# **CONTRACT DOCUMENTS/SPECIFICATIONS**

# FOR

# **SALEM MEMORIAL AIRPORT (K33)**

# MoDOT Project No. 23-066A-1

**Construct 6-Unit T-Hangar** 

April 2023



# TABLE OF CONTENTS

SECTION 1 NOTICE TO BIDDERS	-4
<u>SECTION 2</u> INSTRUCTIONS TO BIDDERS	2-1
SECTION 3	10
GENERAL PROVISIONS	40
<u>SECTION 4</u> SUPPLEMENTARY PROVISIONS 4-1 to 4-	34
PART A – FEDERAL AND STATE PROVISIONS PART B – DBE ADMINISTRATION	
PART C – LOCAL PROVISIONS PART D – FEDERAL AND STATE WAGE RATES	
<u>SECTION 5</u> C-105 – MOBILIZATION	5-2
<u>SECTION 6</u> TEMP – TEMPORARY MARKING, LIGHTING, AND BARRICADES	5-2
<u>SECTION 7</u> T-901 CRM – SEEDING	7-4
<u>SECTION 8</u> T-908 – MULCHING	3-4
ARCHITECTURAL SPECIFICATIONS	
<u>SECTION 03 3100</u> SCO – STRUCTURAL CONCRETE03 3100/1 to 03 3100/	10
<u>SECTION 05 4000</u> CFM – COLD FORMED (LIGHTGAGE) METAL FRAMING05 4000/1 to 05 4000	)/4
<u>SECTION 07 2100</u> INS – BUILDING INSULATION07 2100/1 to 07 2100	)/2
<u>SECTION 07 6000</u> FSM – FLASHING & SHEET METAL07 6000/1 to 07 6000	)/4
<u>SECTION 07 9000</u> JOS – JOINT SEALERS07 9000/1 to 07 9000	)/4

SECTION 08 1100 MDE METAL DOORS & FRAMES	08 1100/1 to 08 1100/4
<u>SECTION 08 3613</u> SOD – SECTIONAL OVERHEAD DOOR	
SECTION 08 7000	00 7000/1 - 00 7000/4
HAR – HARDWARE	
SECTION 13 3401 TEE – TEE HANGAR WITH ELECTRIC BI-FOLD DOORS	
SECTION 26 0500 CRE – COMMON WORK RESULTS FOR ELECTRICAL	
SECTION 26 0510 PSP – PRODUCT SUBSITUTION PROCEDURES	
SECTION 26 0519 EPC – ELECTRICAL POWER CONDUCTORS & CABLES	
SECTION 26 0526	
G&B – GROUNDING AND BONDING	
SECTION 26 0529	
HSE – HANGERS & SUPPORTS FOR ELECTRICAL SYSTEMS	
<u>SECTION 26 0533</u> RW&B - RACEWAYS, WIREWAYS, AND BOXES	
SECTION 26 0553	
IES – IDENTIFICATIONS FOR ELECTRICAL SYSTEMS	
<u>SECTION 26 0923</u> LCD – LIGHTING CONTROL DEVICES	
SECTION 26 2416	
PAN – PANELBOARDS	
<u>SECTION 26 2726</u> WDS – WIRING DEVICES	
SECTION 26 2813	
<u>SECTION 202015</u> FUS – FUSES	
SECTION 26 2816	
SCB - ENCLOSED SWITCHES & CIRCUIT BREAKERS	
SECTION 26 5100	and senate in the stand
INL - INTERIOR LIGHTING	

# **SECTION 26 5600**

EXL – EXTERIOR	LIGHTING		1 to 26 5600-8
----------------	----------	--	----------------

# APPENDIX

GEOTECHNICAL ENGINEERING REPORT (CROCKETT)

CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) REPORT

# ADVISORY CIRCULARS:

150/5370-2G OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION

## PROPOSAL/FORMS

PROPOSAL FORM	PF-1 to PF-12
PERFORMANCE BOND	PB-1 to PB-3
PAYMENT BOND	PA-1 to PA-3
CONTRACT AGREEMENT	CA-1 to CA-4

NOTE: Lochner modifications to FAA standard specifications in block.

# CERTIFICATIONS PAGE

000015546

23-066A-1

# LOCHNER PROJECT NO.: Modot project no.:

**CIVIL ENGINEER:** 



H. W. LOCHNER, INC. Matt Jacobs, P.E. 16105 W 113<sup>th</sup> Street, Suite 107 Lenexa, Kansas 66219 Office: 816-945-5840 Fax: 816-945-5841 mjacobs@hwlochner.com <u>Specifications</u> Sections: 1, 2, 3, 4, 5, 6, 7, 8, CSPP Report, Proposal Form, Performance Bond, Payment Bond, Contract Agreement

THE PROFESSIONAL WHOSE SIGNATURE AND PERSONAL SEAL APPEARS ABOVE ASSUMES RESPONSIBILITY IN THESE BIDDING DOCUMENTS ONLY FOR WHAT IS LISTED ABOVE AND DISCLAIMS (PURSUANT TO SECTION 327.411 RSMO) ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS NOT SEALED BY THE SIGNED PROFESSIONAL RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT.

CERTIFICATIONS PAGE

# **CERTIFICATIONS PAGE**

# LOCHNER PROJECT NO.: Modot project no.:

## **ARCHITECT:**



000015546 23-066A-1

## GHN ARCHITECTS+ENGINEERS

David M. Frohling, AIA 300 S. Jefferson Avenue, Suite 301 Springfield, Missouri 68506 Office: 417-869-0719 Fax: 417-869-3044 df@ghnae.com <u>Specifications</u> Divisions: 03 3100, 05 4000, 07 2100, 07 6000, 07 9000, 08 1100, 08 3613, 08 7000, 13 3401, 26 0500, 26 0510, 26 0519, 26 0526, 26 0529, 26 0533, 26 0553, 26 0923, 26 2416, 26 2726, 26 2813, 26 2816, 26 5100, 26 5600

THE PROFESSIONAL WHOSE SIGNATURE AND PERSONAL SEAL APPEARS ABOVE ASSUMES RESPONSIBILITY IN THESE BIDDING DOCUMENTS ONLY FOR WHAT IS LISTED ABOVE AND DISCLAIMS (PURSUANT TO SECTION 327.411 RSMO) ANY RESPONSIBILITY FOR ALL OTHER PLANS, SPECIFICATIONS, ESTIMATES, REPORTS, OR OTHER DOCUMENTS OR INSTRUMENTS NOT SEALED BY THE SIGNED PROFESSIONAL RELATING TO OR INTENDED TO BE USED FOR ANY PART OR PARTS OF THE PROJECT.

CERTIFICATIONS PAGE

## SECTION 1 NOTICE TO BIDDERS

#### CITY OF SALEM, MISSOURI SALEM MEMORIAL AIRPORT (K33) State Block Grant Project No. 23-066A-1

Sealed bids subject to the conditions and provisions presented herein will be received at the City of Salem Administration Office, 400 N. Iron Street, Salem, MO 65560 until 11:00 A.M. (CDT), Tuesday May 30<sup>th</sup>, 2023, and then publicly opened and read at 11:15 A.M. (CDT) at Old City Hall Council Chambers, 202 N. Washington Street, Salem, MO 65560, for furnishing all labor, materials, equipment and performing all work necessary to:

#### Construct 6-Unit T-Hangar

A <u>virtual</u> bid opening is available for all prospective bidders who do not wish to attend the bid opening in-person. The virtual bid opening will be held via Microsoft Teams. You are not required to have Microsoft Teams to attend the virtual bid opening as you are able to access the meeting via the online Microsoft Teams program. To receive an invitation to the virtual bid opening, contact Ian Wright with Lochner at <u>iwright@hwlochner.com</u>.

Copies of the bid documents including project drawings and technical specifications are on file and may be inspected at:

City of Salem Administration Office	Lochner
400 N. Iron Street	16105 W. 113th Street, Suite 107
Salem, MO 65560	Lenexa, KS 66219

Drawings, specifications, official bid form, and other related contract information may be ordered online at <u>www.drexeltech.com</u> or by contacting Drexel Technologies, Inc. at 10840 W. 86<sup>th</sup> Street, Lenexa, KS 66214, phone (913) 371-4430. Checks shall be made payable to (Drexel Technologies) and mailing costs are the responsibility of the purchaser. Drawings, specifications, official bid form, and addenda, and a plan holders list are available at <u>www.drexeltech.com</u> by clicking on "Enter Plan Room."

A prebid conference will NOT be held for this project.

**Contract Work Items.** This project will involve the following work items and estimated quantities. Prospective bidders are hereby advised that the quantities indicated herein are approximate and are subject to change.

ITEM NO.	SPEC.	ITEM DESCRIPTION	QTY.	UNIT	
MoDOT	PROJECT	No. 23-066A-1		1 T.	
Construct	t 6-Unit T-H	langar			
1	C-105	Mobilization (NTE 10% of Total Bid Amount)			
2	TEMP	Temporary Marking, Lighting, and Barricades	1	L.S.	
3	T-901 & T-908	Haul Road, Staging Area, and Site Restoration 1			
4	222	Construct 6-Unit T-Hangar 1			
5		Construct Hangar Approach 220			

**Contract Time.** The owner has established a contract performance time of one hundred eighty (180) calendar days for submittals, concrete mix design, material procurement and delivery from the date of the Notice-To-Proceed for <u>PROCUREMENT</u> and ninety (90) calendar days for all construction activities from the date of the Notice-to-Proceed for <u>CONSTRUCTION</u>. This project is subject to liquidated damages as prescribed in the project manual.

**Bid Security.** No bid will be considered unless accompanied by a certified check or cashier's check on any bank or trust company insured by the Federal Deposit Insurance Corporation, payable to the **City of Salem**, **Missouri**, for not less than five (5) percent of the total amount of the bid, or by a bid bond secured by an approved surety or sureties, payable to the owner, for not less than five (5) percent of the total amount of the total a

**Bonding Requirements**. The successful bidder will be required to furnish separate performance and payment bonds each in an amount equal to 100% of the contract price at the time of contract execution.

Award of Contract. All proposals submitted in accordance with the instructions presented herein will be subject to evaluation. Bids may be held by the City of Salem, Missouri for a period not to exceed ninety (90) calendar days from the date of the bid opening for the purpose of conducting the bid evaluation.

Award of contract will be based on the lowest aggregate sum proposal submitted from those bidders that are confirmed as being responsive and responsible for the following scenarios:

#### **Base Bid**

The owner reserves the right to select any one of the combinations of the base bid(s) and alternate bid(s), which in the judgment of the owner, best serves the owner's interest. The right is reserved, as the **City of Salem**, **Missouri** may require, to reject any bid and all bids.

Award of contract is contingent upon the owner receiving Federal-funding assistance under the State Block Grant Program.

#### Notice-To-Proceed

It is the intent of the Owner to issue the Notice-To-Proceed (NTP) for **PROCUREMENT** as soon as practical after the Award of Contract.

Federal Provisions. This project is subject to the following Federal provisions, statutes and regulations:

**Equal Employment Opportunity - Executive Order 11246 and 41 CFR Part 60:** The Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth within the supplementary provisions. The successful Bidder shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color, religion, sex, or national origin.

#### Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity:

1. The Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Opportunity Construction Contract Specifications" set forth within the supplementary provisions.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Timetables

Goals for minority participation for each trade:11.4% (Dent County)Goals for female participation in each trade:6.9%.

These goals are applicable to all of the contractor's construction work (whether or not it is Federal or federallyassisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor is also subject to the goals for both its federally involved and non-federally involved construction. The contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The Contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs (OFCCP) within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address, and telephone number of the subcontractor; employer identification number of the subcontract; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the subcontract is to be performed.

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is the Salem Memorial Airport, City of Salem, Dent County, Missouri.

<u>Certification of Nonsegregated Facilities – 41 CFR Part 60</u>: A certification of Nonsegregated Facilities must be submitted prior to the award of a federally-assisted construction contract exceeding \$10,000 which is not exempt from the provisions of the Equal Opportunity Clause.

Contractors receiving federally assisted construction contract awards exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause will be required to provide for the forwarding of the notice to prospective subcontractors for supplies and construction contracts where the subcontracts exceed \$10,000 and are not exempt from the provisions of the Equal Opportunity Clause. The penalty for making false statements in offers is prescribed in 18 U.S.C. 1001.

**Disadvantaged Business Enterprise – 49 CFR Part 26:** The requirements of 49 CFR Part 26, Regulations of the U.S. Department of Transportation, apply to this contract. It is the policy of MoDOT and the **City** to practice nondiscrimination based on race, color, sex or national origin in the award or performance of this contract. All firms qualifying under this solicitation are encouraged to submit bids/proposals regardless of their business size or ownership. Awards of this contract will be conditioned upon satisfying the requirements of this section. These requirements apply to all bidders, including those who qualify as a DBE. The owner's award of this contract is condition upon the bidder satisfying the good faith effort requirements of 49 CFR §26.53. A DBE contract goal of **0.00** percent has been established for this contract. The <u>non-DBE</u> bidder shall subcontract **0.00** percent of the dollar value of the base bid(s), excluding any additive alternates, to disadvantaged business enterprises (DBE) or make good faith efforts to meet the DBE contract goal. <u>The bidder and any subcontractor who qualifies as a DBE who subcontracts work to another non-DBE firm must subtract the amount of the non-DBE contract from the total DBE work counted toward the goal, as defined in 49 CFR Part 26.55.</u>

The apparent successful competitor will be required to submit the following information as a condition of bid responsiveness: (1) the names and addresses of DBE firms that will participate in the contract; (2) a description of the work that each DBE firm will perform; (3) the dollar amount of the participation of each DBE firm participating; (4) written statement from bidder that attests their commitment to use the DBE firm(s) listed under (1) above to meet the owner's project goal; and (5) if the contract goal is not met, evidence of good faith efforts undertaken by the bidder, as described in Appendix A to 49 CFR Part 26.

The apparent successful competitor must provide written confirmation of participation from each of the DBE firms listed in their commitment with the proposal documents as a condition of bid responsiveness.

**Davis-Bacon Act, as amended** – 29 CFR Part 5: The Contractor is required to comply with wage and labor provisions and to pay minimum wages in accordance with the current schedule of wage rates established by the United States Department of Labor included in the supplementary provisions.

In addition, the contractor will also be required to comply with the wage and labor requirements and pay minimum wages in accordance with the schedule of wage rates established by the Missouri Division of Labor Standards included in the Supplementary Provisions.

The highest rate between the two (Federal and State) for each job classification shall be considered the prevailing wage.

**Debarment, Suspension, Ineligibility and Voluntary Exclusion – 49 CFR Part 29:** The bidder certifies, by submission of a proposal or acceptance of a contract, that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

Foreign Trade Restriction – 49 CFR Part 30: The Bidder and Bidder's subcontractors, by submission of an offer and/or execution of a contract, is required to certify that it:

a. is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Trade Representative (USTR);

b. has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country on said list, or is owned or controlled directly or indirectly by one or more citizens or nationals of a foreign country on said list; or

c. has not procured any product nor subcontracted for the supply of any product for use on the project that is produced in a foreign country on said list.

**Buy American Certificate – Aviation Safety and Capacity Act of 1990:** This contract is subject to the "Buy American Preferences" of the Aviation Safety and Capacity Act of 1990. Prospective Bidders are required to certify that steel and manufactured products have been produced in the United States and to clearly identify those items produced or manufactured outside of the United States.

#### Additional Provisions:

Modification to the project documents may only be made by written addendum by the Owner or Owner's authorized Representative.

The proposal must be made on the **Official Bid Form provided separate from the bound project manual**. Bidders must supply all required information prior to the time of bid opening.

#### SECTION 2 INSTRUCTIONS TO BIDDERS

## 1. THE EXECUTED PROPOSAL FORM MUST BE SUBMITTED WITH THE OFFICIAL BID FORM PRVIDED SEPARATE FROM THE ORIGINAL BOUND PROECT MANUAL. NO INDIVIDUAL ELEMENTS OF THE PROJECT MANUAL MAY BE REMOVED OR DETACHED.

- 2. The apparent low bidder shall submit ``evidence of competency" and ``evidence of financial responsibility" to the owner no later than 3 business days after the specified date for opening bids.
- 3. Each bidder shall certify in the Proposal Form located within the Official Bid Form at the time of bid submittal that they acknowledge receipt of all issued addenda.
- 4. No bid will be considered unless accompanied by a certified check or cashier's check on any bank or trust company insured by the Federal Deposit Insurance Corporation, payable to the owner, for not less than five (5) percent of the amount of the bid, or by a bid bond secured by an approved surety or sureties (licensed to conduct surety business in the state of Missouri), payable to the owner, for not less than five (5) percent of the amount of the bid.
- 5. Proposals shall be sent to arrive at the time and date specified in Section 1, Notice to Bidders. Proposals received after the specified time and date will not receive consideration and will be returned unopened. Prior to submittal, the proposal shall be placed in a sealed opaque envelope and addressed to:

Airport Hangar Construction Project Attn: City Clerk City of Salem Administration Offices 400 N. Iron Street Salem, MO 65560

The upper left hand corner of the envelope should be marked as follows:

Sealed Bid Proposal Bid of <u>NAME OF BIDDER</u> For construction improvements at Salem Memorial Airport State Block Grant Project No.: 23-066A-1 To be opened at: 11:15 A.M. (CDT), Tuesday, May 30<sup>th</sup>, 2023

For a modification to a previously submitted proposal, insert "Modification to Proposal" in place of "Sealed Bid Proposal".

- 6. The Owner reserves the right to reject any or all bids, as determined to be in the best interest of the Owner. Causes for rejection of proposals include but are not limited to:
  - Submittal of more than one proposal from the same partnership, firm or corporation;
  - · Failure by Bidder to submit the bid prior to the stated time and date for receipt of bids;
  - Failure by Bidder to furnish satisfactory bid guarantee;
  - · Failure by Bidder to provide all information required of the bid forms;
  - Failure by Bidder to comply with the requirements of bid instructions:
  - Determination by the Owner that Bidder is not qualified to accomplish the project work;
  - Determination by the Owner that the Bidder has placed conditions on or qualified their proposal;
  - Discovery of any alteration, interlineations or erasure of any project requirement by the Bidder;
  - Evidence of collusion among bidders.
- 7. The City of Salem, Missouri will issue a state sales tax exemption certificate to the successful Bidder and the successful Bidder will not be required to pay State sales tax on materials and supplies purchased for use on this project. The successful Bidder will be responsible for payment of all other taxes.

# SECTION 3 GENERAL PROVISIONS

# INDEX TO GENERAL PROVISIONS

SECTION 10	DEFINITION OF TERMS		
SECTION 20	PROPOSAL REQUIREMENTS AND CONDITIONS		
	20-01	Bidder Qualifications	
	20-02	Bid Documents/Project Manual	
	20-03	Modifications to Project Documents	
	20-04	Errors and Discrepancies in Project Documents	
	20-05	Clarifications and Interpretations	
	20-06	Issuance of Proposal Forms	
	20-07	Interpretation of Estimated Proposal Quantities	
	20-08	Examination of Plans, Specifications, and Site Conditions	
	20-09	Preparation of the Bid Proposal	
	20-10	Bid Guaranty	
	20-11	Submission of Bid Proposal	
	20-12	Modification or Withdrawal of Bid Proposal	
	20-13	Bid Opening	
	20-14	Disqualification of Bid Proposals	
SECTION 30	AWARI	D AND EXECUTION OF CONTRACT	
	30-01	Evaluation of Proposals	
	30-02	Cancellation of Award	
	30-03	Notice of Award of Contract	
	30-04	Return of Bid Guaranty	
	30-05	Contract Agreement	
	30-06	Performance and Payment Bonds	
	30-07	Certificates of Insurance	
	30-08	Approval of Contract	
SECTION 40	SCOPE	OF WORK	
	40-01	Intent of Contract	
	40-02	Alteration of Work and Quantities	
	40-03	Omitted Items	
	40-04	Extra Work	
	40-05	Maintenance of Traffic	
	40-06	Removal of Existing Structures	
	40-07	Rights In and Use of Materials Found in the Work	
	40-08	Final Cleaning Up	
SECTION 50	CONTR	OL OF WORK	
	50-01	Authority of the Engineer	
	50-02	Conformity with Plans and Specifications	
	50-03	Coordination of Contract, Plans and Specifications	
	50-04	Cooperation of Contractor	
	50-05	Cooperation Between Contractors	
	50-06	Construction Layout and Stakes	
	50-07	Automatically Controlled Equipment	
	20-08	Authority and Duties of Inspectors	

- 50-09 Inspection of the Work 50-10
- Removal of Unacceptable and Unauthorized Work 50-11
- Load Restrictions 50-12
- Maintenance During Construction 50-13
- Failure to Maintain the Work 50-14
- Partial Acceptance 50-15
- Final Acceptance 50-16
- Claims for Adjustments and Disputes 50-17
- Cost Reduction Incentive

#### **SECTION 60** CONTROL OF MATERIALS

- 60-01 Source of Supply and Quality Requirements
- 60-02 Samples, Tests, and Cited Specifications
- 60-03 Certification of Compliance
- 60-04 Plant Inspection
- 60-05 Engineer's Field Office
- 60-06 Storage of Materials
- 60-07 Unacceptable Materials
- 60-08 **Owner Furnished Materials**

#### SECTION 70

#### LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

- 70-01 Laws to be Observed
- 70-02 Permits, Licenses, and Taxes
- 70-03 Patented Devices, Materials, and Processes
- Restoration of Surfaces Disturbed by Others 70-04
- Federal Aid Participation 70-05
- Sanitary, Health, and Safety Provisions 70-06
- 70-07 Public Convenience and Safety
- Barricades, Warning Signs, and Hazard Markings 70-08
- 70-09 Use of Explosives
- Protection and Restoration of Property and Landscape 70-10
- Responsibility for Damage Claims 70-11
- Third Party Beneficiary Clause 70-12
- 70-13 Opening Sections of the Work to Traffic
- Contractor's Responsibility for Work 70-14
- Contractor's Responsibility for Utility Service and Facilities of Others 70-15
- 70-15.1 FAA Facilities and Cable Runs
- Furnishing Rights-of-Way 70-16
- Personal Liability of Public Officials 70-17
- 70-18 No Waiver of Legal Rights
- 70-19 **Environmental Protection**
- 70-20 Archaeological and Historical Findings

#### **SECTION 80**

#### **PROSECUTION AND PROGRESS**

- Subletting of Contract 80-01
- 80-02 Notice to Proceed
- Prosecution and Progress 80-03
- Limitation of Operations 80-04
- Operational Safety on Airport During Construction 80-04.1
- Character of Workers, Methods, and Equipment 80-05
- Temporary Suspension of the Work 80-06
- Determination and Extension of Contract Time 80-07
- Failure to Complete on Time 80-08
- Default and Termination of Contract 80-09

- 80-10 Termination for National Emergencies
- 80-11 Work Area, Storage Area, and Sequence of Operations

## **SECTION 90**

## MEASUREMENT AND PAYMENT

- 90-01 Measurement of Quantities
- 90-02 Scope of Payment
- 90-03 Compensation for Altered Quantities
- 90-04 Payment for Omitted Items
- 90-05 Payment for Extra and Force Account Work
- 90-06 Partial Payments
- 90-07 Payment for Materials on Hand
- 90-08 Payment of Withheld Funds
- 90-09 Acceptance and Final Payment
- 90-10 Construction Warranty
- 90-11 Project Closeout

# SECTION 10 DEFINITION OF TERMS

Whenever the following terms are used in these specifications, in the contract, or in any documents or other instruments pertaining to construction where these specifications govern, the intent and meaning shall be interpreted as follows:

10-01 AASHTO. The American Association of State Highway and Transportation Officials, the successor association to AASHO.

10-02 ACCESS ROAD. The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public highway.

10-03 ADVERTISEMENT. A public announcement, as required by local law, inviting bids for work to be performed and materials to be furnished.

10-04 AIP. The Airport Improvement Program, a grant-in-aid program, administered by the Federal Aviation Administration.

**10-05 AIR OPERATIONS AREA.** For the purpose of these specifications, the term air operations area shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operations area shall include such paved or unpaved areas that are used or intended to be used for the unobstructed movement of aircraft in addition to its associated runway, taxiway, or apron.

**10-06 AIRPORT.** Airport means an area of land or water which is used or intended to be used for the landing and takeoff of aircraft; an appurtenant area used or intended to be used for airport buildings or other airport facilities or rights of way; and airport buildings and facilities located in any of these areas, and includes a heliport.

10-07 ASTM. The American Society for Testing and Materials.

10-08 AWARD. The acceptance, by the Owner, of the successful bidder's proposal.

**10-09 BIDDER.** Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

10-10 BUILDING AREA. An area on the airport to be used, considered, or intended to be used for airport buildings or other airport facilities or rights-of-way together with all airport buildings and facilities located thereon.

10-11 CALENDAR DAY. Every day shown on the calendar.

**10-12 CHANGE ORDER.** A written order to the Contractor covering changes in the plans, specifications, or proposal quantities and establishing the basis of payment and contract time adjustment, if any, for the work affected by such changes. The work, covered by a change order, shall be within the scope of the contract.

**10-13 CONTRACT.** The written agreement covering the work to be performed. The awarded contract shall include, but is not limited to: The Advertisement; The Contract Form; The Proposal; The Performance Bond; The Payment Bond; any required insurance certificates; The Specifications; The Plans; and any addenda issued to bidders.

10-14 CONTRACT ITEM (PAY ITEM). A specific unit of work for which a price is provided in the contract.

**10-15 CONTRACT TIME.** The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.

10-16 CONTRACTOR. The individual, partnership, firm, or corporation primarily liable for the acceptable performance of the work contracted and for the payment of all legal debts pertaining to the work who acts directly or through lawful agents or employees to complete the contract work.

**10-17 DRAINAGE SYSTEM.** The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.

**10-18 ENGINEER.** The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering inspection of the contract work and acting directly or through an authorized representative.

**10-19 EQUIPMENT.** All machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.

**10-20 EXTRA WORK.** An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Engineer to be necessary to complete the work within the intended scope of the contract as previously modified.

**10-21 FAA.** The Federal Aviation Administration of the U.S. Department of Transportation. When used to designate a person, FAA shall mean the Administrator or his/her duly authorized representative.

10-22 FEDERAL SPECIFICATIONS. The Federal Specifications and Standards, Commercial Item Descriptions, and supplements, amendments, and indices thereto are prepared and issued by the General Services Administration of the Federal Government.

10-23 FORCE ACCOUNT. Not used.

**10-24 INSPECTOR.** An authorized representative of the Engineer assigned to make all necessary inspections and/or tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

**10-25 INTENTION OF TERMS.** Whenever in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer, subject in each case to the final determination of the Owner.

Any reference to a specific requirement of a numbered paragraph of the contract specifications or a cited standard shall be interpreted to include all general requirements of the entire section, specification item, or cited standard that may be pertinent to such specific reference.

10-26 LABORATORY. The official testing laboratories of the Owner or such other laboratories as may be designated by the Engineer.

**10-27** LIGHTING. A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.

**10-28 MAJOR AND MINOR CONTRACT ITEMS.** A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20 percent of the total amount of the award contract. All other items shall be considered minor contract items.

10-29 MATERIALS. Any substance specified for use in the construction of the contract work.

**10-30 NOTICE TO PROCEED.** A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.

10-31 OWNER. The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. For AIP contracts, the term "sponsor" shall have the same meaning as the term "Owner." Where the term "Owner" is capitalized in this document, it shall mean airport owner or sponsor only.

**10-32 PAVEMENT.** The combined surface course, base course, and subbase course, if any, considered as a single unit.

**10-33 PAYMENT BOND.** The approved form of security furnished by the Contractor and his/her surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.

**10-34 PERFORMANCE BOND.** The approved form of security furnished by the Contractor and his/her surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.

**10-35 PLANS.** The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications.

**10-36 PROJECT.** The agreed scope of work for accomplishing specific airport development with respect to a particular airport.

10-37 PROPOSAL. The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.

**10-38 PROPOSAL GUARANTY.** The security furnished with a proposal to guarantee that the bidder will enter into a contract if his/her proposal is accepted by the Owner.

10-39 RUNWAY. The area on the airport prepared for the landing and takeoff of aircraft.

**10-40 SPECIFICATIONS.** A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.

10-41 SPONSOR. See definition above of "Owner."

**10-42 STRUCTURES.** Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes, handholes, lighting fixtures and bases; transformers; flexible and rigid pavements; navigational aids; buildings; vaults; and other manmade features of the airport that may be encountered in the work and not otherwise classified herein.

10-43 SUBGRADE. The soil that forms the pavement foundation.

**10-44 SUPERINTENDENT.** The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

**10-45 SUPPLEMENTAL AGREEMENT.** A written agreement between the Contractor and the Owner covering (1) work that would increase or decrease the total amount of the awarded contract, or any major contract item, by more than 25 percent, such increased or decreased work being within the scope of the originally awarded contract; or (2) work that is not within the scope of the originally awarded contract.

**10-46 SURETY.** The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.

**10-47 TAXIWAY.** For the purpose of this document, the term taxiway means the portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways or aircraft parking areas.

10-48 WORK. The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.

10-49 WORKING DAY. A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least 6 hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered a working day.

## **END OF SECTION 10**

## SECTION 20 PROPOSAL REQUIREMENTS AND CONDITIONS

**20-01 BIDDER QUALIFICATIONS.** The apparent low bidder shall furnish the Owner satisfactory evidence of his/her competency and financial capability to perform the proposed work. The Bidder shall demonstrate that they are a responsible firm that possesses the skills, abilities, and integrity to faithfully perform the project work. Evidence of competency shall consist of statements covering the Bidder's past experience on similar work, a listing of plant and equipment immediately available for use on the project, and a listing of key personnel that are available for the project. The listing for plant and equipment shall identify the type, the capacity and the present condition of the item.

Evidence of financial responsibility shall consist of a confidential statement or report of the Bidder's financial resources and liabilities as of the last calendar year. A public accountant must certify such statements and reports. If the Bidder is presently pre-qualified with the Missouri Department of Transportation (MoDOT), evidence of this prequalification may serve as evidence of financial responsibility in lieu of the certified financial statements and reports.

The apparent low bidder shall submit "evidence of competency" and "evidence of financial responsibility" to the owner no later than 3 business days after the specified date for opening bids.

**20-02 BID DOCUMENTS/PROJECT MANUAL.** The bid documents are comprised of the following: Notice to Bidders; Instructions to Bidders; General Provisions; Supplementary Provisions; Technical Specifications; Project Drawings; Proposal Form; Performance and Payment Bonds; Form of Contract Agreement; any authorized addenda issued by the Owner; and any document incorporated in whole or in part by reference therein.

All documents comprising the Bid Documents are complementary to one another and together establish the complete terms, conditions and obligations of the successful bidder.

Those individual elements of the Contract Documents that are bound together shall also be referred to as the Project Manual. THE EXECUTED PROPOSAL FORM MUST BE SUBMITTED WITH THE OFFICIAL BID FORM PROVIDED SEPARATE FROM THE ORIGINAL BOUND PROECT MANUAL. NO INDIVIDUAL ELEMENTS OF THE PROJECT MANUAL MAY BE REMOVED OR DETACHED.

Prospective bidders may obtain a copy of the project manual and project drawings from the designated office identified within this Notice to Bidders.

**20-03 MODIFICATIONS TO PROJECT DOCUMENTS.** Modifications to the project documents may only be made by written addendum issued by the Owner or the Engineer. Verbal explanations, interpretations or comments made by the Owner or Owner's representative shall not be binding. Addenda will be transmitted to all known official plan holders. Each bidder shall certify in the Proposal Form at the time of bid submittal, that they acknowledge receipt of all issued addenda.

**20-04** ERRORS AND DISCREPANCIES IN PROJECT DOCUMENTS. Should Bidder find an error, discrepancy, ambiguity or omission in the project documents prior to submittal of a proposal, the Bidder is obligated to contact the Owner or Engineer with written notice of the error, discrepancy, ambiguity or omission. The written notice shall identify the nature and location of the error, discrepancy, ambiguity or omission. Corrections or modifications to the project documents will only be made by written addendum as prescribed herein. By submittal of a Bid Proposal, Bidder represents that they have thoroughly reviewed the project documents and that they have not identified any error, discrepancy, ambiguity or omission that would affect cost, progress or performance of the project work.

**20-05** CLARIFICATIONS AND INTERPRETATIONS. A Bidder requiring a clarification or interpretation of the project documents shall make a written request to the Owner or Engineer. The Owner or Engineer must receive the written request a minimum of seven (7) calendar days prior to the date of the bid opening.

**20-06 ISSUANCE OF PROPOSAL FORMS.** The Owner reserves the right to refuse to issue a proposal form to a prospective bidder should such bidder be in default for any of the following reasons:

**a.** Failure to comply with any prequalification regulations of the Owner, if such regulations are cited, or otherwise included, in the proposal as a requirement for bidding.

**b.** Failure to pay, or satisfactorily settle, all bills due for labor and materials on former contracts in force (with the Owner) at the time the Owner issues the proposal to a prospective bidder.

- c. Contractor default under previous contracts with the Owner.
- d. Unsatisfactory work on previous contracts with the Owner.

20-07 INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES. An estimate of quantities of work to be done and materials to be furnished under these specifications is stated within the project manual. This estimate is a result of careful calculations and is believed to be correct. The estimated quantities are given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly or impliedly agree that the actual quantities involved will correspond exactly with the estimated quantities. The Bidder shall not plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or decreased as hereinafter provided in the subsection titled "Alteration of Work and Quantities" of the general provisions without in any way invalidating the unit bid prices.

**20-08 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE CONDITIONS.** The Bidder is expected to carefully examine the site of the proposed work, the proposal, drawings, specifications, terms and conditions of the proposed agreement and the form of agreement. The Bidder shall satisfy themselves as to the character, quality, and quantities of work to be performed, materials to be furnished, and as to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the Bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the proposed contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests, as appropriate, may be available for inspection by the Bidder. It is understood and agreed that such subsurface information, whether included in the project drawings, specifications, or otherwise made available to the Bidder, was obtained and is intended for the Owner's design and estimating purposes only. Such information has been made available for the convenience of all bidders. It is further understood and agreed that the Bidder is solely responsible for all assumptions, deductions, or conclusions which he or she may make or obtain from his or her examination of the boring logs and other records of subsurface investigations and tests that are furnished by the Owner.

**20-09 PREPARATION OF THE BID PROPOSAL.** All bid proposals shall be made on the forms provided by the Owner within the bound Project Manual. No bidder may submit more than one proposal. Each bidder shall specify in the bid, in figures, a unit price for each of the separate items listed in the bid proposal, except a unit price entry will not be necessary for those items having a quantity of one, and only the amount for that item need be entered. Zero will be considered a valid bid. The Bidder shall not enter zero in any "Unit Price" field unless zero is the intended bid for that item. A unit price left blank, with or without an extension, other than items having a quantity of one, will be considered as zero by the owner. The Bidder shall show the products of the respective unit prices and quantities in the amount column provided for that purpose. These extensions shall be totaled and in case of errors or discrepancies in extensions, the unit prices shall govern. All entries in the bid shall be in ink. If, in the sole discretion of the Owner, an obvious and apparent clerical error exists in the unit bid price for an item due to a misplaced decimal, but the extension appears to be correct and as intended in all respects, the Owner may correct the unit price bid in accordance with the extension listed. All errors in extensions or totals will be corrected by the Owner and such corrected extensions and totals will be used in comparing bids.

Bids shall not contain interlineations, alterations or erasures, except a bidder may alter or correct a unit price, lump sum price or extension entered on the Proposal Form by crossing out the figure with ink and entering a new unit price, lump sum bid or extension above or below in ink with his/her initials.

The proposal shall be signed and dated by an authorized representative of the Bidder. All signatures shall be made with an ink pen. The Bidder's representative shall have the legal authority to obligate and bind the Bidder to the terms and conditions of the contract. The Bidder shall legibly state the name of the Bidder's representative, the legal name of the Bidder, and the address of the Bidder including City, State and Zip Code.

 For bids by corporations, an officer of the corporation shall sign the bid, the State of incorporation shall be identified and the corporate seal affixed.

- For bids submitted by an agent, evidence of the power of attorney shall be attached to the bid.
- For bids submitted by a partnership or joint venture, the proposal shall identify the name of all firms and the authorized parties of all firms. A copy of the partnership/joint agreement shall be provided to the owner as an attachment to the proposal.

**20-10 BID GUARANTY.** No bid will be considered unless accompanied by a certified check or cashier's check on any bank or trust company insured by the Federal Deposit Insurance Corporation, payable to the Owner, for not less than five (5) percent of the amount of the bid, or by a bid bond secured by an approved surety or sureties (licensed to conduct surety business in the state of Missouri), payable to the Owner, for not less than five (5) percent of the amount of the bid.

**20-11 SUBMISSION OF BID PROPOSAL**. Proposals shall be sent to arrive at the time and date specified in Section 1, Notice to Bidders. Proposals received after the specified time and date will not receive consideration and will be returned unopened. Prior to submittal, the proposal shall be placed in a sealed opaque envelope and addressed as specified in Section 2, Instructions to Bidders, paragraph 5.

**20-12 MODIFICATION OR WITHDRAWAL OF BID PROPOSAL.** Bidder may modify or withdraw his/her proposal at any point up to the specified time and date identified for receipt of proposals. Any request for bid withdrawal or modification by the Bidder that is received after the specified time and date for receipt of proposals will be returned unopened to the sender.

Any modification to a Bidder's proposal, subject to the time constraint noted herein, must be made on the proposal forms contained in the project manual. The Bidder's authorized representative must sign the modification. The modification shall be placed in a sealed envelope, and the statement "Modification to Proposal" shall be legibly marked in the upper left hand corner. Withdrawal of a proposal may be made, subject to the time constraint noted herein, only with written confirmation under signature of the Bidder.

**20-13 BID OPENING.** All proposals submitted prior to the stated time and date for receipt of bids will be publicly opened and read aloud by the Owner or the Owner's representative. Bidders, their authorized agents, and other interested parties are invited to attend. Proposals submitted after the stated time and date for receipt of bids will be automatically rejected without consideration and will be returned unopened.

**20-14 DISQUALIFICATION OF BID PROPOSALS.** The Owner reserves the right to reject any or all bids, as determined to be in the best interest of the Owner. Causes for rejection of proposals include but are not limited to:

- · Submittal of more than one proposal from the same partnership, firm or corporation;
- · Failure by Bidder to submit the bid prior to the stated time and date for receipt of bids;
- · Failure by Bidder to furnish satisfactory bid guarantee;
- · Failure by Bidder to provide all information required of the bid forms;
- · Failure by Bidder to comply with the requirements of bid instructions;
- Failure by Bidder to complete the applicable Buy American Certification;
- Failure by the Bidder to demonstrate good faith efforts in obtaining participation by certified DBE firms;
- Determination by the Owner that Bidder is not qualified to accomplish the project work;
- Determination by the Owner that the Bidder has placed conditions on or qualified their proposal;
- · Discovery of any alteration, interlineations or erasure of any project requirement by the Bidder;
- · Inclusion of the Bidder as an Excluded Party in the System for Award Management;
- Evidence of collusion among bidders.

# **END OF SECTION 20**

## SECTION 30 AWARD AND EXECUTION OF CONTRACT

**30-01** EVALUATION OF PROPOSALS. Proposals may be held by the Owner for purposes of review and evaluation by the Owner for a period not to exceed **ninety (90)** calendar days from the stated date for receipt of bids. The Owner will tabulate all bids and verify proper extension of unit costs. The Bidder shall honor their proposal for the duration of this period of review and evaluation. The bid guaranty will be held by the Owner until this period of review has expired or a contract has been formally executed.

**30-02 CANCELLATION OF AWARD.** At any time prior to execution of a contract agreement, the Owner reserves the right to cancel the award for any reason without liability to the Bidder, with the exception of the return of the bid guaranty, at any time prior to execution of the contract.

**30-03 NOTICE OF AWARD OF CONTRACT.** It is the intent of the Owner, after a period of review and evaluation, to award a contract to the responsible bidder that submits the lowest responsive proposal. The successful bidder will be informed their bid has been accepted through the Owner's issuance of a Notice of Award. The Notice of Award shall not be construed as a binding agreement. The proper execution of a contract agreement shall serve as the binding agreement.

Award of this contract is conditioned upon MoDOT concurring in award of contract. The issuance of the Notice of Award will not be made until MoDOT has concurred in award.

Unless specifically stated, the owner reserves the right to accept alternates in any order or combination, which in the judgment of the Owner, best serves the Owner's interest.

**30-04 RETURN OF BID GUARANTY.** The bid guaranty of the successful Bidder will be returned upon successful execution of the contract documents as specified herein. Failure by the successful Bidder to execute the contract documents within the specified time shall result in forfeiture of the bid guaranty. The bid guaranty of the second and third lowest responsible bidders will be retained for a period of **ninety (90)** days pending the execution of the contract documents by the successful bidder. Except as noted above, the bid guaranty of unsuccessful bidders will be returned at the point their proposal is rejected.

**30-05 CONTRACT AGREEMENT.** The successful Bidder shall execute the contract agreement in accordance with the accepted bid proposal within thirty (30) days of the date of the Notice of Award. Failure to execute the contract agreement within the specified time frame may result in the bid being awarded to the next low bidder and shall result in the forfeiture of the Bidder's bid guarantee as a liquidated damage.

**30-06 PERFORMANCE AND PAYMENT BONDS**. The successful Bidder shall furnish separate performance and payment bonds each in the amount of 100% of the contract price. The bonds shall be made payable to the Owner as security for faithful performance of the contract and for the payment of all persons, firms or corporations to whom the Bidder may become legally indebted for labor, materials, tools, equipment or services in the performance of the project work. The form of the bond shall be that provided within the project manual. The current power of attorney for the person signing the bond as a representative of the surety shall be attached to the bonds.

The executed bonds shall be delivered to the Owner within fifteen (15) calendar days from the date of contract execution. Bonds should not be executed prior to execution of the contract agreement. The bonds shall be issued by a solvent Surety, which is certified to operate within the State the project work is located and which is listed in the current issue of the U.S. Treasury Circular 570. If specifically requested by the Owner, the successful Bidder shall obtain and submit information on the surety's financial strength rating.

**30-07 CERTIFICATES OF INSURANCE**. The successful Bidder shall furnish to the Owner all required certificates of insurance as specified within the project manual.

**30-08 APPROVAL OF CONTRACT.** Upon receipt of the Contract Agreement, Contract Bonds and Certificate of Insurance as executed by the successful Bidder, the Owner will complete execution of the contract conditioned upon the Owner's judgment that it remains in their best interest to enter into the Agreement.

Delivery of the fully executed Contract Agreement to the successful Bidder shall constitute the Owner's approval to be bound by the successful Bidder's proposal and all terms and conditions of the Contract Agreement.

Upon satisfactory execution of the contract by the successful Bidder and the Owner, all references to "Bidder" in the bid documents become equivalent to the term "Contractor".

# SECTION 40 SCOPE OF WORK

**40-01 INTENT OF CONTRACT.** The intent of the contract is to provide for construction and completion, in every detail, of the work described. It is further intended that the Contractor shall furnish all labor, materials, equipment, tools, transportation, and supplies required to complete the work in accordance with the plans, specifications, and terms of the contract.

**40-02 ALTERATION OF WORK AND QUANTITIES.** The Owner reserves and shall have the right to make such alterations in the work as may be necessary or desirable to complete the work originally intended in an acceptable manner. Unless otherwise specified herein, the Engineer shall be and is hereby authorized to make such alterations in the work as may increase or decrease the originally awarded contract quantities, provided that the aggregate of such alterations does not change the total contract cost or the total cost of any major contract item by more than 25 percent (total cost being based on the unit prices and estimated quantities in the awarded contract). Alterations that do not exceed the 25 percent limitation shall not invalidate the contract nor release the surety, and the Contractor agrees to accept payment for such alterations as if the altered work had been a part of the original contract. These alterations that are for work within the general scope of the contract shall be covered by "Change Orders" issued by the Engineer. Change orders for altered work shall include extensions of contract time where, in the Engineer's opinion, such extensions are commensurate with the amount and difficulty of added work.

Should the aggregate amount of altered work exceed the 25 percent limitation hereinbefore specified, such excess altered work shall be covered by supplemental agreement. If the Owner and the Contractor are unable to agree on a unit adjustment for any contract item that requires a supplemental agreement, the Owner reserves the right to terminate the contract with respect to the item and make other arrangements for its completion.

All supplemental agreements shall be approved by the Missouri Department of Transportation's Aviation Section and shall include valid wage determinations of the U.S. Department of Labor and Missouri Division of Labor Standards when the amount of the supplemental agreement exceeds \$2,000. However, if the Contractor elects to waive the limitations on work that increases or decreases the originally awarded contract or any major contract item by more than 25 percent, the supplemental agreement shall be subject to the same U.S. Department of Labor and Missouri Division of Labor Standards wage determination as was included in the originally awarded contract.

All supplemental agreements shall require consent of the Contractor's surety and separate performance and payment bonds.

**40-03 OMITTED ITEMS.** The Engineer may, in the Owner's best interest, omit from the work any contract item, except major contract items. Major contract items may be omitted by a supplemental agreement. Such omission of contract items shall not invalidate any other contract provision or requirement.

Should a contract item be omitted or otherwise ordered to be nonperformed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with the subsection titled PAYMENT FOR OMITTED ITEMS of Section 90.

**40-04 EXTRA WORK.** Should acceptable completion of the contract require the Contractor to perform an item of work for which no basis of payment has been provided in the original contract or previously issued change orders or supplemental agreements, the same shall be called "Extra Work." Extra Work that is within the general scope of the contract shall be covered by written change order. Change orders for such Extra Work shall contain agreed unit prices for performing the change order work in accordance with the requirements specified in the order, and shall contain any adjustment to the contract time that, in the Engineer's opinion, is necessary for completion of such Extra Work.

When determined by the Engineer to be in the Owner's best interest, the Engineer may order the Contractor to proceed with Extra Work by force account as provided in the subsection titled PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK of Section 90. Extra Work that is necessary for acceptable completion of the project, but is not within the general scope of the work covered by the original contract shall be covered by a Supplemental Agreement, as hereinbefore defined in the subsection titled SUPPLEMENTAL AGREEMENT of Section 10.

Any claim for payment of Extra Work that is not covered by written agreement (change order or supplemental agreement) shall be rejected by the Owner.

**40-05 MAINTENANCE OF TRAFFIC.** It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's personnel and equipment, is the most important consideration. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas of the airport with respect to his/her own operations and the operations of all his/her subcontractors as specified in the subsection titled LIMITATION OF OPERATIONS of Section 80. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in the subsection titled CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS in Section 70.

With respect to his/her own operations and the operations of all his/her subcontractors, the Contractor shall provide marking, lighting, and other acceptable means of identifying: personnel; equipment; vehicles; storage areas; and any work area or condition that may be hazardous to the operation of aircraft, fire-rescue equipment, or maintenance vehicles at the airport.

When the contract requires the maintenance of vehicular traffic on an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep such road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic. The Contractor shall furnish, erect, and maintain barricades, warning signs, flagpersons, and other traffic control devices in reasonable conformity with the manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office), unless otherwise specified herein. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways. Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.

The Contractor shall make his/her own estimate of all labor, materials, equipment, and incidentals necessary for providing the maintenance of aircraft and vehicular traffic as specified in this subsection.

The cost of maintaining the aircraft and vehicular traffic specified in this subsection shall not be measured or paid for directly, but shall be included in the various contract items.

**40-06 REMOVAL OF EXISTING STRUCTURES.** All existing structures encountered within the established lines, grades, or grading sections shall be removed by the Contractor, unless such existing structures are otherwise specified to be relocated, adjusted up or down, salvaged, abandoned in place, reused in the work or to remain in place. The cost of removing such existing structures shall not be measured or paid for directly, but shall be included in the various contract items.

Should the Contractor encounter an existing structure (above or below ground) in the work for which the disposition is not indicated on the plans, the Engineer shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the Engineer in accordance with the provisions of the contract.

Except as provided in the subsection titled RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK of this section, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for completion of the work) shall be utilized in the work as otherwise provided for in the contract and shall remain the property of the Owner when so utilized in the work.

**40-07 RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK.** Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be either embankment or waste, he may at his/her option either:

**a.** Use such material in another contract item, providing such use is approved by the Engineer and is in conformance with the contract specifications applicable to such use; or

b. Remove such material from the site, upon written approval of the Engineer; or

- c. Use such material for his/her own temporary construction on site; or
- d. Use such material as intended by the terms of the contract.

Should the Contractor wish to exercise option a., b., or c., he shall request the Engineer's approval in advance of such use.

Should the Engineer approve the Contractor's request to exercise option a., b., or c., the Contractor shall be paid for the excavation or removal of such material at the applicable contract price. The Contractor shall replace, at his/her own expense, such removed or excavated material with an agreed equal volume of material that is acceptable for use in constructing embankment, backfills, or otherwise to the extent that such replacement material is needed to complete the contract work. The Contractor shall not be charged for his/her use of such material so used in the work or removed from the site.

Should the Engineer approve the Contractor's exercise of option a., the Contractor shall be paid, at the applicable contract price, for furnishing and installing such material in accordance with requirements of the contract item in which the material is used.

It is understood and agreed that the Contractor shall make no claim for delays by reason of his/her exercise of option a., b., or c.

The Contractor shall not excavate, remove, or otherwise disturb any material, structure, or part of a structure which is located outside the lines, grades, or grading sections established for the work, except where such excavation or removal is provided for in the contract, plans, or specifications.

**40-08 FINAL CLEANING UP.** Upon completion of the work and before acceptance and final payment will be made, the Contractor shall remove from the site all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. He shall cut all brush and woods within the limits indicated and shall leave the site in a neat and presentable condition. Material cleared from the site and deposited on adjacent property will not be considered as having been disposed of satisfactorily, unless the Contractor has obtained the written permission of such property owner.

## **END OF SECTION 40**

# SECTION 50 CONTROL OF WORK

**50-01 AUTHORITY OF THE ENGINEER.** The Engineer shall decide any and all questions which may arise as to the quality and acceptability of materials furnished, work performed, and as to the manner of performance and rate of progress of the work. The Engineer shall decide all questions that may arise as to the interpretation of the specifications or plans relating to the work. The Engineer shall determine the amount and quality of the several kinds of work performed and materials furnished which are to be paid for under the contract.

The Engineer does not have the authority to accept pavements that do not conform to FAA specification requirements.

**50-02 CONFORMITY WITH PLANS AND SPECIFICATIONS.** All work and all materials furnished shall be in reasonably close conformity with the lines, grades, grading sections, cross sections, dimensions, material requirements, and testing requirements that are specified (including specified tolerances) in the contract, plans or specifications.

If the Engineer finds the materials furnished, work performed, or the finished product not within reasonably close conformity with the plans and specifications, but that the portion of the work affected will, in his/her opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, he/she will advise the Owner of his/her determination that the affected work be accepted and remain in place. In this event, the Engineer will document his/her determination and recommend to the Owner a basis of acceptance that will provide for an adjustment in the contract price for the affected portion of the work. The Engineer's determination and recommended contract price adjustments will be based on good engineering judgment and such tests or retests of the affected work as are, in his/her opinion, needed. Changes in the contract price shall be covered by contract modifications (change order or supplemental agreement) as applicable.

If the Engineer finds the materials furnished, work performed, or the finished product are not in reasonably close conformity with the plans and specifications and have resulted in an unacceptable finished product, the affected work or materials shall be removed and replaced or otherwise corrected by and at the expense of the Contractor in accordance with the Engineer's written orders.

For the purpose of this subsection, the term "reasonably close conformity" shall not be construed as waiving the Contractor's responsibility to complete the work in accordance with the contract, plans, and specifications. The term shall not be construed as waiving the Engineer's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's prosecution of the work, when, in the Engineer's opinion, such compliance is essential to provide an acceptable finished portion of the work.

For the purpose of this subsection, the term "reasonably close conformity" is also intended to provide the Engineer with the authority, after consultation with MoDOT and/or the FAA, to use good engineering judgment in his/her determinations as to acceptance of work that is not in strict conformity, but will provide a finished product equal to or better than that intended by the requirements of the contract, plans and specifications.

The Engineer will not be responsible for the Contractor's means, methods, techniques, sequences, or procedures of construction or the safety precautions incident thereto.

**50-03 COORDINATION OF CONTRACT, PLANS, AND SPECIFICATIONS.** The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. A requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited FAA advisory circulars; contract general provisions shall govern over plans, cited standards for materials or testing and cited FAA Advisory Circulars; plans shall govern over cited standards for materials or testing and cited FAA Advisory Circulars. If any paragraphs contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

The Contractor shall not take advantage of any apparent error or omission on the plans or specifications. In the event the Contractor discovers any apparent error or discrepancy, he shall immediately call upon the Engineer for his/her interpretation and decision, and such decision shall be final.

50-04 COOPERATION OF CONTRACTOR. The Contractor will be supplied with five copies each of the plans and specifications. He shall have available on the work at all times one copy each of the plans and specifications. Additional copies of plans and specifications may be obtained by the Contractor for the cost of reproduction.

The Contractor shall give constant attention to the work to facilitate the progress thereof, and he shall cooperate with the Engineer and his/her inspectors and with other contractors in every way possible. The Contractor shall have a competent superintendent on the work at all times who is fully authorized as his/her agent on the work. The superintendent shall be capable of reading and thoroughly understanding the plans and specifications and shall receive and fulfill instructions from the Engineer or his/her authorized representative.

**50-05 COOPERATION BETWEEN CONTRACTORS.** The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

When separate contracts are let within the limits of any one project, each Contractor shall conduct his/her work so as not to interfere with or hinder the progress of completion of the work being performed by other Contractors. Contractors working on the same project shall cooperate with each other as directed.

Each Contractor involved shall assume all liability, financial or otherwise, in connection with his/her contract and shall protect and save harmless the Owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced by him because of the presence and operations of other Contractors working within the limits of the same project.

The Contractor shall arrange his/her work and shall place and dispose of the materials being used so as not to interfere with the operations of the other Contractors within the limits of the same project. He shall join his/her work with that of the others in an acceptable manner and shall perform it in proper sequence to that of the others.

**50-06 CONSTRUCTION LAYOUT AND STAKES.** This work shall consist of providing the necessary surveying and staking for the successful prosecution of the work.

The Engineer shall establish horizontal and vertical control only. Such stakes and markings as the Engineer may set for either his/her own or the Contractor's guidance shall be preserved by the Contractor. In case of negligence on the part of the Contractor, or his/her employees, resulting in the destruction of such stakes or markings, an amount equal to the cost of replacing the same may be deducted from subsequent estimates due the Contractor at the discretion of the Engineer.

The Contractor must establish all layout required for the construction of the work. The Contractor will be required to furnish all lines, grades and measurements from the control points necessary for the proper prosecution and control of the work contracted for under these specifications. All surveying work performed by the Contractor shall be sufficient and accurate to construct the work in accordance with the contract documents. Any delays or additional costs to the project which result from insufficient or inaccurate staking or time lost to corrective action will be considered as a non-excusable and non-compensable delay.

The Contractor must give copies of survey notes to the Engineer for each area of construction and for each placement of material as specified to allow the Engineer to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. All surveys must be provided to the Engineer prior to commencing work items that will cover or disturb the survey staking as set by the Contractor's surveyor. All documents shall be labeled with the project, Contractor name, survey party supervisor and the date work was performed. Survey(s) and notes shall be provided in the following format(s): .txt (PNEZD), comma delimited. In the case of error, on the part of the Contractor, their surveyor, employees or subcontractors, resulting in established grades, alignment or grade tolerances that do not concur with those specified or shown on the plans, the Contractor is solely responsible for correction, removal, replacement and all associated costs at no additional cost to the Owner.

All surveying and measurements necessary for computing pay quantities will be performed by the Engineer. The Contractor shall notify the Engineer at least two working days prior to disturbing any areas used to calculate pay quantities.

Adjustments necessary to provide accurate staking or match improvements to existing features shall be immediately brought to the attention of the Engineer. The Engineer shall determine the nature of the discrepancy and will make revisions as necessary. The Contractor shall perform any re-staking required by such revision. Any reimbursement due the Contractor for additional staking due to errors in the plans will be in accordance with Section 40-04.

No direct payment will be made, unless otherwise specified in contract documents, for this labor, materials, or other expenses therewith. The cost thereof shall be included in the price of the bid for the various items of the Contract.

Unless otherwise approved by the Engineer, Construction Staking and Layout includes but is not limited to:

- a. Clearing and Grubbing perimeter staking
- b. Rough Grade slope stakes at 100-foot (30-m) stations
- c. Drainage Swales slope stakes and flow line blue tops at 50-foot (15-m) stations

Subgrade blue tops at 25-foot (7.5-m) stations and 25-foot (7.5-m) offset distance (maximum) for the following section locations:

- a. Runway minimum five (5) per station
- b. Taxiways minimum three (3) per station
- c. Holding apron areas minimum three (3) per station
- d. Roadways minimum three (3) per station

Base Course blue tops at 25-foot (7.5-m) stations and 25-foot (7.5-m) offset distance (maximum) for the following section locations:

- a. Runway minimum five (5) per station
- b. Taxiways minimum three (3) per station
- c. Holding apron areas minimum three (3) per station

Pavement areas:

- a. Edge of Pavement hubs and tacks (for stringline by Contractor) at 100-foot (30-m) stations.
- b. Between Lifts at 25-foot (7.5-m) stations for the following section locations:
  - (1) Runways each paving lane width
  - (2) Taxiways each paving lane width
  - (3) Holding areas each paving lane width

c. After finish paving operations at 50-foot (15-m) stations:

(1) All paved areas - Edge of each paving lane prior to next paving lot

d. Shoulder and safety area blue tops at 50-foot (15-m) stations and at all break points with maximum of 50-foot (15-m) offsets.

e. Fence lines at 100-foot (30-m) stations minimum.

f. Electrical and Communications System locations, lines and grades including but not limited to duct runs, connections, fixtures, signs, lights, Visual Approach Slope Indicators (VASIs), Precision Approach Path Indicators (PAPIs), Runway End Identifier Lighting (REIL), Wind Cones, Distance Markers (signs), pull boxes and manholes.

g. Drain lines, cut stakes and alignment on 25-foot (7.5-m) stations, inlet and manholes.

h. Painting and Striping layout (pinned with 1.5 inch PK nails) marked for paint Contractor. (All nails shall be removed after painting).

i. Laser, or other automatic control devices, shall be checked with temporary control point or grade hub at a minimum of once per 400 feet (120 m) per pass (that is, paving lane).

The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor.

Controls and stakes disturbed or suspect of having been disturbed shall be checked and/or reset as directed by the Engineer without additional cost to the Owner.

**50-07 AUTOMATICALLY CONTROLLED EQUIPMENT.** Whenever batching or mixing plant equipment is required to be operated automatically under the contract and a breakdown or malfunction of the automatic controls occurs, the equipment may be operated manually or by other methods for a period of 48 hours following the breakdown or malfunction, provided this method of operations will produce results which conform to all other requirements of the contract.

**50-08** AUTHORITY AND DUTIES OF INSPECTORS. Inspectors employed by the Owner shall be authorized to inspect all work done and all material furnished. Such inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. Inspectors are not authorized to revoke, alter, or waive any provision of the contract. Inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

Inspectors employed by the Owner are authorized to notify the Contractor or his/her representatives of any failure of the work or materials to conform to the requirements of the contract, plans, or specifications and to reject such nonconforming materials in question until such issues can be referred to the Engineer for his/her decision.

**50-09 INSPECTION OF THE WORK.** All materials and each part or detail of the work shall be subject to inspection by the Engineer. The Engineer shall be allowed access to all parts of the work and shall be furnished with such information and assistance by the Contractor as is required to make a complete and detailed inspection.

If the Engineer requests it, the Contractor, at any time before acceptance of the work, shall remove or uncover such portions of the finished work as may be directed. After examination, the Contractor shall restore said portions of the work to the standard required by the specifications. Should the work thus exposed or examined prove acceptable, the uncovering or removing and the replacing of the covering or making good of the parts removed will be paid for as extra work; but should the work so exposed or examined prove unacceptable, the uncovering or making good of the parts removed will be paid the replacing of the covering or making good of the parts removing and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Any work done or materials used without supervision or inspection by an authorized representative of the Owner may be ordered removed and replaced at the Contractor's expense, unless the Owner's representative failed to inspect after having been given reasonable notice in writing that the work was to be performed.

Should the contract work include relocation, adjustment, or any other modification to existing facilities not the property of the (contract) Owner, authorized representatives of the owners of such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the contract, and shall in no way interfere with the rights of the parties to this contract.

**50-10 REMOVAL OF UNACCEPTABLE AND UNAUTHORIZED WORK.** All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the Engineer as provided in the subsection titled CONFORMITY WITH PLANS AND SPECIFICATIONS of this section.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of the subsection titled CONTRACTOR'S RESPONSIBILITY FOR WORK of Section 70.

No removal work made under provision of this subsection shall be done without lines and grades having been given by the Engineer. Work done contrary to the instructions of the Engineer, work done beyond the lines shown on the plans or as given, except as herein specified, or any extra work done without authority, will be considered as unauthorized and will not be paid for under the provisions of the contract. Work so done may be ordered removed or replaced at the Contractor's expense.

Upon failure on the part of the Contractor to comply forthwith with any order of the Engineer made under the provisions of this subsection, the Engineer will have authority to cause unacceptable work to be remedied or removed and replaced and unauthorized work to be removed and to deduct the costs (incurred by the Owner) from any monies due or to become due the Contractor.

**50-11 LOAD RESTRICTIONS.** The Contractor shall comply with all legal load restrictions in the hauling of materials on public roads beyond the limits of the work. A special permit will not relieve the Contractor of liability for damage that may result from the moving of material or equipment.

The operation of equipment of such weight or so loaded as to cause damage to structures or to any other type of construction will not be permitted. Hauling of materials over the base course or surface course under construction shall be limited as directed. No loads will be permitted on a concrete pavement, base, or structure before the expiration of the curing period. The Contractor shall be responsible for all damage done by his/her hauling equipment and shall correct such damage at his/her own expense.

**50-12 MAINTENANCE DURING CONSTRUCTION.** The Contractor shall maintain the work during construction and until the work is accepted. This maintenance shall constitute continuous and effective work prosecuted day by day, with adequate equipment and forces so that the work is maintained in satisfactory condition at all times.

In the case of a contract for the placing of a course upon a course or subgrade previously constructed, the Contractor shall maintain the previous course or subgrade during all construction operations.

All costs of maintenance work during construction and before the project is accepted shall be included in the unit prices bid on the various contract items, and the Contractor will not be paid an additional amount for such work.

**50-13 FAILURE TO MAINTAIN THE WORK.** Should the Contractor at any time fail to maintain the work as provided in the subsection titled MAINTENANCE DURING CONSTRUCTION of this section, the Engineer shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

Should the Contractor fail to respond to the Engineer's notification, the Owner may suspend any work necessary for the Owner to correct such unsatisfactory maintenance condition, depending on the exigency that exists. Any maintenance cost incurred by the Owner shall be deducted from monies due or to become due the Contractor.

**50-14 PARTIAL ACCEPTANCE.** If at any time during the prosecution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, he may request the Engineer to make final inspection of that unit. If the Engineer finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, he may accept it as being completed, and the Contractor may be relieved of further responsibility for that unit. Such partial acceptance and beneficial occupancy by the Owner shall not void or alter any provision of the contract.

**50-15 FINAL ACCEPTANCE.** Upon due notice from the Contractor of presumptive completion of the entire project, the Engineer and Owner will make an inspection. If all construction provided for and contemplated by the contract is found to be completed in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The Engineer shall notify the Contractor in writing of final acceptance as of the date of the final inspection.

If, however, the inspection discloses any work, in whole or in part, as being unsatisfactory, the Engineer will give the Contractor the necessary instructions for correction of same and the Contractor shall immediately comply with and execute such instructions. Upon correction of the work, another inspection will be made which shall constitute the final inspection, provided the work has been satisfactorily completed. In such event, the Engineer will make the final acceptance and notify the Contractor in writing of this acceptance as of the date of final inspection.

**50-16 CLAIMS FOR ADJUSTMENT AND DISPUTES.** If for any reason the Contractor deems that additional compensation is due him/her for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, he/she shall notify the Engineer in writing of his/her intention to claim such additional compensation before he/she begins the work on which he/she bases the claim. If such notification is not given or the Engineer is not afforded proper opportunity by the Contractor for keeping strict account of actual cost as required, then the Contractor hereby agrees to waive any claim for such additional compensation. Such notice by the Contractor and the fact that the Engineer has kept account of the cost of the work shall not in any way be construed as proving or substantiating the validity of the claim. When the work on which the claim for additional compensation is based has been completed, the Contractor shall, within 10 calendar days, submit his/her written claim to the Engineer who will present it to the Owner for consideration in accordance with local laws or ordinances.

Nothing in this subsection shall be construed as a waiver of the Contractor's right to dispute final payment based on differences in measurements or computations.

### 50-17 COST REDUCTION INCENTIVE. NOT USED

## **END OF SECTION 50**

# SECTION 60 CONTROL OF MATERIALS

**60-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS.** The materials used on the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish complete statements to the Engineer as to the origin, composition, and manufacture of all materials to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

Note statement of origin should clearly address compliance with Buy American Provisions of Contract.

At the Engineer's option, materials may be approved at the source of supply before delivery is stated. If it is found after trial that sources of supply for previously approved materials do not produce specified products, the Contractor shall furnish materials from other sources.

The Contractor shall furnish airport lighting equipment that conforms to the requirements of cited materials specifications. In addition, where an FAA specification for airport lighting equipment is cited in the plans or specifications, the Contractor shall furnish such equipment that is:

a. Listed in FAA Advisory Circular (AC) 150/5345-53, Airport Lighting Equipment Certification Program, that is in effect on the date of advertisement; and,

b. Produced by the manufacturer as listed in the Addendum to AC 150/5345-53.

The following airport lighting equipment is required for this contract and is to be furnished by the Contractor in accordance with the requirements of this subsection:

N/A

**60-02 SAMPLES, TESTS, AND CITED SPECIFICATIONS.** Unless otherwise designated, all materials used in the work shall be inspected, tested, and approved by the Engineer before incorporation in the work. Any work in which untested materials are used without approval or written permission of the Engineer shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the Engineer, shall be removed at the Contractor's expense. Unless otherwise designated, tests in accordance with the cited standard methods of ASTM, AASHTO, Federal Specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids, will be made by and at the expense of the Engineer. The testing organizations performing on site field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel, including the Contractor's representative at his/her request. Unless otherwise designated, samples will be taken by a qualified representative of the Engineer. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at his/her request.

The Contractor shall employ a testing organization to perform all Contractor required tests. The Contractor shall submit to the Engineer resumes on all testing organizations and individual persons who will be performing the tests. The Engineer will determine if such persons are qualified. All the test data shall be reported to the Engineer after the results are known. A legible, handwritten copy of all test data shall be given to the Engineer daily, along with printed reports, in an approved format on a weekly basis. After completion of the project, and prior to final payment, the Contractor shall submit a final report to the Engineer showing all test data reports, plus an analysis of all results showing ranges, averages, and corrective action taken on all failing tests.

**60-03 CERTIFICATION OF COMPLIANCE.** The Engineer may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's certificates of compliance stating that such materials or assemblies fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer. Each lot of such materials or assemblies delivered to the work must be accompanied by a certificate of compliance in which the lot is clearly identified.

Materials or assemblies used on the basis of certificates of compliance may be sampled and tested at any time, and if found not to be in conformity with contract requirements, will be subject to rejection whether in place or not.

The form and distribution of certificates of compliance shall be as approved by the Engineer.

When a material or assembly is specified by "brand name or equal" and the Contractor elects to furnish the specified "brand name," the Contractor shall be required to furnish the manufacturer's certificate of compliance for each lot of such material or assembly delivered to the work. Such certificate of compliance shall clearly identify each lot delivered and shall certify as to:

- a. Conformance to the specified performance, testing, quality or dimensional requirements; and,
- b. Suitability of the material or assembly for the use intended in the contract work.

Should the Contractor propose to furnish an "or equal" material or assembly, he/she shall furnish the manufacturer's certificates of compliance as hereinbefore described for the specified brand name material or assembly. However, the Engineer shall be the sole judge as to whether the proposed "or equal" is suitable for use in the work.

The Engineer reserves the right to refuse permission for use of materials or assemblies on the basis of certificates of compliance.

**60-04 PLANT INSPECTION.** The Engineer or his/her authorized representative may inspect, at its source, any specified material or assembly to be used in the work. Manufacturing plants may be inspected from time to time for the purpose of determining compliance with specified manufacturing methods or materials to be used in the work and to obtain samples required for the Engineer's acceptance of the material or assembly.

Should the Engineer conduct plant inspections, the following conditions shall exist:

a. The Engineer shall have the cooperation and assistance of the Contractor and the producer with whom he/she has contracted for materials.

**b.** The Engineer shall have full entry at all reasonable times to such parts of the plant that concern the manufacture or production of the materials being furnished.

c. If required by the Engineer, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Office or working space should be conveniently located with respect to the plant.

It is understood and agreed that the Owner shall have the right to retest any material that has been tested and approved at the source of supply after it has been delivered to the site. The Engineer shall have the right to reject only material which, when retested, does not meet the requirements of the contract, plans, or specifications.

### 60-05 ENGINEER'S FIELD OFFICE. NOT USED

**60-06 STORAGE OF MATERIALS.** Materials shall be so stored as to assure the preservation of their quality and fitness for the work. Stored materials, even though approved before storage, may again be inspected prior to their use in the work. Stored materials shall be located so as to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the Engineer. Materials to be stored on airport property shall not create an obstruction to air navigation, nor shall they interfere with the free and unobstructed movement of aircraft. Unless otherwise shown on the plans, the storage of materials and the location of the Contractor's plant and parked equipment or vehicles shall be as directed by the Engineer. Private property shall not be used for storage purposes without written permission of the owner or lessee of such property. The Contractor shall make all arrangements and bear all expenses for the storage of materials on private property. Upon request, the Contractor shall furnish the Engineer a copy of the property owner's permission.

All storage sites on private or airport property shall be restored to their original condition by the Contractor at his/her entire expense, except as otherwise agreed to (in writing) by the owner or lessee of the property.

**60-07 UNACCEPTABLE MATERIALS.** Any material or assembly that does not conform to the requirements of the contract, plans, or specifications shall be considered unacceptable and shall be rejected. The Contractor shall remove any rejected material or assembly from the site of the work, unless otherwise instructed by the Engineer.

Rejected material or assembly, the defects of which have been corrected by the Contractor, shall not be returned to the site of the work until such time as the Engineer has approved its used in the work.

**60-08 OWNER FURNISHED MATERIALS.** The Contractor shall furnish all materials required to complete the work, except those specified herein (if any) to be furnished by the Owner. Owner-furnished materials shall be made available to the Contractor at the location specified herein.

All costs of handling, transportation from the specified location to the site of work, storage, and installing Ownerfurnished materials shall be included in the unit price bid for the contract item in which such Owner-furnished material is used.

After any Owner-furnished material has been delivered to the location specified, the Contractor shall be responsible for any demurrage, damage, loss, or other deficiencies that may occur during the Contractor's handling, storage, or use of such Owner-furnished material. The Owner will deduct from any monies due or to become due the Contractor any cost incurred by the Owner in making good such loss due to the Contractor's handling, storage, or use of Ownerfurnished materials.

## **END OF SECTION 60**

## SECTION 70 LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

**70-01 LAWS TO BE OBSERVED.** The Contractor shall keep fully informed of all Federal and state laws, all local laws, ordinances, and regulations and all orders and decrees of bodies or tribunals having any jurisdiction or authority which in any manner affect those engaged or employed on the work, or which in any way affect the conduct of the work. He/she shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all his/her officers, agents, or servants against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether by himself or his/her employees.

**70-02 PERMITS, LICENSES, AND TAXES.** The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

**70-03 PATENTED DEVICES, MATERIALS, AND PROCESSES.** If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, he shall provide for such use by suitable legal agreement with the patentee or owner. The Contractor and the surety shall indemnify and save harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the prosecution or after the completion of the work.

**70-04 RESTORATION OF SURFACES DISTURBED BY OTHERS.** The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) is indicated as follows:

### N/A

Except as listed above, the Contractor shall not permit any individual, firm, or corporation to excavate or otherwise disturb such utility services or facilities located within the limits of the work without the written permission of the Engineer.

Should the owner of the public or private utility service, FAA, or NOAA facility, or a utility service of another government agency be authorized to construct, reconstruct, or maintain such utility service or facility during the progress of the work, the Contractor shall cooperate with such owners by arranging and performing the work in this contract so as to facilitate such construction, reconstruction or maintenance by others whether or not such work by others is listed above. When ordered as extra work by the Engineer, the Contractor shall make all necessary repairs to the work which are due to such authorized work by others, unless otherwise provided for in the contract, plans, or specifications. It is understood and agreed that the Contractor shall not be entitled to make any claim for damages due to such authorized work by others or for any delay to the work resulting from such authorized work.

**70-05 FEDERAL AID PARTICIPATION.** For AIP contracts, the United States Government, by and through the Missouri Department of Transportation (MoDOT) as a Block Grant State, has agreed to reimburse the Owner for some portion of the contract costs. Such reimbursement is made from time to time upon the Owner's request to the MoDOT. In consideration of the United States Government's (FAA's) agreement with the Owner, the Owner has included provisions in this contract pursuant to the requirements of Title 49 of the United States Code (USC) and the Rules and Regulations of the FAA that pertain to the work.

As required by the USC, the contract work is subject to the inspection and approval of duly authorized representatives of the Administrator, FAA, and is further subject to those provisions of the rules and regulations that are cited in the contract, plans, or specifications.

No requirement of the USC, the rules and regulations implementing the USC, or this contract shall be construed as making the Federal Government a party to the contract nor will any such requirement interfere in any way with the rights of either party to the contract.

70-06 SANITARY, HEALTH, AND SAFETY PROVISIONS. The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of his/her employees as may be necessary to comply with the requirements of the state and local Board of Health, or of other bodies or tribunals having jurisdiction.

Attention is directed to Federal, state, and local laws, rules and regulations concerning construction safety and health standards. The Contractor shall not require any worker to work in surroundings or under conditions that are unsanitary, hazardous, or dangerous to his/her health or safety.

The contractor shall be aware of all COVID-19 guidance from the Center for Disease Control (CDC) and other government health mandates and conduct all operations in conformance with these safety directives. The guidance may change during the project construction and the contractor shall change and adapt their operation and safety protocols accordingly.

The contractor shall include these procedures in the project safety plan as called for in the contract documents and revise the safety plan as needed.

The contractor shall be aware of the Missouri Standard Specifications for Highway Construction Section 107.1 "Laws to be Observed".

**70-07 PUBLIC CONVENIENCE AND SAFETY.** The Contractor shall control his/her operations and those of his/her subcontractors and all suppliers to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to his/her own operations and those of his/her subcontractors and all suppliers in accordance with the subsection titled MAINTENANCE OF TRAFFIC of Section 40 hereinbefore specified and shall limit such operations for the convenience and safety of the traveling public, as specified in the subsection titled LIMITATION OF OPERATIONS of Section 80 hereinafter.

**70-08 BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS.** The Contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs, and hazard markings shall be suitably illuminated. Unless otherwise specified, barricades, warning signs, and markings for hazards that are in the air operations area shall be a maximum of 18 inches high. Unless otherwise specified, barricades shall be spaced not more than 25 feet apart. Barricades, warning signs, and markings shall be paid for under Section 40-05.

For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights and other traffic control devices in reasonable conformity with the Manual of Uniform Traffic Control Devices for Streets and Highways (published by the United States Government Printing Office).

When the work requires closing an air operations area of the airport or portion of such area, the Contractor shall furnish, erect, and maintain temporary markings and associated lighting conforming to the requirements of AC 150/5340-1 (current edition), Standards for Airport Markings.

The Contractor shall furnish, erect, and maintain markings and associated lighting of open trenches, excavations, temporary stockpiles, and his/her parked construction equipment that may be hazardous to the operation of emergency fire-rescue or maintenance vehicles on the airport in reasonable conformance to AC 150/5370-2 (current edition), Operational Safety on Airports During Construction.

The Contractor shall identify each motorized vehicle or piece of construction equipment in reasonable conformance to AC 150/5370-2 (current edition).

The Contractor shall furnish and erect all barricades, warning signs, and markings for hazards prior to commencing work that requires such erection and shall maintain the barricades, warning signs, and markings for hazards until their dismantling is directed by the Engineer.

Open-flame type lights shall not be permitted within the air operations areas of the airport.

**70-09 USE OF EXPLOSIVES.** When the use of explosives is necessary for the prosecution of the work, the Contractor shall exercise the utmost care not to endanger life or property, including new work. The Contractor shall be responsible for all damage resulting from the use of explosives.

All explosives shall be stored in a secure manner in compliance with all laws and ordinances, and all such storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided satisfactory to the

Engineer and, in general, not closer than 1,000 feet (300 m) from the work or from any building, road, or other place of human occupancy.

The Contractor shall notify each property owner and public utility company having structures or facilities in proximity to the site of the work of his/her intention to use explosives. Such notice shall be given sufficiently in advance to enable them to take such steps as they may deem necessary to protect their property from injury.

The use of electrical blasting caps shall not be permitted on or within 1,000 feet (300 m) of the airport property.

70-10 PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE. The Contractor shall be responsible for the preservation of all public and private property, and shall protect carefully from disturbance or damage all land monuments and property markers until the Engineer has witnessed or otherwise referenced their location and shall not move them until directed.

The Contractor shall be responsible for all damage or injury to property of any character during the prosecution of the work resulting from any act, omission, neglect, or misconduct in his/her manner or method of executing the work or at any time due to defective work or materials, and said responsibility will not be released until the project shall have been completed and accepted.

When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the work, or in consequence of the nonexecution thereof by the Contractor, he/she shall restore, at his/her own expense, such property to a condition similar or equal to that existing before such damage or injury was done, by repairing, or otherwise restoring as may be directed, or he/she shall make good such damage or injury in an acceptable manner.

70-11 RESPONSIBILITY FOR DAMAGE CLAIMS. The Contractor shall indemnify and save harmless the Engineer and the Owner and their officers and employees from all suits, actions, or claims of any character brought because of any injuries or damage received or sustained by any person, persons, or property on account of the operations of the Contractor; or on account of or in consequence of any neglect in safeguarding the work; or through use of unacceptable materials in constructing the work; or because of any act or omission, neglect, or misconduct of said Contractor; or because of any claims or amounts recovered from any infringements of patent, trademark, or copyright; or from any claims or amounts arising or recovered under the "Worker's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of his/her contract as may be considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, his/her surety may be held until such suit(s), action(s), or claim(s) for injuries or damages as aforesaid shall have been settled and suitable evidence to that effect furnished to the Owner, except that money due the Contractor will not be withheld when the Contractor produces satisfactory evidence that he/she is adequately protected by public liability and property damage insurance.

70-12 THIRD PARTY BENEFICIARY CLAUSE. It is specifically agreed between the parties executing the contract that it is not intended by any of the provisions of any part of the contract to create in the public or any member thereof a third party beneficiary or to authorize anyone not a party to the contract to maintain a suit for personal injuries or property damage pursuant to the terms or provisions of the contract.

70-13 OPENING SECTIONS OF THE WORK TO TRAFFIC. Should it be necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work shall be specified herein and indicated on the plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified. The Contractor shall make his/her own estimate of the difficulties involved in arranging his/her work to permit such beneficial occupancy by the Owner as described below:

### The Construction Safety and Phasing Plan (CSPP) Report as shown in the Appendix shall be followed.

Upon completion of any portion of the work listed above, such portion shall be accepted by the Owner in accordance with the subsection titled PARTIAL ACCEPTANCE of Section 50.

No portion of the work may be opened by the Contractor for public use until ordered by the Engineer in writing. Should it become necessary to open a portion of the work to public traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the Engineer, such portion of the work is in an acceptable condition to support the intended traffic. Temporary or intermittent openings are considered to be inherent in the work and shall not constitute either acceptance of the portion of the work so opened or a waiver of any provision of the

contract. Any damage to the portion of the work so opened that is not attributable to traffic which is permitted by the Owner shall be repaired by the Contractor at his/her expense.

The Contractor shall make his/her own estimate of the inherent difficulties involved in completing the work under the conditions herein described and shall not claim any added compensation by reason of delay or increased cost due to opening a portion of the contract work.

Contractor shall be required to conform to safety standards contained AC 150/5370-2, Operational Safety on Airports During Construction (See Special Provisions.)

Contractor shall refer to the approved safety plan to identify barricade requirements and other safety requirements prior to opening up sections of work to traffic.

70-14 CONTRACTOR'S RESPONSIBILITY FOR WORK. Until the Engineer's final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with the subsection titled PARTIAL ACCEPTANCE of Section 50, the Contractor shall have the charge and care thereof and shall take every precaution against injury or damage to any part due to the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof, except for damage to the work due to unforeseeable causes beyond the control of and without the fault or negligence of the Contractor, including but not restricted to acts of God such as earthquake, tidal wave, tornado, hurricane or other cataclysmic phenomenon of nature, or acts of the public enemy or of government authorities.

If the work is suspended for any cause whatsoever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures, signs, or other facilities at his/her expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seedings, and soddings furnished under his/her contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

70-15 CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS. As provided in the subsection titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this section, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another governmental agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control his/her operations to prevent the unscheduled interruption of such utility services and facilities.

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans and the owners are indicated as follows:

To the extent that such public or private utility services, FAA, or NOAA facilities, or utility services of another governmental agency are known to exist within the limits of the contract work, the approximate locations have been indicated on the plans. It is the Contractor's responsibility to utilize utility location services, as well as on-airport utilities not located by Missouri One Call System. This shall be completed at the Contractor's expense. Prior to the project beginning, the Contractor shall call Missouri One Call System 1-800-344-7483.

It is understood and agreed that the Owner does not guarantee the accuracy or the completeness of the location information relating to existing utility services, facilities, or structures that may be shown on the plans or encountered in the work. Any inaccuracy or omission in such information shall not relieve the Contractor of his/her responsibility to protect such existing features from damage or unscheduled interruption of service.

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the owners of all utility services or other facilities of his/her plan of operations. Such notification shall be in writing addressed to THE PERSON TO CONTACT as provided hereinbefore in this subsection and the subsection titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this section. A copy of each notification shall be given to the Engineer.

In addition to the general written notification hereinbefore provided, it shall be the responsibility of the Contractor to keep such individual owners advised of changes in his/her plan of operations that would affect such owners.
Prior to commencing the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such owner of his/her plan of operation. If, in the Contractor's opinion, the owner's assistance is needed to locate the utility service or facility or the presence of a representative of the owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's PERSON TO CONTACT no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the Engineer.

The Contractor's failure to give the two days' notice hereinabove provided shall be cause for the Owner to suspend the Contractor's operations in the general vicinity of a utility service or facility.

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use excavation methods acceptable to the Engineer within 3 feet (90 cm) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, he/she shall immediately notify the proper authority and the Engineer and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner and the Engineer continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to his/her operations whether or not due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or his/her surety.

#### 70-15.1 FAA FACILITIES AND CABLE RUNS. NOT USED

**70-16 FURNISHING RIGHTS-OF-WAY.** The Owner will be responsible for furnishing all rights-of-way upon which the work is to be constructed in advance of the Contractor's operations.

70-17 PERSONAL LIABILITY OF PUBLIC OFFICIALS. In carrying out any of the contract provisions or in exercising any power or authority granted to him by this contract, there shall be no liability upon the Engineer, his/her authorized representatives, or any officials of the Owner either personally or as an official of the Owner. It is understood that in such matters they act solely as agents and representatives of the Owner.

**70-18** NO WAIVER OF LEGAL RIGHTS. Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped from recovering from the Contractor or his/her surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill his/her obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

The Contractor, without prejudice to the terms of the contract, shall be liable to the Owner for latent defects, fraud, or such gross mistakes as may amount to fraud, or as regards the owner's rights under any warranty or guaranty.

**70-19 ENVIRONMENTAL PROTECTION.** The Contractor shall comply with all Federal, state, and local laws and regulations controlling pollution of the environment. He shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, bitumens, chemicals, or other harmful materials and to prevent pollution of the atmosphere from particulate and gaseous matter.

**70-20** ARCHAEOLOGICAL AND HISTORICAL FINDINGS. Unless otherwise specified in this subsection, the Contractor is advised that the site of the work is not within any property, district, or site, and does not contain any building, structure, or object listed in the current National Register of Historic Places published by the United States Department of Interior.

Should the Contractor encounter, during his/her operations, any building, part of a building, structure, or object that is incongruous with its surroundings, he shall immediately cease operations in that location and notify the Engineer. The Engineer will immediately investigate the Contractor's finding, and the Owner will direct the Contractor to either resume his/her operations or to suspend operations as directed. Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract modification (change order or supplemental agreement) as provided in the subsection titled EXTRA WORK of Section 40 and the subsection titled PAYMENT FOR EXTRA WORK AND FORCE ACCOUNT WORK of Section 90. If appropriate, the contract modification shall include an extension of contract time in accordance with the subsection titled DETERMINATION AND EXTENSION OF CONTRACT TIME of Section 80.

## **END OF SECTION 70**

## SECTION 80 PROSECUTION AND PROGRESS

**80-01** SUBLETTING OF CONTRACT. The Owner will not recognize any subcontractor on the work. The Contractor shall at all times when work is in progress be represented either in person by a qualified superintendent, or by another designated, qualified representative who is duly authorized to receive and execute orders of the Engineer.

Should the Contractor elect to assign his/her contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner. In case of approval, the Contractor shall file copies of all subcontracts with the Engineer.

The Contractor shall perform, with his organization, an amount of work equal to at least twenty-five (25) percent of the total contract cost.

80-02 NOTICE TO PROCEED. The notice to proceed shall state the date on which it is expected the Contractor will begin the construction and from which date contract time will be charged. The Contractor shall begin the work to be performed under the contract within 10 days of the date set by the Owner in the written notice to proceed, but in any event, the Contractor shall notify the Engineer at least 48 hours in advance of the time actual construction operations will begin.

**80-03 PROSECUTION AND PROGRESS.** Unless otherwise specified, the Contractor shall submit his/her progress schedule for the Engineer's approval within 10 days after the effective date of the notice to proceed. The Contractor's progress schedule, when approved by the Engineer, may be used to establish major construction operations and to check on the progress of the work. The Contractor shall provide sufficient materials, equipment, and labor to guarantee the completion of the project in accordance with the plans and specifications within the time set forth in the proposal.

If the Contractor falls significantly behind the submitted schedule, the Contractor shall, upon the Engineer's request, submit a revised schedule for completion of the work within the contract time and modify his/her operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the prosecution of the work be discontinued for any reason, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.

For AIP contracts, the Contractor shall not commence any actual construction prior to the date on which the notice to proceed is issued by the Owner.

**80-04 LIMITATION OF OPERATIONS.** The Contractor shall control his/her operations and the operations of his/her subcontractors and all suppliers so as to provide for the free and unobstructed movement of aircraft in the AIR OPERATION AREAS (AOA) of the airport.

When the work requires the Contractor to conduct his/her operations within an AIR OPERATIONS AREA of the airport, the work shall be coordinated with airport operations (through the Engineer) at least 48 hours prior to commencement of such work. The Contractor shall not close an AIR OPERATIONS AREA until so authorized by the Engineer and until the necessary temporary marking and associated lighting is in place as provided in the subsection titled BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS of Section 70.

When the contract work requires the Contractor to work within an AIR OPERATIONS AREA of the airport on an intermittent basis (intermittent opening and closing of the AIR OPERATIONS AREA), the Contractor shall maintain constant communications as hereinafter specified; immediately obey all instructions to vacate the AIR OPERATIONS AREA; and immediately obey all instructions to resume work in such AIR OPERATIONS AREA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AIR OPERATIONS AREA until the satisfactory conditions are provided. The following AIR OPERATIONS AREA cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently as follows:

The Contractor shall coordinate all work with the Engineer and Sponsor so appropriate NOTAMs will be issued by the Sponsor.

The Contractor will be responsible for all barricades and temporary lighting as required by FAA regulations or as directed by the Engineer. The Engineer will have the authority to direct the

# Contractor to place additional barricades, temporary marking, or temporary lighting as may be required to maintain safe airfield operations.

Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction (See Special Provisions).

**80-04.1 OPERATIONAL SAFETY ON AIRPORT DURING CONSTRUCTION.** All Contractors' operations shall be conducted in accordance with the project safety plan and the provisions set forth within the current version of Advisory Circular 150/5370-2. The safety plan included within the contract documents conveys minimum requirements for operational safety on the airport during construction activities. The Contractor shall prepare and submit a plan that details how it proposes to comply with the requirements presented within the safety plan.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks of the safety plan measures to assure compliance with the safety plan measures.

The Contractor is responsible to the Owner for the conduct of all subcontractors it employs on the project. The Contractor shall assure that all subcontractors are made aware of the requirements of the safety plan and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved safety plan unless approved in writing by the Owner or Engineer.

**80-05** CHARACTER OF WORKERS, METHODS, AND EQUIPMENT. The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

All workers shall have sufficient skill and experience to perform properly the work assigned to them. Workers engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform the work satisfactorily.

Any person employed by the Contractor or by any subcontractor who violates any operational regulations and, in the opinion of the Engineer, does not perform his/her work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the Engineer, be removed forthwith by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the Engineer.

Should the Contractor fail to remove such person or persons, or fail to furnish suitable and sufficient personnel for the proper prosecution of the work, the Engineer may suspend the work by written notice until compliance with such orders.

All equipment that is proposed to be used on the work shall be of sufficient size and in such mechanical condition as to meet requirements of the work and to produce a satisfactory quality of work. Equipment used on any portion of the work shall be such that no injury to previously completed work, adjacent property, or existing airport facilities will result from its use.

When the methods and equipment to be used by the Contractor in accomplishing the work are not prescribed in the contract, the Contractor is free to use any methods or equipment that will accomplish the work in conformity with the requirements of the contract, plans, and specifications.

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the Engineer. If the Contractor desires to use a method or type of equipment other than specified in the contract, he/she may request authority from the Engineer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the Engineer determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this subsection. **80-06 TEMPORARY SUSPENSION OF THE WORK.** The Owner shall have the authority to suspend the work wholly or in part for such period or periods as he/she may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the prosecution of the work, or for such time as is necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

In the event that the Contractor is ordered by the Owner, in writing, to suspend work for some unforeseen cause not otherwise provided for in the contract and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the work during the period of shutdown. No allowance will be made for anticipated profits. The period of shutdown shall be computed from the effective date of the Owner's order to suspend work to the effective date of the Owner's order to resume the work. Claims for such compensation shall be filed with the Owner's order to resume the work. The Contractor shall submit with his/her claim information substantiating the amount shown on the claim. The Engineer will forward the Contractor's claim to the Owner for consideration in accordance with local laws or ordinances. No provision of this article shall be construed as entitling the Contractor to compensation for delays due to inclement weather, for suspensions made at the request of the Owner, or for any other delay provided for in the contract, plans, or specifications.

If it should become necessary to suspend work for an indefinite period, the Contractor shall store all materials in such manner that they will not become an obstruction nor become damaged in any way. He shall take every precaution to prevent damage or deterioration of the work performed and provide for normal drainage of the work. The Contractor shall erect temporary structures where necessary to provide for traffic on, to, or from the airport.

80-07 DETERMINATION AND EXTENSION OF CONTRACT TIME. The number of calendar or working days allowed for completion of the work shall be stated in the proposal and contract and shall be known as the CONTRACT TIME.

Should the contract time require extension for reasons beyond the Contractor's control, it shall be adjusted as follows:

a. CONTRACT TIME based on WORKING DAYS shall be calculated weekly by the Engineer. The Engineer will furnish the Contractor a copy of his/her weekly statement of the number of working days charged against the contract time during the week and the number of working days currently specified for completion of the contract (the original contract time plus the number of working days, if any, that have been included in approved CHANGE ORDERS or SUPPLEMENTAL AGREEMENTS covering EXTRA WORK).

The Engineer shall base his/her weekly statement of contract time charged on the following considerations:

(1) No time shall be charged for days on which the Contractor is unable to proceed with the principal item of work under construction at the time for at least 6 hours with the normal work force employed on such principal item. Should the normal work force be on a double-shift, 12 hours shall be used. Should the normal work force be on a triple-shift, 18 hours shall apply. Conditions beyond the Contractor's control such as strikes, lockouts, unusual delays in transportation, temporary suspension of the principal item of work under construction or temporary suspension of the entire work which have been ordered by the Owner for reasons not the fault of the Contractor, shall not be charged against the contract time.

(2) The Engineer will not make charges against the contract time prior to the effective date of the notice to proceed.

(3) The Engineer will begin charges against the contract time on the first working day after the effective date of the notice to proceed.

(4) The Engineer will not make charges against the contract time after the date of final acceptance as defined in the subsection titled FINAL ACCEPTANCE of Section 50.

(5) The Contractor will be allowed 1 week in which to file a written protest setting forth his/her objections to the Engineer's weekly statement. If no objection is filed within such specified time, the weekly statement shall be considered as acceptable to the Contractor.

The contract time (stated in the proposal) is based on the originally estimated quantities as described in the subsection titled INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES of Section 20. Should the satisfactory completion of the contract require performance of work in greater quantities than those estimated in the proposal, the

contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in contract time shall not consider either the cost of work or the extension of contract time that has been covered by change order or supplemental agreement and shall be made at the time of final payment.

**b.** CONTRACT TIME based on CALENDAR DAYS shall consist of the number of calendar days stated in the contract counting from the effective date of the notice to proceed and including all Saturdays, Sundays, holidays, and nonwork days. All calendar days elapsing between the effective dates of the Owner's orders to suspend and resume all work, due to causes not the fault of the Contractor, shall be excluded.

At the time of final payment, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in the contract time shall not consider either cost of work or the extension of contract time that has been covered by a change order or supplemental agreement. Charges against the contract time will cease as of the date of final acceptance.

c. When the contract time is a specified completion date, it shall be the date on which all contract work shall be substantially completed.

If the Contractor finds it impossible for reasons beyond his/her control to complete the work within the contract time as specified, or as extended in accordance with the provisions of this subsection, he/she may, at any time prior to the expiration of the contract time as extended, make a written request to the Engineer for an extension of time setting forth the reasons which he/she believes will justify the granting of his/her request. Requests for extension of time on calendar day projects, caused by inclement weather, shall be supported with National Weather Bureau data showing the actual amount of inclement weather exceeded which could normally be expected during the contract period. The Contractor's plea that insufficient time was specified is not a valid reason for extension of time. If the Engineer finds that the work was delayed because of conditions beyond the control and without the fault of the Contractor, he/she may extend the time for completion in such amount as the conditions justify. The extended time for completion shall then be in full force and effect, the same as though it were the original time for completion.

**80-08 FAILURE TO COMPLETE ON TIME.** For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in the subsection titled DETERMINATION AND EXTENSION OF CONTRACT TIME of this Section), the sum specified in the contract and proposal as liquidated damages will be deducted from any money due or to become due the Contractor or his/her surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages, including but not limited to, additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in his/her contract.

PHASE	LIQUIDATED DAMAGES COST	ALLOWED CONSTRUCTION TIME
Procurement	\$1,700 / Calendar Day	One Hundred Eighty (180) Calendar Days
Construction	\$1,700 / Calendar Day	Ninety (90) Calendar Days

The owner has established a contract performance time of one hundred eighty (180) calendar days for submittals, concrete mix design, material procurement and delivery from the date of the Notice-To-Proceed for <u>PROCUREMENT</u> and ninety (90) calendar days for all construction activities from the date of the Notice-to-Proceed for <u>CONSTRUCTION</u>. All project work shall be substantially completed within the stated timeframe. This project is subject to liquidated damages as prescribed in the project manual.

**80-09 DEFAULT AND TERMINATION OF CONTRACT.** The Contractor shall be considered in default of his/her contract, and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons if the Contractor:

a. Fails to begin the work under the contract within the time specified in the "Notice to Proceed," or

**b.** Fails to perform the work or fails to provide sufficient workers, equipment or materials to assure completion of work in accordance with the terms of the contract, or

c. Performs the work unsuitably or neglects or refuses to remove materials or to perform anew such work as may be rejected as unacceptable and unsuitable, or

- d. Discontinues the prosecution of the work, or
- e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or
- f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or
- g. Allows any final judgment to stand against him/her unsatisfied for a period of 10 days, or
- h. Makes an assignment for the benefit of creditors, or
- i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

Should the Engineer consider the Contractor in default of the contract for any reason hereinbefore, he/she shall immediately give written notice to the Contractor and the Contractor's surety as to the reasons for considering the Contractor in default and the Owner's intentions to terminate the contract.

If the Contractor or surety, within a period of 10 days after such notice, does not proceed in accordance therewith, then the Owner will, upon written notification from the Engineer of the facts of such delay, neglect, or default and the Contractor's failure to comply with such notice, have full power and authority without violating the contract to take the prosecution of the work out of the hands of the Contractor. The Owner may appropriate or use any or all materials and equipment that have been mobilized for use in the work and are acceptable and may enter into an agreement for the completion of said contract according to the terms and provisions thereof, or use such other methods as in the opinion of the Engineer will be required for the completion of said contract in an acceptable manner.

All costs and charges incurred by the Owner, together with the cost of completing the work under contract, will be deducted from any monies due or which may become due the Contractor. If such expense exceeds the sum which would have been payable under the contract, then the Contractor and the surety shall be liable and shall pay to the Owner the amount of such excess.

**80-10 TERMINATION FOR NATIONAL EMERGENCIES.** The Owner shall terminate the contract or portion thereof by written notice when the Contractor is prevented from proceeding with the construction contract as a direct result of an Executive Order of the President with respect to the prosecution of war or in the interest of national defense.

When the contract, or any portion thereof, is terminated before completion of all items of work in the contract, payment will be made for the actual number of units or items of work completed at the contract price or as mutually agreed for items of work partially completed or not started. No claims or loss of anticipated profits shall be considered.

Reimbursement for organization of the work and other overhead expenses (when not otherwise included in the contract), and moving equipment and materials to and from the job will be considered, the intent being that an equitable settlement will be made with the Contractor.

Acceptable materials obtained or ordered by the Contractor for the work that are not incorporated in the work shall, at the option of the Contractor, be purchased from the Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the Engineer.

Termination of the contract or a portion thereof shall neither relieve the Contractor of his/her responsibilities for the completed work nor shall it relieve his/her surety of its obligation for and concerning any just claim arising out of the work performed.

**80-11 WORK AREA, STORAGE AREA, AND SEQUENCE OF OPERATIONS.** The Contractor shall obtain approval from the Engineer prior to beginning any work in all areas of the airport. No operating runway, taxiway, or Air Operations Area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate his/her work in such a manner as to insure safety and a minimum of hindrance to flight operations. All Contractor equipment and material stockpiles shall be stored a minimum of **250** feet from the centerline of an active runway. No equipment will be allowed to park within the approach area of an active runway at any time. No equipment shall be within **250** feet of the centerline of an active runway at any time.

# END OF SECTION 80

# SECTION 90 MEASUREMENT AND PAYMENT

**90-01 MEASUREMENT OF QUANTITIES.** All work completed under the contract will be measured by the Engineer, or his/her authorized representatives, using United States Customary Units of Measurement or the International System of Units.

The method of measurement and computations to be used in determination of quantities of material furnished and of work performed under the contract will be those methods generally recognized as conforming to good engineering practice.

Unless otherwise specified, longitudinal measurements for area computations will be made horizontally, and no deductions will be made for individual fixtures (or leave-outs) having an area of 9 square feet (0.8 square meters) or less. Unless otherwise specified, transverse measurements for area computations will be the neat dimensions shown on the plans or ordered in writing by the Engineer.

Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.

Unless otherwise specified, all contract items which are measured by the linear foot such as electrical ducts, conduits, pipe culverts, underdrains, and similar items shall be measured parallel to the base or foundation upon which such items are placed.

In computing volumes of excavation, the average end area method or other acceptable methods will be used.

The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing will be specified and measured in decimal fraction of inches.

The term "ton" will mean the short ton consisting of 2,000 pounds (907 kilograms) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, approved scales by competent, qualified personnel at locations designed by the Engineer. If material is shipped by rail, the car weight may be accepted provided that only the actual weight of material is paid for. However, car weights will not be acceptable for material to be passed through mixing plants. Trucks used to haul material being paid for by weight shall be weighed empty daily at such times as the Engineer directs, and each truck shall bear a plainly legible identification mark.

Materials to be measured by volume in the hauling vehicle shall be hauled in approved vehicles and measured therein at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined. All vehicles shall be loaded to at least their water level capacity, and all loads shall be leveled when the vehicles arrive at the point of delivery.

When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard (cubic meter) may be weighed, and such weights will be converted to cubic yards (cubic meters) for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Bituminous materials will be measured by the gallon (liter) or ton (kilogram). When measured by volume, such volumes will be measured at 60 F (15 C) or will be corrected to the volume at 60 F (15 C) using ASTM D 1250 for asphalts or ASTM D 633 for tars.

Net certified scale weights or weights based on certified volumes in the case of rail shipments will be used as a basis of measurement, subject to correction when bituminous material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work.

When bituminous materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, may be used for computing quantities.

Cement will be measured by the ton (kilogram) or hundredweight (kilogram).

Timber will be measured by the thousand feet board measure (M.F.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

The term "lump sum" when used as an item of payment will mean complete payment for the work described in the contract.

When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered by the Engineer in connection with force account work will be measured as agreed in the change order or supplemental agreement authorizing such force account work as provided in the subsection titled PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK of this section.

When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gage, unit weight, section dimensions, etc., such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

Scales for weighing materials which are required to be proportioned or measured and paid for by weight shall be furnished, erected, and maintained by the Contractor, or be certified permanently installed commercial scales.

Scales shall be accurate within one-half of 1 percent of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the inspector before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed one-tenth of 1 percent of the nominal rated capacity of the scale, but not less than 1 pound (454 grams). The use of spring balances will not be permitted.

Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the inspector can safely and conveniently view them.

Scale installations shall have available ten standard 50-pound (2.3 kilogram) weights for testing the weighing equipment or suitable weights and devices for other approved equipment.

Scales must be tested for accuracy and serviced before use at a new site. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end.

Scales "overweighing" (indicating more than correct weight) will not be permitted to operate, and all materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of one-half of 1 percent.

In the event inspection reveals the scales have been "underweighing" (indicating less than correct weight), they shall be adjusted, and no additional payment to the Contractor will be allowed for materials previously weighed and recorded.

All costs in connection with furnishing, installing, certifying, testing, and maintaining scales; for furnishing check weights and scale house; and for all other items specified in this subsection, for the weighing of materials for proportioning or payment, shall be included in the unit contract prices for the various items of the project.

When the estimated quantities for a specific portion of the work are designated as the pay quantities in the contract, they shall be the final quantities for which payment for such specific portion of the work will be made, unless the dimensions of said portions of the work shown on the plans are revised by the Engineer. If revised dimensions result in an increase or decrease in the quantities of such work, the final quantities for payment will be revised in the amount represented by the authorized changes in the dimensions.

**90-02 SCOPE OF PAYMENT.** The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the prosecution thereof, subject to the provisions of the subsection titled NO WAIVER OF LEGAL RIGHTS of Section 70.

When the "basis of payment" subsection of a technical specification requires that the contract price (price bid) include compensation for certain work or material essential to the item, this same work or material will not also be measured for payment under any other contract item which may appear elsewhere in the contract, plans, or specifications.

**90-03 COMPENSATION FOR ALTERED QUANTITIES.** When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in the subsection titled ALTERATION OF WORK AND QUANTITIES of Section 40 will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from his/her unbalanced allocation of overhead and profit among the contract items, or from any other cause.

**90-04 PAYMENT FOR OMITTED ITEMS.** As specified in the subsection titled OMITTED ITEMS of Section 40, the Engineer shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

Should the Engineer omit or order nonperformance of a contract item or portion of such item from the work, the Contractor shall accept payment in full at the contract prices for any work actually completed and acceptable prior to the Engineer's order to omit or nonperform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the Engineer's order will be paid for at the actual cost to the Contractor and shall thereupon become the property of the Owner.

In addition to the reimbursement hereinbefore provided, the Contractor shall be reimbursed for all actual costs incurred for the purpose of performing the omitted contract item prior to the date of the Engineer's order. Such additional costs incurred by the Contractor must be directly related to the deleted contract item and shall be supported by certified statements by the Contractor as to the nature the amount of such costs.

**90-05 PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK**. Extra work, performed in accordance with the subsection titled EXTRA WORK of Section 40, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work. When the change order or supplemental agreement authorizing the extra work. When the change order or supplemental agreement authorizing the extra work requires that it be done by force account, such force account shall be measured and paid for based on expended labor, equipment, and materials plus a negotiated and agreed upon allowance for overhead and profit.

a. Miscellaneous. No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

b. Comparison of Record. The Contractor and the Engineer shall compare records of the cost of force account work at the end of each day. Agreement shall be indicated by signature of the Contractor and the Engineer or their duly authorized representatives.

c. Statement. No payment will be made for work performed on a force account basis until the Contractor has furnished the Engineer with duplicate itemized statements of the cost of such force account work detailed as follows:

(1) Name, classification, date, daily hours, total hours, rate and extension for each laborer and foreman.

(2) Designation, dates, daily hours, total hours, rental rate, and extension for each unit of machinery and equipment.

- (3) Quantities of materials, prices, and extensions.
- (4) Transportation of materials.

(5) Cost of property damage, liability and worker's compensation insurance premiums, unemployment insurance contributions, and social security tax.

Statements shall be accompanied and supported by a receipted invoice for all materials used and transportation charges. However, if materials used on the force account work are not specifically purchased for such work but are taken from the Contractor's stock, then in lieu of the invoices the Contractor shall furnish an affidavit certifying that such materials were taken from his/her stock, that the quantity claimed was actually used, and that the price and transportation claimed represent the actual cost to the Contractor.

**90-06 PARTIAL PAYMENTS.** Partial payments will be made at least once each month as the work progresses. Said payments will be based upon estimates prepared by the Engineer of the value of the accepted work performed and materials complete in place in accordance with the contract, plans, and specifications. Such partial payments may also include the delivered actual cost of those materials stockpiled and stored in accordance with the subsection titled PAYMENT FOR MATERIALS ON HAND of this section.

No partial payment will be made when the amount due the Contractor since the last estimate amounts to less than five hundred dollars.

From the total of the amount determined to be payable on a partial payment, 5 percent of such total amount will be deducted and retained by the Owner until the final payment is made, except as may be provided (at the Contractor's option) in the subsection titled PAYMENT OF WITHHELD FUNDS of this section. The balance (95 percent) of the amount payable, less all previous payments, shall be certified for payment. Should the Contractor exercise his/her option, as provided in the subsection titled PAYMENT OF WITHHELD FUNDS of this section, no such 5 percent retainage shall be deducted.

When not less than 95 percent of the work has been completed, the Engineer may, at the Owner's discretion and with the consent of the surety, prepare an estimate from which will be retained an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

It is understood and agreed that the Contractor shall not be entitled to demand or receive partial payment based on quantities of work in excess of those provided in the proposal or covered by approved change orders or supplemental agreements, except when such excess quantities have been determined by the Engineer to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Owner to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in the subsection titled ACCEPTANCE AND FINAL PAYMENT of this section.

The Contractor shall deliver to the Owner a complete release of all claims for labor and material arising out of this contract before the final retained percentage or final payment is made. If any subcontractor or supplier fails to furnish such a release in full, the Contractor may furnish a bond or other collateral satisfactory to the Owner to indemnify the Owner against any potential lien or other such claim. The bond or collateral shall include all costs, expenses, and attorney fees the Owner may be compelled to pay in discharging any such lien or claim.

90-07 PAYMENT FOR MATERIALS ON HAND. Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity

that are acceptable to the Owner. Such delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

a. The material has been stored or stockpiled in a manner acceptable to the Engineer at or on an approved site.

**b.** The Contractor has furnished the Engineer with acceptable evidence of the quantity and quality of such stored or stockpiled materials.

c. The Contractor has furnished the Engineer with satisfactory evidence that the material and transportation costs have been paid.

d. The Contractor has furnished the Owner legal title (free of liens or encumbrances of any kind) to the material so stored or stockpiled.

e. The Contractor has furnished the Owner evidence that the material so stored or stockpiled is insured against loss by damage to or disappearance of such materials at any time prior to use in the work.

It is understood and agreed that the transfer of title and the Owner's payment for such stored or stockpiled materials shall in no way relieve the Contractor of his/her responsibility for furnishing and placing such materials in accordance with the requirements of the contract, plans, and specifications.

In no case will the amount of partial payments for materials on hand exceed the contract price for such materials or the contract price for the contract item in which the material is intended to be used.

No partial payment will be made for stored or stockpiled living or perishable plant materials.

The Contractor shall bear all costs associated with the partial payment of stored or stockpiled materials in accordance with the provisions of this subsection.

**90-08 PAYMENT OF WITHHELD FUNDS.** At the Contractor's option, he/she may request that the Owner accept (in lieu of the 5 percent retainage on partial payments described in the subsection titled PARTIAL PAYMENTS of this section) the Contractor's deposits in escrow under the following conditions.

a. The Contractor shall bear all expenses of establishing and maintaining an escrow account and escrow agreement acceptable to the Owner.

**b.** The Contractor shall deposit to and maintain in such escrow only those securities or bank certificates of deposit as are acceptable to the Owner and having a value not less than the 5 percent retainage that would otherwise be withheld from partial payment.

c. The Contractor shall enter into an escrow agreement satisfactory to the Owner.

d. The Contractor shall obtain the written consent of the surety to such agreement.

**90-09** ACCEPTANCE AND FINAL PAYMENT. When the contract work has been accepted in accordance with the requirements of the subsection titled FINAL ACCEPTANCE of Section 50, the Engineer will prepare the final estimate of the items of work actually performed. The Contractor shall approve the Engineer's final estimate or advise the Engineer of his/her objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the Engineer shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the Engineer's final estimate. If, after such 30 day period, a dispute still exists, the Contractor may approve the Engineer's estimate under protest of the subsection titled CLAIMS FOR ADJUSTMENT AND DISPUTES of Section 50.

After the Contractor has approved, or approved under protest, the Engineer's final estimate, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of the subsection titled CLAIMS FOR ADJUSTMENTS AND DISPUTES of Section 50 or under the provisions of this subsection, such claims will be considered by the Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

**90-10 CONSTRUCTION WARRANTY.** In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier. This warranty shall continue for a period of 1 year from the date of final acceptance of the work. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date the Owner takes possession.

The Contractor shall remedy at the Contractor's expense any failure to conform or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to the Owner's real or personal property, when that damage is the result of:

- (1) The Contractor's failure to conform to contract requirements; or
- (2) Any defect of equipment, material, workmanship, or design furnished by the Contractor.

The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.

The Owner will notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage. If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall:

(1) Obtain all warranties that would be given in normal commercial practice;

(2) Require all warranties to be executed, in writing, for the benefit of the owner, as directed by the owner, and

(3) Enforce all warranties for the benefit of the owner.

This warranty shall not limit the Owner's rights with respect to latent defects, gross mistakes, or fraud.

**90-11 PROJECT CLOSEOUT.** Approval of final payment to the Contractor is contingent upon completion and submittal of the items listed below. The final payment will not be approved until the Engineer approves the Contractor's submittal.

The Contractor shall:

- (a) Provide two (2) copies of all manufacturers' warranties specified for materials, equipment, and installations.
- (b) Provide weekly payroll records (not previously received) from the general contractor and all subcontractors.

- (c) Complete final clean up in accordance with Subsection 40-09.
- (d) Complete all punch list items identified during the Final Inspection.
- (e) Provide an executed Certification Regarding Settlement of Claims for release of all claims for labor and material arising out of the Contract. Form is available on the MoDOT Aviation Website.
- (f) Provide a certification letter attesting to the actual work performed by the Disadvantaged Business Enterprise (DBE) firm and the amount paid the DBE firm, upon completion of the individual DBE firm's work. This certification letter shall be signed by both the prime contractor and the DBE firm. A sample certification letter is available on the MoDOT Aviation website.

# **END OF SECTION 90**

## SECTION 4 SUPPLEMENTARY PROVISIONS

#### PART A FEDERAL AND STATE PROVISIONS

- 1. TITLE VI CLAUSES FOR COMPLIANCE WITH NONDISCRIMINATION REQUIREMENTS (49 USC § 47123, FAA Order 1400.11)
- 2. GENERAL CIVIL RIGHTS PROVISIONS (49 USC § 47123)
- 3. ACCESS TO RECORDS AND REPORTS (2 CFR § 200.333; 2 CFR § 200.336; FAA Order 5100.38)
- 4. DISADVANTAGE BUSINESS ENTERPRISES (DBE) (49 CFR PART 26)
- 5. TERMINATION OF CONTRACT (2 CFR § 200 Appendix II(B), FAA Advisory Circular 150/5370-10, Section 80-09)
- 6. CLEAN AIR AND WATER POLLUTION CONTROL (2 CFR § 200 Appendix II(G))
- 7. DAVIS-BACON REQUIREMENTS (2 CFR § 200 Appendix II(D), 29 CFR PART 5)
- 8. EQUAL OPPORTUNITY CLAUSE (2 CFR § 200 Appendix II(C), 41 CFR § 60-1.4, 41 CFR § 60-4.3, Executive Order 11246)
- 9. ENERGY CONSERVATION REQUIREMENTS (2 CFR § 200 Appendix II(H))
- 10. PROHIBITION OF SEGREGATED FACILITIES (41 CFR § 60)
- 11. STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (41 CFR 60-4.3)
- 12. VETERAN'S PREFERENCE (Title 49 U.S.C. 47112(c))
- 13. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION CONSTRUCTION SAFETY TRAINING
- 14. COPELAND "ANTI-KICKBACK" ACT (2 CFR § 200 Appendix II (D), 29 CFR Parts 3 and 5)
- 15. FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE) (29 U.S.C. § 201, et seq.)
- 16. OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 (20 CFR Part 1910)
- 17. TEXTING WHEN DRIVING (Executive Order 13513, DOT Order 3902.10)
- 18. PROCUREMENT OF RECOVERED MATERIALS (2 CFR § 200.322, 40 CFR Part 247)
- 19. BREACH OF CONTRACT TERMS (2 CFR § 200 Appendix II(A))
- 20. CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS (2 CFR § 200 Appendix II(E))
- 21. SEISMIC SAFETY (49 CFR Part 41)
- 22. RIGHT TO INVENTIONS (2 CFR § 200 Appendix II(F), 37 CFR § 401)

 CERTIFICATION OF BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS (Sections 415 and 416 of Title IV, Division L of the Consolidated Appropriations Act, 2014, DOT Order 4200.6)

#### 1. TITLE VI CLAUSES FOR COMPLIANCE WITH NONDISCRIMINATION REQUIREMENTS (49 USC § 47123, FAA Order 1400.11)

During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees as follows:

1. <u>Compliance with Regulations</u>. The contractor (hereinafter includes consultants) will comply with the **Title VI List** of **Pertinent Nondiscrimination Acts and Authorities**, as they may be amended from time to time, which are herein incorporated by reference and made a part of this contract.

2. <u>Nondiscrimination</u>. The contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, or national origin in the selection and retention of subcontractors, including procurements of materials and leases of equipment. The contractor will not participate directly or indirectly in the discrimination prohibited by the Nondiscrimination Acts and Authorities, including employment practices when the contract covers any activity, project, or program set forth in Appendix B of 49 CFR Part 21.

3. <u>Solicitations for Subcontracts</u>, <u>Including Procurements of Materials and Equipment</u>. In all solicitations, either by competitive bidding or negotiation made by the contractor for work to be performed under a subcontract, including procurements of materials or leases of equipment, each potential subcontractor or supplier will be notified by the contractor of the contractor's obligations under this contract and the Nondiscrimination Acts and Authorities on the grounds of race, color, or national origin.

4. <u>Information and Reports.</u> The contractor will provide all information and reports required by the Acts, the Regulations, and directives issued pursuant thereto and will permit access to its books, records, accounts, other sources of information, and its facilities as may be determined by the Sponsor or the Federal Aviation Administration (FAA) to be pertinent to ascertain compliance with such Nondiscrimination Acts and Authorities and instructions. Where any information required of a contractor is in the exclusive possession of another who fails or refuses to furnish the information, the contractor will so certify to the Sponsor or the FAA, as appropriate, and will set forth what efforts it has made to obtain the information.

5. <u>Sanctions for Noncompliance</u>. In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the Sponsor will impose such contract sanctions as it or the FAA may determine to be appropriate, including, but not limited to:

- a. Withholding payments to the contractor under the contract until the contractor complies, and/or
- b. Cancelling, terminating, or suspending a contract, in whole or in part.

6. <u>Incorporation of Provisions</u>. The contractor will include the provisions of paragraphs one through six in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Acts, the Regulations, and directives issued pursuant thereto. The contractor will take action with respect to any subcontract or procurement as the Sponsor or the FAA may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, that if the contractor becomes involved in or is threatened with litigation by a subcontractor or supplier because of such direction, the contractor may request the Sponsor to enter into any litigation to protect the interests of the Sponsor. In addition, the contractor may request the United States to enter into the litigation to protect the interests of the United States.

7. <u>Title VI List of Pertinent Nondiscrimination Acts and Authorities</u>. During the performance of this contract, the contractor, for itself, its assignees, and successors in interest (hereinafter referred to as the "contractor") agrees to comply with the following non-discrimination statutes and authorities; including but not limited to:

- Title VI of the Civil Rights Act of 1964 (42 U.S.C. § 2000d et seq., 78 stat. 252) (prohibits discrimination on the basis of race, color, national origin);
- 49 CFR Part 21 (Non-discrimination in Federally-Assisted Programs of The Department of Transportation— Effectuation of Title VI of the Civil Rights Act of 1964);
- The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. § 4601) (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);
- Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794 et seq.), as amended (prohibits discrimination on the basis of disability); and 49 CFR Part 27;
- The Age Discrimination Act of 1975, as amended (42 U.S.C. § 6101 et seq.) (prohibits discrimination on the basis of age);
- Airport and Airway Improvement Act of 1982 (49 U.S.C. § 471, Section 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (PL 100-209) (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);
- Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131-12189) as implemented by U.S. Department of Transportation regulations at 49 CFR parts 37 and 38;
- The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures nondiscrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and
  resulting agency guidance, national origin discrimination includes discrimination because of limited English
  proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP
  persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100); and
- Title IX of the Education Amendments of 1972, as amended, which prohibits you from discriminating because of sex in education programs or activities (20 U.S.C. § 1681 et seq.).

## 2. GENERAL CIVIL RIGHTS PROVISIONS (49 USC § 47123)

The Contractor agrees to comply with pertinent statutes, Executive Orders and such rules as are promulgated to ensure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract. This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

## 3. ACCESS TO RECORDS AND REPORTS (2 CFR § 200.333; 2 CFR § 200.336; FAA Order 5100.38)

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the Sponsor, MoDOT, the Federal Aviation Administration and the Comptroller General of the United States or any of their duly authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to the specific contract for the purpose of making audit, examination, excerpts and transcriptions. The Contractor agrees to maintain all books, records and reports required under this contract for a period of not less than three years after final payment is made and all pending matters are closed.

#### 4. DISADVANTAGED BUSINESS ENTERPRISE (DBE)(49 CFR PART 26)

Where used in this provision, "Department of Transportation" or "DOT" refers to the United States Department of Transportation. "MoDOT" refers to the Missouri Department of Transportation and the Missouri Highways and Transportation Commission.

**Policy.** It is the policy of the Department of Transportation that disadvantaged business enterprises as defined in 49 CFR Part 26 shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal funds under this agreement. Consequently, the DBE requirements of 49 CFR Part 26 applies to this agreement.

<u>Contract Assurance</u>. MoDOT and the Sponsor will ensure that the following clause is placed in every USDOT assisted contract and subcontract:

"The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the Sponsor deems appropriate, which may include, but is not limited to: (1) withholding monthly progress payments; (2) assessing sanctions; (3) liquidated damages; and/or (4) disqualifying the contractor from future bidding as non-responsible.."

(This assurance shall be included in each subcontract the prime contractor signs with a subcontractor.)

**Federal Financial Assistance Agreement Assurance**. MoDOT and the Sponsor agree to and incorporate the following assurance into the day to day operations and the administration of all USDOT assisted contracts; where "recipient" means MoDOT and any MoDOT grantee receiving USDOT assistance:

"MoDOT or the Sponsor shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of any USDOT assisted contract or in the administration of its DBE Program or the requirements of 49 CFR Part 26. The recipient shall take all necessary and reasonable steps under 49 CFR Part 26 to ensure nondiscrimination in the award and administration of USDOT assisted contracts. The recipient's DBE Program, as required by 49 CFR Part 26 and as approved by USDOT, is incorporated by reference in this agreement. Implementation of this program is a legal obligation and for failure to carry out its approved program, the Department may impose sanctions as provided for under Part 26 and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1986 (31 U.S.C. 3801 et seq.)."

MoDOT and the Sponsor ensure that all recipients of USDOT assisted contracts, funds, or grants incorporate, agree to and comply with the assurance statement.

<u>Prompt Payment</u>. MoDOT and the Sponsor require all contractors to pay all subcontractors and suppliers under this prime contract for satisfactory performance of its contract in compliance with the prompt payment statute, Mo. Revised Statutes, Chapter 34, Section 34.057 (included below). MoDOT and the Sponsor also require the prompt, as defined in Section 34.057, return of all retainage held on all subcontractors after the subcontractor's work is satisfactorily completed, as MoDOT and Sponsor personnel may ultimately determine (if necessary). These prompt payment requirements apply to both DBE and non-DBE subcontractors.

All contractors and subcontractors must retain records of all payments, made or received, for 3 years from the date of final payment and must be available for inspection, upon request, by any authorized representative of MoDOT, the Sponsor or USDOT. MoDOT and the Sponsor will maintain records of actual payments to DBE firms for work committed to at the time of contract award.

MoDOT and the Sponsor will perform audits of contract payments to firms. The audits will review payments to subcontractors to ensure that the actual amount paid to DBE subcontractors equals or exceeds the dollar amounts stated in the schedule of DBE participation and that payment was made in compliance with Missouri Revised Statutes, Chapter 34, Section 34.057.

## **Missouri Revised Statutes**

Chapter 34 State Purchasing and Printing Section 34.057

August 28, 2014

#### Public works contracts--prompt payment by public owner to contractor, engineer, architect, or surveyor-prompt payment by contractor to subcontractor-- progress payments--retainage--late payment charges-withholding of payments.

34.057. 1. Unless contrary to any federal funding requirements or unless funds from a state grant are not timely received by the contracting public municipality but notwithstanding any other law to the contrary, all public works contracts made and awarded by the appropriate officer, board or agency of the state or of a political subdivision of the state or of any district therein, including any municipality, county and any board referred to as the public owner, for construction, reconstruction or alteration of any public works project, shall provide for prompt payment by the public owner to the contractor, and any professional engineer, architect, landscape architect, or land surveyor, as well as prompt payment by the contractor to the subcontractor and material supplier in accordance with the following:

(1) A public owner shall make progress payments to the contractor and any professional engineer, architect, landscape architect or land surveyor on at least a monthly basis as the work progresses, or, on a lump sum basis according to the terms of the lump sum contract. Except in the case of lump sum contracts, payments shall be based upon estimates prepared at least monthly of work performed and material delivered, as determined by the project architect or engineer. Retainage withheld on any construction contract or subcontract for public works projects shall not exceed five percent of the value of the contract or subcontract. If the contractor is not required to obtain a bond under section 107.170 because the cost of the public works project in an amount not to exceed fifty thousand dollars, the public owner may withhold retainage on the public works project in an amount not to exceed the percent of the value of the contract or shall pay the contractor the amount due, less a retainage, within thirty days following the latter of the following:

(a) The date of delivery of materials or construction services purchased;

(b) The date, as designated by the public owner, upon which the invoice is duly delivered to the person or place designated by the public owner; or

(c) In those instances in which the contractor approves the public owner's estimate, the date upon which such notice of approval is duly delivered to the person or place designated by the public owner;

(2) Payments shall be considered received within the context of this section when they are duly posted with the United States Postal Service or other agreed upon delivery service or when they are hand-delivered to an authorized person or place as agreed to by the contracting parties;

(3) If, in the discretion of the owner and the project architect or engineer and the contractor, it is determined that a subcontractor's performance has been completed and the subcontractor can be released prior to substantial completion of the public works contract without risk to the public owner, the contractor shall request such adjustment in retainage, if any, from the public owner as necessary to enable the contractor to pay the subcontractor in full. The public owner

may reduce or eliminate retainage on any contract payment if, in the public owner's opinion, the work is proceeding satisfactorily. If retainage is released and there are any remaining minor items to be completed, an amount equal to one hundred fifty percent of the value of each item as determined by the public owner's duly authorized representatives shall be withheld until such item or items are completed;

(4) The public owner shall pay at least ninety-eight percent of the retainage, less any offsets or deductions authorized in the contract or otherwise authorized by law, to the contractor. The contractor shall pay the subcontractor or supplier after substantial completion of the contract work and acceptance by the public owner's authorized contract representative, or as may otherwise be provided by the contract specifications for state highway, road or bridge projects administered by the state highways and transportation commission. Such payment shall be made within thirty days after acceptance, and the invoice and all other appropriate documentation and certifications in complete and acceptable form are provided, as may be required by the contract documents. If the public owner or the owner's representative determines the work is not substantially completed and accepted, then the owner or the owner's representative shall provide a written explanation of why the work is not considered substantially completed and accepted within fourteen calendar days to the contractor, who shall then provide such notice to the subcontractor or suppliers responsible for such work. If such written explanation is not given by the public body, the public body shall pay at least ninety-eight percent of the retainage within thirty calendar days. If at that time there are any remaining minor items to be completed, an amount equal to one hundred fifty percent of the value of each item as determined by the public owner's representative shall be withheld until such items are completed;

(5) All estimates or invoices for supplies and services purchased, approved and processed, or final payments, shall be paid promptly and shall be subject to late payment charges provided in this section. Except as provided in subsection 4 of this section, if the contractor has not been paid within thirty days as set forth in subdivision (1) of subsection 1 of this section, the contracting agency shall pay the contractor, in addition to the payment due him, interest at the rate of one and one-half percent per month calculated from the expiration of the thirty-day period until fully paid;

(6) When a contractor receives any payment, the contractor shall pay each subcontractor and material supplier in proportion to the work completed by each subcontractor and material supplier his application less any retention not to exceed five percent. If the contractor receives less than the full payment due under the public construction contract, the contractor shall be obligated to disburse on a pro rata basis those funds received, with the contractor, subcontractors and material suppliers each receiving a prorated portion based on the amount of payment. When, however, the public owner does not release the full payment due under the contract because there are specific areas of work or materials he is rejecting or because he has otherwise determined such areas are not suitable for payment then those specific subcontractors or suppliers involved shall not be paid for that portion of the work rejected or deemed not suitable for payment; provided the public owner or the owner's representative gives a written explanation to the contractor, subcontractor, subcontractor, or supplier involved as to why the work or supplies were rejected or deemed not suitable for payment, and all other subcontractors and suppliers shall be paid in full;

(7) If the contractor, without reasonable cause, fails to make any payment to his subcontractors and material suppliers within fifteen days after receipt of payment under the public construction contract, the contractor shall pay to his subcontractors and material suppliers, in addition to the payment due them, interest in the amount of one and one-half percent per month, calculated from the expiration of the fifteen-day period until fully paid. This subdivision shall also apply to any payments made by subcontractors and material suppliers to their subcontractors and material suppliers and to all payments made to lower tier subcontractors and material suppliers throughout the contracting chain;

(8) The public owner shall make final payment of all moneys owed to the contractor, including any retainage withheld under subdivision (4) of this subsection, less any offsets or deductions authorized in the contract or otherwise authorized by law, within thirty days of the due date. Final payment shall be considered due upon the earliest of the following events:

(a) Completion of the project and filing with the owner of all required documentation and certifications, in complete and acceptable form, in accordance with the terms and conditions of the contract;

(b) The project is certified by the architect or engineer authorized to make such certification on behalf of the owner as having been completed, including the filing of all documentation and certifications required by the contract, in complete and acceptable form; or

(c) The project is certified by the contracting authority as having been completed, including the filing of all documentation and certifications required by the contract, in complete and acceptable form.

2. Nothing in this section shall prevent the contractor or subcontractor, at the time of application or certification to the public owner or contractor, from withholding such applications or certifications to the owner or contractor for payment to the subcontractor or material supplier. Amounts intended to be withholding such applications or certifications shall include, but not be limited to, the following: unsatisfactory job progress; defective construction work or material not remedied; disputed work; failure to comply with other material provisions of the contract; third-party claims filed or reasonable evidence that a claim will be filed; failure of the subcontractor to make timely payments for labor, equipment and materials; damage to a contractor or another subcontractor or material supplier; reasonable evidence that the contract cannot be completed for the unpaid balance of the subcontract sum or a reasonable amount for retention, not to exceed the initial percentage retained by the owner.

3. Should the contractor determine, after application or certification has been made and after payment has been received from the public owner, or after payment has been received by a contractor based upon the public owner's estimate of materials in place and work performed as provided by contract, that all or a portion of the moneys needs to be withheld from a specific subcontractor or material supplier for any of the reasons enumerated in this section, and such moneys are withheld from such subcontractor or material supplier, then such undistributed amounts shall be specifically identified in writing and deducted from the next application or certification made to the public owner or from the next estimate by the public owner of payment due the contractor, until a resolution of the matter has been achieved. Disputes shall be resolved in accordance with the terms of the contract documents. Upon such resolution the amounts withheld by the contractor from the subcontractor or material supplier shall be included in the next application or certification made to the public owner or the next estimate by the public owner and shall be paid promptly in accordance with the provisions of this section. This subsection shall also apply to applications or certifications made by subcontractors or material suppliers to the contractor and throughout the various tiers of the contracting chain.

4. The contracts which provide for payments to the contractor based upon the public owner's estimate of materials in place and work performed rather than applications or certifications submitted by the contractor, the public owner shall pay the contractor within thirty days following the date upon which the estimate is required by contract to be completed by the public owner, the amount due less a retainage not to exceed five percent. All such estimates by the public owner shall be paid promptly and shall be subject to late payment charges as provided in this subsection. After the thirtieth day following the date upon which the estimate is required by the public owner, the contracting agency shall pay the contractor, in addition to the payment due him, interest at a rate of one and one-half percent per month calculated from the expiration of the thirty-day period until fully paid.

5. The public owner shall pay or cause to be paid to any professional engineer, architect, landscape architect, or land surveyor the amount due within thirty days following the receipt of an invoice prepared and submitted in accordance with the contract terms. In addition to the payment due, the contracting agency shall pay interest at the rate of one and one-half percent per month calculated from the expiration of the thirty-day period until fully paid.

6. Nothing in this section shall prevent the owner from withholding payment or final payment from the contractor, or a subcontractor or material supplier. Reasons for withholding payment or final payment shall include, but not be limited to, the following: liquidated damages; unsatisfactory job progress; defective construction work or material not remedied; disputed work; failure to comply with any material provision of the contract; third party claims filed or reasonable evidence that a claim will be filed; failure to make timely payments for labor, equipment or materials; damage to a contractor, subcontractor or material supplier; reasonable evidence that a number of the contract sum; or citation by the enforcing authority for acts of the contractor or subcontractor which do not comply with any material

4-7

provision of the contract and which result in a violation of any federal, state or local law, regulation or ordinance applicable to that project causing additional costs or damages to the owner.

7. Nothing in this section shall be construed to require direct payment by a public owner to a subcontractor or supplier, except in the case of the default, as determined by a court, of the contractor on the contract with the public owner where no performance or payment bond is required or where the surety fails to execute its duties, as determined by a court.

8. Notwithstanding any other provisions in this section to the contrary, no late payment interest shall be due and owing for payments which are withheld in good faith for reasonable cause pursuant to subsections 2, 5 and 6 of this section. If it is determined by a court of competent jurisdiction that a payment which was withheld pursuant to subsections 2, 5 and 6 of this section was not withheld in good faith for reasonable cause, the court may impose interest at the rate of one and one-half percent per month calculated from the date of the invoice and may, in its discretion, award reasonable attorney fees to the prevailing party. In any civil action or part of a civil action brought pursuant to this section, if a court determines after a hearing for such purpose that the cause was initiated, or a defense was asserted, or a motion was filed, or any proceeding therein was done frivolously and in bad faith, the court shall require the party who initiated such cause, asserted such defense, filed such motion, or caused such proceeding to be had to pay the other party named in such action the amount of the costs attributable thereto and reasonable expenses incurred by such party, including reasonable attorney fees.

(L. 1990 S.B. 808 & 672 § 1, A.L. 2014 S.B. 529)

(2004) Act contemplates a contract between the parties to such a cause of action and provides for such action against a public owner only by the contractor, not a subcontractor or supplier. Mays-Maune & Associates v. Werner Brothers, 139 S.W.3d 201 (Mo.App. E.D.).

MoDOT DBE Program Regulations. The Sponsor, contractor and each subcontractor are bound by the MoDOT DBE Program regulations at Title 7 CSR, Division 10, Chapter 8.

- TERMINATION OF CONTRACT (2 CFR § 200 Appendix II(B), FAA Advisory Circular 150/5370-10, Section 80-09)
  - (a) Termination for Convenience:

The Owner may terminate this contract in whole or in part at any time by providing written notice to the Contractor. Such action may be without cause and without prejudice to any other right or remedy of Owner. Upon receipt of a written notice of termination, except as explicitly directed by the Owner, the Contractor shall immediately proceed with the following obligations regardless of any delay in determining or adjusting amounts due under this clause:

- (1) Contractor must immediately discontinue work as specified in the written notice.
- (2) Terminate all subcontracts to the extent they relate to the work terminated under the notice.
- (3) Discontinue orders for materials and services except as directed by the written notice.
- (4) Deliver to the Owner all fabricated and partially fabricated parts, completed and partially completed work, supplies, equipment and materials acquired prior to termination of the work and as directed in the written notice.
- (5) Complete performance of the work not terminated by the notice.
- (6) Take action as directed by the Owner to protect and preserve property and work related to this contract of which Owner will take possession.

Owner agrees to pay Contractor for:

- (1) Completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;
- (2) Documented expenses sustained prior to the effective date of termination in performing work and furnishing labor, materials, or equipment as required by the contract documents in connection with uncompleted work;
- (3) Reasonable and substantiated claims, costs, and damages incurred in settlement of terminated contracts with subcontractors and suppliers; and
- (4) Reasonable and substantiated expenses to the Contractor directly attributable to Owner's termination action.

Owner will not pay Contractor for loss of anticipated profits or revenue or other economic loss arising out of or resulting from the Owner's termination action.

The rights and remedies this clause provides are in addition to any other rights and remedies provided by law or under this contract.

(b) Termination for Default (Construction):

Section 80-09 of FAA Advisory Circular 150/5370-10 establishes conditions, rights and remedies associated with Owner termination of this contract due to default of the Contractor.

(c) Termination for Default (Equipment):

The Owner may, by written notice of default to the Contractor, terminate all or part of this Contract if the Contractor:

- Fails to commence the Work under the Contract within the time specified in the Notice to Proceed;
- (2) Fails to make adequate progress as to endanger performance of this Contract in accordance with its terms;
- (3) Fails to make delivery of the equipment within the time specified in the Contract, including any Owner approved extensions;
- (4) Fails to comply with material provisions of the Contract;
- (5) Submits certifications made under the Contract and as part of their proposal that include false or fraudulent statements;
- (6) Becomes insolvent or declares bankruptcy;

If one or more of the stated events occur, the Owner will give notice in writing to the Contractor and Surety of its intent to terminate the contract for cause. At the Owner's discretion, the notice may allow the Contractor and Surety an opportunity to cure the breach or default.

If within ten days of the receipt of notice, the Contractor or Surety fails to remedy the breach or default to the satisfaction of the Owner, the Owner has authority to acquire equipment by other procurement action. The Contractor will be liable to the Owner for any excess costs the Owner incurs for acquiring such similar equipment.

Payment for completed equipment delivered to and accepted by the Owner shall be at the Contract price. The Owner may withhold from amounts otherwise due the Contractor for such completed equipment such sum as the Owner determines to be necessary to protect the Owner against loss because of Contractor default.

Owner will not terminate the Contractor's right to proceed with the Work under this clause if the delay in completing the work arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor. Examples of such acceptable causes include: acts of God; acts of the Owner; acts of another Contractor in the performance of a contract with the Owner; and severe weather events that substantially exceed normal conditions for the location.

If, after termination of the Contractor's right to proceed, the Owner determines that the Contractor was not in default, or that the delay was excusable, the rights and obligations of the parties will be the same as if the Owner issued the termination for the convenience of the Owner.

The rights and remedies of the Owner in this clause are in addition to any other rights and remedies provided by law or under this contract.

## 6. CLEAN AIR AND WATER POLLUTION CONTROL (2 CFR § 200 Appendix II(G))

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 U.S.C. § 740-7671q) and the Federal Water Pollution Control Act, as amended (33 U.S.C. § 1251-1387). The Contractor agrees to report any violation to the Owner immediately upon discovery. The Owner assumes responsibility for notifying the Environmental Protection Agency and the Federal Aviation Administration.

Contractor must include this requirement in all subcontracts that exceed \$150,000.

#### 7. DAVIS-BACON REQUIREMENTS (2 CFR § 200 Appendix II(D), 29 CFR PART 5)

#### 1 Minimum Wages.

(i) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Part 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: *Provided*, that the employer's payroll records accurately set forth the time spent in each classification and wage rates conformed under (1)(ii) of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can easily be seen by the workers.

(ii)(A) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall

approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

(1) The work to be performed by the classification requested is not performed by a classification in the wage determination; and

(2) The classification is utilized in the area by the construction industry; and

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

- (B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- (C) In the event the contractor, the laborers, or mechanics to be employed in the classification, or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30day period that additional time is necessary.
- (D) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraphs (1)(ii) (B) or (C) of this paragraph, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- (iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- (iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, *Provided* that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

#### 2. Withholding.

The Federal Aviation Administration or the Sponsor shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withhold from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including

any apprentice, trainee, or helper, employed or working on the site of work, all or part of the wages required by the contract, the Federal Aviation Administration may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

#### 3 Payrolls and basic records.

- Payrolls and basic records relating thereto shall be maintained by the contractor during the (i) course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records that show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and that show the costs anticipated or the actual costs incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.
- (ii) (A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division website at http://www.dol.gov/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Federal Aviation Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).
  - (B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) The payroll for the payroll period contains the information required to be provided under 29 CFR § 5.5(a)(3)(ii), the appropriate information is being

maintained under 29 CFR § 5.5(a)(3)(i) and that such information is correct and complete;

(2) Each laborer and mechanic (including each helper, apprentice and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations 29 CFR Part 3;

(3) Each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

- (C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (3)(ii)(B) of this section.
- (D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.
- (iii) The contractor or subcontractor shall make the records required under paragraph (3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the sponsor, the Federal Aviation Administration, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

#### 4 Apprentices and Trainees.

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program

does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination that provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.
- (iii) Equal Employment Opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

#### 5. Compliance With Copeland Act Requirements.

The contractor shall comply with the requirements of 29 CFR Part 3, which are incorporated by reference in this contract.

#### 6. Subcontracts.

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR Part 5.5(a)(1) through (10) and such other clauses as the Federal Aviation Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR Part 5.5.

#### 7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 10.1 through 10.10 of this section may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. Compliance With Davis-Bacon and Related Act Requirements.

All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR Parts 1, 3, and 5 are herein incorporated by reference in this contract.

9. Disputes Concerning Labor Standards.

Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

#### 10. Certification of Eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

8. EQUAL OPPORTUNITY CLAUSE (2 CFR § 200 Appendix II(C), 41 CFR § 60-1.4, 41 CFR § 60-4.3, Executive Order 11246)

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identify, or national origin. Such action shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.

(3) The contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provision, including sanctions for noncompliance: *Provided, however*, that in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States.

## 9. ENERGY CONSERVATION REQUIREMENTS (2 CFR § 200 Appendix II(H))

The Contractor and Subcontractor agree to comply with mandatory standards and policies relating to energy efficiency that are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6201 *et seq.*).

## 10. PROHIBITION OF SEGREGATED FACILITIES (41 CFR § 60)

1. The Contractor agrees that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Contractor agrees that a breach of this clause is a violation of the Equal Opportunity clause in this contract.

2. "Segregated facilities," as used in this clause, means any waiting rooms, rest areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user rest rooms or necessary dressing or sleeping areas provided to assure privacy between the sexes.

3. The Contractor shall include this clause in every subcontract and purchase order that is subject to the Equal Opportunity clause of this contract.

#### 11. STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (41 CFR 60-4.3)

1. As used in these specifications:

a. "Covered area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs (OFCCP), U.S. Department of Labor, or any person to whom the Director delegates authority;

c. "Employer identification number" means the Federal social security number used on the Employer's Quarterly Federal Tax Return, U.S. Treasury Department Form 941;

d. "Minority" includes:

(1) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin regardless of race);

(3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and

(4) American Indian or Alaskan native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the contractor is participating (pursuant to 41 CFR Part 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors shall be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved plan is individually required to comply with its obligations under the EEO clause and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The contractor shall implement the specific affirmative action standards provided in paragraphs 11.7a through 11.7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement nor the failure by a union with whom the contractor has a collective bargaining agreement to refer either minorities or women shall excuse the contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees shall be employed by the contractor during the training period and the contractor shall have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees shall be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The contractor shall document these efforts fully and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the contractor's employees are assigned to work. The contractor,

where possible, will assign two or more women to each construction project. The contractor shall specifically ensure that all foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source, or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the contractor by the union or, if referred, not employed by the contractor, this shall be documented in the file with the reason therefore along with whatever additional actions the contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the contractor has a collective bargaining agreement has not referred to the contractor a minority person or female sent by the contractor, or when the contractor has other information that the union referral process has impeded the contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under 11.7b above.

f. Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination, or other employment decisions including specific review of these items, with onsite supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and subcontractors with whom the contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students, and to minority and female recruitment and training organizations serving the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations,

such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer, and vacation employment to minority and female youth both on the site and in other areas of a contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

1. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments, and other personnel practices do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non-segregated, except that separate or single user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (11.7a through 11.7p). The efforts of a contractor association, joint contractor union, contractor community, or other similar groups of which the contractor is a member and participant may be asserted as fulfilling any one or more of its obligations under 11.7a through 11.7p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's, and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, if the particular group is employed in a substantially disparate manner (for example, even though the contractor has achieved its goals for women generally), the contractor may be in violation of the Executive Order if a specific minority group of women is underutilized.

10. The contractor shall not use the goals and timetables or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The contractor shall not enter into any subcontract with any person or firm debarred from Government contracts pursuant to Executive Order 11246.

12. The contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination, and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal

Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 11.7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR Part 60-4.8.

14. The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the Government, and to keep records. Records shall at least include for each employee, the name, address, telephone number, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

#### 12. VETERAN'S PREFERENCE (Title 49 U.S.C. 47112(c))

In the employment of labor (excluding executive, administrative, and supervisory positions), the contractor and all sub-tier contractors must give preference to covered veterans as defined within Title 49 United States Code Section 47112. Covered veterans include Vietnam era veterans, Persian Gulf veterans, Afghanistan-Iraq war veterans, disabled veterans, and small business concerns (as defined by 15 U.S.C. 632) owned and controlled by disabled veterans. This preference only applies when there are covered veterans readily available and qualified to perform the work to which the employment relates.

#### 13. OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION CONSTRUCTION SAFETY TRAINING

The Contractor and its subcontractors (if any subcontractors are retained) shall comply with all applicable provisions of section 292.675, Revised Statutes of Missouri, which statute is incorporated herein by reference and is made a part of this contract. Section 292.675 states that any person signing a contract to work on the construction of public works for any public body shall provide a ten hour Occupational Safety and Health Administration (OSHA) construction safety program for their on-site employees, which includes a course in construction safety and health approved by OSHA or a similar program approved by the Department of Labor and Industrial Relations which is at least as stringent as an approved OSHA program, unless such employees have previously completed the required program are required to complete the program within sixty (60) days of beginning work on such construction project. Any employee found on a worksite subject to section 292.675's requirements without documentation of the successful completion of this course shall have twenty (20) days to produce such documentation before being subject to removal from the project.

The Contractor shall forfeit as penalty to the public body on whose behalf the contract is made or awarded two thousand five hundred dollars (\$2,500) plus one hundred dollars (\$100) for each employee employed by the contractor or subcontractor, for each calendar day, or portion thereof, such employee is employed by the contractor or subcontractor without the required training. These penalties shall not begin to accrue until the sixty (60) day and twenty (20) day time periods described above have elapsed. The public body awarding the contract shall withhold and retain therefrom all sums and amounts due and owing as a result of any violation of section 292.675 when making payments to the Contractor under the contract. The Contractor resulting from the subcontractor sufficient sums to cover any penalties the public body has withheld from the Contractor resulting from the subcontractor's failure to comply with the terms of section 292.675.

## 14. COPELAND "ANTI-KICKBACK" ACT (2 CFR § 200 Appendix II(D), 29 CFR Parts 3 and 5)

Contractor must comply with the requirements of the Copeland "Anti-Kickback" Act (18 U.S.C. § 874 and 40 U.S.C. § 3145), as supplemented by Department of Labor regulation 29 CFR Part 3. Contractor and subcontractors are prohibited from inducing, by any means, any person employed on the project to give up any part of the compensation to which the employee is entitled. The Contractor and each subcontractor must submit to the Owner a weekly statement on the wages paid to each employee performing on covered work during the prior week. Owner must report any violations of the Act to the Federal Aviation Administration.

# 15. FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE) (29 U.S.C. § 201, et seq.)

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR Part 201, the Federal Fair Labor Standards Act (FLSA), with the same force and effect as if given in full text. The FLSA sets minimum wage, overtime pay, recordkeeping, and child labor standards for full and part time workers.

The Contractor has full responsibility to monitor compliance to the referenced statute or regulation. The Contractor must address any claims or disputes that arise from this requirement directly with the U.S. Department of Labor-Wage and Hour Division.

## 16. OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970 (20 CFR Part 1910)

All contracts and subcontracts that result from this solicitation incorporate by reference the requirements of 29 CFR Part 1910 with the same force and effect as if given in full text. The Contractor must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The Contractor retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (20 CFR Part 1910). The Contractor must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor-Occupational Safety and Health Administration.

#### 17. TEXTING WHEN DRIVING (Executive Order 13513, DOT Order 3902.10)

In accordance with Executive Order 13513, "Federal Leadership on Reducing Text Messaging While Driving" (10/1/2009) and DOT Order 3902.10 "Text Messaging While Driving" (12/30/2009), the Federal Aviation Administration encourages recipients of Federal grant funds to adopt and enforce safety policies that decrease crashes by distracted drivers, including policies to ban text messaging while driving when performing work related to a grant or subgrant.

In support of its initiative, the Owner encourages the Contractor to promote policies and initiatives for its employees and other work personnel that decrease crashes by distracted drivers, including policies that ban text messaging while driving motor vehicles while performing work activities associated with the project. The Contractor must include the substance of this clause in all sub-tier contracts exceeding \$3,500 that involve driving a motor vehicle in performance of work activities associated with the project.

## 18. PROCUREMENT OF RECOVERED MATERIALS (2 CFR § 200.322, 40 CFR Part 247)

Contractor and subcontractor agree to comply with Section 6002 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, and the regulatory provisions of 40 CFR Part 247. In the performance of this contract and to the extent practicable, the Contractor and subcontractors are to use products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

- (a) The contract requires procurement of \$10,000 or more of a designated item during the fiscal year; or
- (b) The contractor has procured \$10,000 or more of a designated item using Federal funding during the previous fiscal year.
The list of EPA-designated items is available at <u>www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products</u>.

Section 6002(c) establishes exceptions to the preference for recovery of EPA-designated products if the contractor can demonstrate the item is:

- (a) Not reasonably available within a timeframe providing for compliance with the contract performance schedule;
- (b) Fails to meet reasonable contract performance requirements; or
- (c) Is only available at an unreasonable price.

### 19. BREACH OF CONTRACT TERMS (2 CFR § 200 Appendix II(A))

Any violation or breach of terms of this contract on the part of the Contractor or its subcontractors may result in the suspension or termination of this contract or such other action that may be necessary to enforce the rights of the parties of this agreement.

The Owner will provide the Contractor written notice that describes the nature of the breach and corrective actions the Contractor must undertake in order to avoid termination of the contract. The Owner reserves the right to withhold payments to the Contractor until such time the Contractor corrects the breach or the Owner elects to terminate the contract. The Owner's notice will identify a specific date by which the Contractor must correct the breach. The Owner may proceed with termination of the contract if the Contractor fails to correct the breach by the deadline indicated in the Owner's notice.

The duties and obligations imposed by the Contract Documents and the rights and remedies available thereunder are in addition to, and not a limitation of, any duties, obligations, rights and remedies otherwise imposed or available by law.

# 20. CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS (2 CFR § 200, Appendix II(E))

1. <u>Overtime Requirements</u>. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic, including watchmen and guards, in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

2. <u>Violation; Liability for Unpaid Wages; Liquidated Damages.</u> In the event of any violation of the clause set forth in paragraph 1 of this clause, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph 1 of this clause, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph 1 of this clause.

3. <u>Withholding for Unpaid Wages and Liquidated Damages.</u> The Federal Aviation Administration or the Owner shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 2 of this clause.

4. <u>Subcontractors</u>. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs 1 through 4 and also a clause requiring the subcontractor to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs 1 through 4 of this clause.

### 21. SEISMIC SAFETY (49 CFR Part 41)

The contractor agrees to ensure that all work performed under this contract, including work performed by subcontractors, conforms to a building code standard that provides a level of seismic safety substantially equivalent to standards established by the National Earthquake Hazards Reduction Program (NEHRP). Local building codes that model their code after the current version of the International Building Code (IBC) meet the NEHRP equivalency level for seismic safety.

### 22. RIGHT TO INVENTIONS (2 CFR § 200 Appendix II(F), 37 CFR § 401)

Contracts or agreements that include the performance of experimental, developmental, or research work must provide for the rights of the Federal Government and the Owner in any resulting invention as established by 37 CFR Part 401, Rights to Inventions Made by Non-Profit Organizations and Small Business Firms Under Government Grants, Contracts, and Cooperative Agreements. This contract incorporates by reference the patent and inventions rights as specified within 37 CFR §401.14. Contractor must include this requirement in all sub-tier contracts involving experimental, developmental or research work.

23. CERTIFICATION OF BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS (Sections 415 and 416 of Title IV, Division L of the Consolidated Appropriations Act, 2014, DOT Order 4200.6)

The bidder must complete the following two certification statements. The applicant must indicate its current status as it relates to tax delinquency and felony conviction by inserting a checkmark ( $\sqrt{}$ ) in the space following the applicable response. The bidder agrees that, if awarded a contract resulted from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

### Certifications

- (1) The bidder represents that it is ( ) is not ( ) a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.
- (2) The bidder represents that it is ( ) is not ( ) a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

<u>Note</u>: If a bidder responds in the affirmative to either of the above representations, the bidder is ineligible to receive an award unless the Sponsor has received notification from the agency suspension and debarment official (SDO) that the SDO has considered suspension or debarment and determined that further action is not required to protect the Government's interests. The bidder therefore must provide information to the Sponsor about its tax liability or conviction to the Sponsor, who will then notify MoDOT and/or the FAA, which will then notify the agency's SDO to facilitate completion of the required considerations before award decisions are made.

### Term Definitions:

Felony Conviction: Felony conviction means a conviction within the preceding twenty-four (24) months of a felony criminal violation under any Federal law and includes conviction of an offense defined in a section of the U.S. code that specifically classifies the offense as a felony and conviction of an offense that is classified as a felony under 18 U.S.C. § 3559.

Tax Delinquency: A tax delinquency is any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted, or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

### PART B DBE ADMINISTRATION

 Eligibility of DBE's: <u>Only</u> those firms currently certified as DBEs by the Missouri Department of Transportation (MoDOT), City of St. Louis, Metro, City of Kansas City, and Kansas City Area Transportation Authority are eligible to participate as DBEs on this contract. A list of these firms are available on MoDOT's Office of External Civil Rights webpage at the following address:

http://www.modot.mo.gov/business/contractor\_resources/External\_Civil\_Rights/DBE\_program.htm.

- 2. Counting DBE Participation Towards DBE Goals: DBE participation toward attainment of the goal will be computed on the basis of the subcontract prices agreed to between the contractor and subcontractors for the contract items or portions of items being sublet, as documented in the Proposal Form. Credit will only be given for use of DBEs that are certified or accepted according to this specification. DBE participation shall be counted toward meeting the DBE goal in accordance with the following:
  - a. **Commercially Useful Function:** The Sponsor shall count toward the DBE goal only those expenditures to DBEs that perform a commercially useful function in the work of the contract. A DBE performs a commercially useful function when it is responsible for execution of a distinct element of work by actually performing, managing, and supervising that work. To determine if a DBE is performing a commercially useful function, the amount of work subcontracted, industry practices, and other relevant factors will be evaluated. If consistent with industry practices, a DBE shall enter into a subcontract or other contractual written agreement. A DBE Contractor may subcontract a portion of the work up to the amount allowed under standard subcontracting contract provisions of normal industry practices. A DBE is performing a commercially useful function if the DBE is performing outside these guidelines.
  - b. Materials and Supplies: The Sponsor shall count toward the DBE goal the expenditures for materials and supplies obtained from DBE suppliers and manufacturers as described below. The DBEs must assume the actual and contractual responsibility for the provision of the materials and supplies:
    - The entire expenditure to a DBE manufacturer will be counted toward the DBE goal. A
      manufacturer must operate or maintain a factory or establishment that produces on the premises the
      materials or supplies that are obtained by the contractor.
    - (2) Sixty percent of expenditures to a DBE regular dealer will be counted toward the DBE goal. A regular dealer must perform a commercially useful function in the supply process, including buying the materials or supplies, maintaining an inventory, and regularly selling materials to the public. Bulk items such as steel, cement, gravel, stone, and petroleum products need not be kept in stock, but the dealer must own or operate distribution equipment.
    - (3) No credit will be given toward the DBE goal if the prime contractor makes a direct payment to a non-DBE material supplier. However, it will be permissible for a material supplier to invoice the prime contractor and the DBE jointly and be paid by the prime contractor making remittance to the DBE firm and material supplier jointly.
    - (4) No credit toward the DBE goal will be given for the cost of materials or equipment used in a DBE firm's work when those costs are paid by a deduction from the prime contractor's payment(s) to the DBE firm.
  - c. Work Classifications: DBE credit will count toward the contractual goal only for work actually performed by the DBE firm and within the Standard Industry Classification (SIC) code approved for that firm. The credit will be counted in the following manner:

- (1) Manufacturer: Credit is given for 100 percent of the value paid for materials furnished which become a permanent part of the project. A manufacturer is a firm that owns and operates the facilities to produce a product required by the project and purchased by the contractor.
- (2) Supplier: Credit is given for 60 percent of the value paid for materials furnished which becomes a permanent part of the project. A supplier sells goods to the general public and maintains an inventory at an owned or leased warehouse or store. Bulk items such as steel, petroleum projects, or rock do not have to be maintained in an on-site inventory. Credit will not be given for the cost of the materials and separate credit for the hauling of those same materials. Transportation of the materials is deemed part of the total cost.
- (3) Broker: Credit is given for 100 percent of the fees or commission received by the DBE firm for materials purchased, services provided, or equipment secured and resold to the contractor. Fees or commissions are defined as the difference between what the DBE firm paid for the materials purchased, services provided, or equipment secured and the price paid by the contractor to the DBE firm for those items. A broker does not manufacture or supply on a regular basis.
- (4) Trucker: Credit is given for 100 percent of the amount paid to the DBE trucker if that trucking is performed by the DBE, with employees of the DBE, using equipment owned or long-term leased by the DBE. However, if the DBE firm uses leased trucks, at least one truck owned by the firm must be used on the project.

Full credit will not be given for leased trucks unless they are leased on a long-term basis from another DBE firm, DBE owner operators, or a recognized commercial leasing operation. Firms licensed by the Missouri Public Service Commission as leasing agents qualify as a recognized leasing operation. Lease of trucks from the prime contractor will not be credited toward the DBE goal, other than possibly the portion constituting broker fees and commissions. This type of relationship will be subject to strict scrutiny.

All trucks used must be labeled clearly and visibly with a sign indicating the firm owning or leasing the vehicle. MoDOT will require submittal of a truck roster report, including ownership and vehicle identification information, on a regular basis. MoDOT project office or other designated personnel will review the rosters for verification and will monitor the trucks operating on the project. MoDOT will conduct random verification and report any irregularities to the External Civil Rights Unit for review.

In order for the use of a DBE trucker to be credited for the delivered price of materials supplies, the trucker must be certified as a supplier or manufacturer of the material, responsible for the quality standards of the material, negotiating the material price, payment, and select the source.

(a) Owner-Operator Trucking: The Sponsor shall count toward the DBE goal, the entire delivery fee paid to DBE owner-operators performing trucking for the contractor, if they appear on the contractor's payroll and separate records are furnished to the Sponsor documenting the expenditures. The records shall include for each owner-operator: their social security number; driver's license number; vehicle registration number; current vehicle license number; truck number; and a complete record of the contract fees paid to them.

If the DBE firm uses owner-operators to supplement their owned trucks, the DBE must be responsible for management and supervision of the entire trucking operation. The trucking arrangement or contract *cannot* be a contrived arrangement to meet the DBE goal. The DBE will be considered a broker, and only fees or commissions received will count toward the goal, if the DBE is not in full control, or does not have employees or trucks on the project.

d. Joint Venture: When a joint venture contract is involved, the Sponsor shall count towards the DBE goal that portion of the contract total dollar value equal to the percentage of ownership and control of each DBE firm within the joint venture. Such crediting is subject to the sponsor's acceptance of the joint

venture agreement. The Bidder must furnish the joint venture agreement with the DBE Participation Form. The joint venture agreement must include a detailed breakdown of the following:

- (1) Contract responsibility of the DBE for specific contract items of work,
- (2) Capital participation by the DBE,
- (3) Specific equipment to be provided by the DBE,
- (4) Specific responsibilities of the DBE regarding control of the joint venture,
- (5) Specific workers and skills to be provided by the DBE, and
- (6) Percentage distribution to the DBE of the projected profit or loss incurred by the joint venture.

The joint venture must be certified in writing by MoDOT.

- Award Documentation and Procedure: All Bidders shall certify in the Proposal Form their intent to meet or exceed the established goal or to demonstrate good faith efforts to meet the goal. Failure to make such certification or failure to demonstrate good faith efforts will render a bid non-responsive and will not be considered.
  - a. **DBE Participation Information:** All Bidders must complete the required DBE participation information in the Proposal Form, when a DBE goal has been established for the project. The information shall demonstrate the contractor's intended participation by certified DBE's. The information furnished shall consist of:
    - (1) The names and addresses of DBE firms that will participate in the contract;
    - (2) A description of the work that each DBE will perform;
    - (3) The dollar amount of the participation of each DBE firm participating;
    - (4) Written documentation (signed contract proposal) of the bidder/offeror's commitment to use a DBE subcontractor whose participation it submits to meet a contract goal;
    - (5) If the contract goal is not met, evidence of good faith efforts (see paragraph c below).

(Note: After award of the contract, the MoDOT External Civil Rights Office will contact by mail each DBE firm participating in the contract, requesting written confirmation from the DBE that it is participating in the contract as provided in the Proposal Form.)

- b. Sponsor Evaluation: In selecting the lowest responsible bidder, the Sponsor and MoDOT will evaluate the DBE information provided with the bid. The Sponsor and MoDOT may request additional DBE information. Prior to awarding the contract, the Sponsor will verify verbally and/or in writing that the information submitted by the apparent successful bidder is accurate and complete.
- c. Good Faith Efforts: If the bidder is unable to meet the DBE goal, the bidder must submit in and as part of its bid, written documentation and evidence of good faith efforts taken to meet the goal. Good faith efforts conducted after the bid opening will not be considered adequate to fulfill these bid requirements. Good faith efforts may include but are not limited to:
  - (1) Efforts to select portions of the work for performance by DBEs, in order to increase the likelihood of achieving the DBE goal. This can include, but is not limited to, breaking down contracts into economically feasible units to facilitate DBE participation. Selection of portions of work shall be at least equal to the DBE goal.
  - (2) Written notification to individual DBEs likely to participate in the contract sent at least 7 calendar days prior to the bid opening. The notification shall list specific items or types of work and shall be sent to a reasonable number of DBEs qualified to participate in the contract.
  - (3) Efforts to negotiate with DBEs for specific items of work including:
    - (a) Names, addresses, and telephone numbers of DBEs who were contacted, the dates of initial contact and information on further contacts made to determine with certainty if the DBEs were interested. <u>Personal or phone contacts are expected</u>;
    - (b) Description of the information provided to the DBEs regarding the plans, specifications and estimated quantities for portions of the work to be performed;

- (c) Individual statements as to why agreements with DBEs were not reached; and
- (d) Information on each DBE contacted but rejected and the reasons for the rejection.
- (4) Efforts to assist the DBE's that need assistance in obtaining bonding, insurance, or lines of credit required by the contractor.
- (5) Documentation that qualified DBEs are not available or not interested.
- (6) Advertisements in general circulation media, trade association publications and disadvantagedfocused media concerning subcontracting opportunities.
- (7) Efforts to use the services of available disadvantaged community organizations; disadvantaged contractor's groups; local, state and federal disadvantaged business assistance offices; and other organizations that provide assistance in recruitment and placement of DBEs.

The demonstration of good faith efforts by the contractor must prove the contractor actively and aggressively sought out DBEs to participate in the project. The following actions would <u>not</u> be considered acceptable reasons for failure to meet the DBE goal and would <u>not</u> constitute a good faith effort:

- (1) The DBE was unable to provide adequate performance and/or payment bonds.
- (2) A reasonable DBE bid was rejected based on price.
- (3) The DBE would not agree to perform the subcontract work at the prime contractor's unit bid price.
- (4) Union versus non-union status of the DBE firm.
- (5) The prime contractor would normally perform all or most of the work included in this contract.
- (6) The prime contractor solicited DBE participation by mail only.

Should MoDOT and the city determine that the bidder's submitted documentation on good faith efforts are inadequate, the bidder must make a written request for administrative reconsideration within 2 working days of the notification on lack of good faith efforts. That notice may be faxed or emailed to:

Missy Stuedle External Civil Rights Director P. O. Box 270 Jefferson City, Missouri 65102 Telephone: (573) 526-2978 Fax: (573) 526-0558 E-Mail: <u>missy.stuedle@modot.mo.gov</u>

The Administrative Reconsideration Committee will include 3 individuals MoDOT deems appropriate and the members will be familiar with the DBE program, bidding, construction, and/or contracting matters. The External Civil Rights Unit will process the request, including providing documentation of the determination, and notify the Administrative Reconsideration Committee of the request for review; however, neither the administrator, nor any member of MoDOT that had a part in the initial determination will be a part of the reconsideration determination.

As part of this reconsideration, the bidder will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so to the committee. The bidder may choose to meet in person with the Administrative Reconsideration Committee to discuss the finding. MoDOT and the city will notify the bidder, in writing of the decision on reconsideration, explaining the basis for finding that the bidder did or did not make adequate good faith efforts to meet the goal. The result of the reconsideration process is not administratively appealable to the USDOT.

4. Post Award Compliance: If the contract is awarded on less than full DBE goal participation, the contractor is not relieved of the responsibility to make a determined effort to meet the full goal amount during the life of the contract. In such a case, the contractor shall continue good faith efforts throughout the life of the contract to increase the DBE participation to meet the contract goal.

If a DBE is unwilling or unable to perform the work specified, the contractor shall request from the Sponsor and MoDOT, relief from the obligation to use that DBE. Efforts will be made by the contractor to acquire from the DBE a letter which states the reason the DBE is unwilling or unable to complete its obligations under the project. If this results in a DBE contract shortfall, the contractor shall immediately take steps to obtain another certified DBE to perform an equal dollar value of allowable credit. If a new DBE cannot be found, the contractor shall submit evidence of good faith efforts within 15 calendar days of the request for relief. The contractor shall submit the new DBE's name, address, work items and the dollar amount of each item. The sponsor and MoDOT shall approve the new DBE before the DBE starts work.

If the contractor fails to conform to the approved DBE participation or if it becomes evident that the remaining work will not meet the approved participation, then the contractor shall submit evidence showing either how the contractor intends to meet the DBE participation, or what circumstances have changed affecting the DBE participation. If the sponsor is not satisfied with the evidence, then liquidated damages may be assessed for the difference between the approved and actual DBE participation.

- 5. Records and Reports: The contractor and all of its subcontractors shall keep records as necessary to determine compliance with the DBE obligations. The records shall include but are not limited to:
  - a. Record of DBE Participation: The names of disadvantaged and non-disadvantaged subcontractors, regular dealers, manufacturers, consultant and service agencies; the type of work or materials or services performed on or incorporated in the project; and the actual value of such work.
  - b. Efforts to Utilize DBE Firms: Documentation of all efforts made to seek out disadvantaged contractor organizations and individual disadvantaged contractors for work on this project. All correspondence, personal contacts, telephone calls, etc., to obtain the services of DBEs should be documented.
  - c. Final DBE Certification: Upon completion of the individual DBE firm's work, the prime contractor shall submit a certification letter attesting to the actual work performed by the DBE firm and the amount paid the DBE firm. This certification letter shall be signed by both the prime contractor and the DBE firm. A sample certification letter is available on the MoDOT Aviation website.

### PART C LOCAL PROVISIONS

GENERAL DESCRIPTION. These Supplementary Provisions with the accompanying Plans, Specifications and related documents as hereinafter listed cover the requirements of the Owner for construction of various improvements to the Salem Memorial Airport. The airport is located three miles southwest of Salem, Missouri. The work consists of

### Construct 6-Unit T-Hangar

**CONTRACT SPECIFICATIONS.** The Specifications which are bound herewith and which shall govern the materials furnished and the work to be performed in construction of the work under the Contract based thereon, are identified and indexed in the Table of Contents at the beginning of this volume of the Contract Documents.

CITY OF SALEM, MISSOURI BIDDING POLICY. Bids shall not be accepted from, nor contracts awarded, to a contractor who is in default on the payment of taxes, license, or other monies due to the city. All bids received that are submitted by individuals or businesses with their principal place of business located in Dent County, Missouri, shall be multiplied by a preference factor of 0.95 that will reduce the bid amount for purposes of consideration by the city in awarding the contract for goods or services. The actual bid amount multiplied by the appropriate preference factors shall be termed the adjusted local bid amount. The adjusted local bid amount shall be used in lieu of the actual bid amount in comparing competitive bids.

**COPIES OF PLANS AND SPECIFICATIONS.** The Contractor will be furnished without cost to him five (5) copies of all Specifications and five (5) sets of all Plans, together with any and all addenda thereto. The Contractor shall keep one copy of all such Specifications and Plans constantly accessible on the work.

**LIQUIDATED DAMAGES.** Should the Contractor fail to complete the work within the required number of calendar days, or within such extra time as may have been allowed by extension, the Owner will deduct from any monies due or coming due the Contractor, the amount indicated in the Proposal for each calendar day that the work shall remain uncompleted. This sum shall be considered and treated not as a penalty but as fixed, agreed and liquidated damages due the Owner from the Contractor for reasons of inconvenience to the public, added cost of engineering, administration, supervision, inspection and other items which have caused an expenditure of public funds resulting from his failure to complete the work within the time specified in the Contract.

**DEFENSE OF SUITS.** In case any action at law or suit in equity is brought against the Owner or any officer or agent thereof, for or on account of the failure, omission, or neglect of the Contractor to do and perform any of the covenants, acts, matters, or things by this Contract undertaken to be done or performed, or for the injury or damage caused by the negligence or alleged negligence of the Contractor or his subcontractors or his or their agents, or in connection with any claim or claims based on the lawful demands of subcontractors, workmen, material men, or suppliers of machinery and parts thereof, equipment, power tools, and supplies incurred in the fulfillment of this Contract, the Contractor shall indemnify and save harmless the Owner and officers and agents of the Owner, of and from all losses, damages, costs, expenses, judgments, or decrees what ever arising out of such action or suit that may be brought as aforesaid.

**INSURANCE.** The Contractor shall secure, and maintain throughout the duration of this Contract, insurance of such types and in such amounts as may be necessary to protect himself against all hazards or risks of loss as hereinafter designated and specified. The form and limits of such insurance, together with the underwriter thereof in each case, shall be approved by the Owner but, regardless of such approval, it shall be the responsibility of the Contractor to maintain adequate insurance coverage at all times. Failure of the Contractor to maintain such coverage shall not relieve him of any contractual responsibility or obligation.

a. If a part of the Contract work is to be sublet, the Contractor shall:

(1) Cover any and all subcontractors in his insurance policies, or

(2) Require each subcontractor not so covered to secure insurance which will protect said subcontractor against all applicable hazards or risks of loss designated herein.

b. Satisfactory certificates of insurance shall be filed by the Contractor and all Subcontractors with the Owner prior to starting any construction work for or in connection with this Contract. Said certificates shall state that ten (10) day's written notice will be given the Owner before any policy covered thereby is changed or canceled.

c. <u>Workmen's Compensation and Employers' Liability Insurance</u>. This insurance shall protect the Contractor against any and all claims brought under the Workmen's Compensation Law for the state or states involved in work performed under this Contract. It shall also protect the Contractor against claims for injury to, disease or death of workmen engaged in work under this Contract which, for any reason, may not fall within the provisions of the Workmen's Compensation Act.

Workmen's Compensation Statutory

Employers' Liability

\$100,000 (each accident) \$500,000 (disease-policy limit) \$100,000 (disease-each employee)

d. <u>Comprehensive General Liability Insurance</u>. This insurance, to be on the comprehensive form, shall protect the Contractor against any and all claims arising from injuries to members of the public or damage to property of others arising out of any act or omission of the Contractor, his agents, employees or subcontractor, in connection with the operation or performance of the work for and in connection with this Contract. In addition, this general liability insurance policy shall specifically insure the contractual liability of the Contractor assumed under the foregoing Paragraph, "Defense of Suits".

The property damage liability coverage under this policy shall contain no exclusion relative to blasting, explosion, collapse of buildings, or damage to underground property.

Liability limits for general liability insurance coverage under this policy shall be not less than the following:

Bodily Injury	\$500,000 (personal & advertising injury) \$500,000 (each occurrence) \$5,000 (medical expense, any one person)	
Property Damage	\$500,000 (products-comp/ops aggregate) \$500,000 (general aggregate) \$50,000 (fire damage)	

e. <u>Comprehensive Automobile Liability Insurance</u>. This insurance, to be on the comprehensive form, shall protect the Contractor against any and all claims for injuries to members of the public and damage to property of others arising from the use of automobiles and trucks in connection with the performance of work under this Contract, and shall cover the operation on or off the site of the work of all motor vehicles licensed for highway use, whether they are owned, non-owned, or hired by the Contractor. The policy shall include an "all states" endorsement.

Liability limits for automobile liability insurance coverage under this policy shall be not less than the following:

Combined Single Limit \$500,000 each person

**EXTENSION OF CONTRACT TIME.** The Contractor is requested to bring to the attention of the Engineer, by letter, during the progress of the work, the occurrence of events which the Contractor considers may warrant extensions of time under the conditions of the Contract. If the Contract is not completed within the time stipulated, the Contractor shall at the conclusion of the work, present to the Engineer a written statement presenting his view upon all matters of time extensions.

The amount of all extensions of time for whatever reason granted shall be determined by the Engineer with due consideration given to working seasons and working conditions. In general, only actual and not hypothetical days of delay will be considered. The owner shall have authority to grant additional extensions of time as they may deem advisable and justifiable.

Promptly after the award of the Contract, the Contractor shall submit for approval to the Engineer a written program of construction outlining the proposed operations and the order of completion of the various parts in sufficient detail to demonstrate to the Engineer the adequacy of the progress to complete the construction within the time provided. No payment shall be made to the Contractor on any estimate until such a program has been submitted and approved.

Should it become evident at any time during construction that construction operations will or may fall behind the schedule of this first program of construction, the Contractor shall upon request promptly submit revised written schedules setting out operations, methods and equipment, added amount of labor, or of working shifts, night work, etc., by which lost time shall be made up, and shall confer with the Engineer until an approved modification of the original program shall have been secured. No payments on any estimates shall be made to the Contractor after such request is made until a modified program has been provided by the Contractor and approved by the Engineer. Execution of the work according to accepted program of construction, or approved modifications thereof, shall be an obligation of the Contract.

Should the Contractor fail to complete the work on the required calendar date as stipulated in the Proposal or within such extra time as may have been allowed by extension, the Engineer will deduct from any monies due or coming due the Contractor, the amount stipulated in the Proposal of said extension of same that the work shall remain uncompleted. This sum shall be considered and treated not as penalty but as fixed, agreed and liquidated damages due to the Owner from the Contractor by reason of interference with business, convenience to the public, added cost of engineering, administration, supervision and other items which have caused an expenditure of public funds resulting from his failure to complete the work within the time specified in the Contract.

Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, shall in no way operate as a waiver on the part of the Owner of any of its rights under the Contract.

Neither by the act of taking over the work nor by the annulment of the Contract nor by requiring the Surety to complete the Contract shall the owner forfeit the right to recover liquidated damages from the Contractor or his Surety for failure to complete the Contract within the specified time.

**DUST CONTROL.** Adequate precaution should be taken to insure that excessive dust does not become airborne during construction. No separate payment will be made for performing dust control or for the water used for this purpose, but the cost of these items shall be subsidiary to other items in the Contract.

**CONTRACTOR'S RESPONSIBILITY.** The Engineer's project representative shall not have responsibility for the construction site conditions, including safety, operations, equipment, or personnel other than employees of the Engineer. The Contractor is responsible to construct the project in conformance with the Plans and Specifications. The Contractor has the responsibility for safety, safety precautions and safety programs on the site. He has the responsibility and duty to provide a safe working environment for his employees or employees of others over whom he has supervision, direction and control as well as providing a safe environment for those who are required or are permitted to have access to the site including but not exclusive to engineer and owner personnel.

## PART D FEDERAL AND STATE WAGE RATES

This Page Intentionally Left Blank

"General Decision Number: M020230001 04/14/2023

Superseded General Decision Number: MO20220001

State: Missouri

Construction Types: Heavy and Highway

Counties: Missouri Statewide.

HEAVY AND HIGHWAY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(2)-(60).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	<ul> <li>Executive Order 14026</li> <li>generally applies to the contract.</li> <li>The contractor must pay all covered workers at</li> <li>least \$16.20 per hour (or the applicable wage rate</li> <li>listed on this wage</li> <li>determination, if it is</li> <li>higher) for all hours</li> <li>spent performing on the contract in 2023.</li> </ul>
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:	<ul> <li>Executive Order 13658 generally applies to the contract.</li> <li>The contractor must pay all covered workers at least \$12.15 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2023.</li> </ul>

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification	Number	Publication	Date
0		01/06/2023	
1		01/27/2023	
2		03/03/2023	

SAM.gov

3	03/17/2023
4	03/24/2023
5	04/14/2023

CARP0002-002 05/01/2022

ST. LOUIS COUNTY AND CITY

	Rates	Fringes
Carpenters	\$ 39.94	19.50
CARP0005-006 05/01/2021		
CASS (Richards-Gebauer AFB ONLY), COUNTIES	CLAY, JACKSON,	PLATTE AND RAY
	Rates	Fringes
Carpenters: CARPENTERS & LATHERS MILLWRIGHTS & PILEDRIVERS	\$ 41.37 \$ 41.37	18.90 18.90
CARP0011-001 05/01/2022		
	Rates	Fringes
Carpenter and Piledriver ADAIR, AUDRAIN (West of Hwy 19), BOONE, CALLAWAY, CHARITON, COLE, COOPER, HOWARD, KNOX,LINN, MACON, MILLER, MONITEAU,MONROE, OSAGE, PUTNAM, RANDOLPH, SCHUYLER, SHELBY AND SULLIVAN COUNTIESS ATCHISON, ANDREW, BATES, CALDWELL, CARROLL,DAVIESS, DEKALB,GENTRY, GRUNDY, HARRISON, HENRY, HOLT, LIVINGSTON, MERCER, NODAWAY,ST. CLAIR, SALINE	34.06	19.20
AND WORTH COUNTIES AUDRAIN (East of Hwy.19), RALLS MARTON LEWIS	5 32.43	19.20
CLARK AND SCOTLAND COUNTIES. BARRY, BARTON, CAMDEN, CEDAR, CHRISTIAN, DADE, DALLAS, DOUGLAS, GREENE, HICKORY, JASPER, LACLEDE, LAWRENCE, MCDONALD, NEWTON, OZARK, POLK, STONE, TANEY, VERNON.	5 34.07	19.20
WEBSTER AND WRIGHT COUNTIES. BENTON, MORGAN AND PETTIS BOLLINGER, BUTLER, CAPE GIRARDEAU, DUNKLIN, MISSISSIPPI, NEW MADRID, PEMISCOT, PERRY, STE. GENEVIEVE, SCOTT. STODDARD	5 32.00 5 32.48	19.20 19.20
AND WAYNE COUNTIES	33.90	19.20
AND LAFAYETTE COUNTIES\$ CARTER, HOWELL, OREGON AND	33.20	19.20

SAM.gov

	RIPLEY COUNTIES\$	32.77	19.20
	CRAWFORD, DENT, GASCONADE,		
	IRON, MADISON, MARIES,		
	MONTGOMERY, PHELPS,		
	PULASKI, REYNOLDS, SHANNON		
	AND TEXAS COUNTIES\$	33.89	19.20
	FRANKLIN COUNTY\$	37.59	19.20
	JEFFERSON AND ST. CHARLES		
	COUNTIES\$	39.94	19.50
	LINCOLN COUNTY\$	35.91	19.20
	PIKE, ST. FRANCOIS AND		
	WASHINGTON COUNTIES\$	34.74	19.20
	WARREN COUNTY\$	36.38	19.20
-			

ELEC0001-002 07/17/2022

BOLLINGER, BUTLER, CAPE GIRARDEAU, CARTER, DUNKLIN, FRANKLIN, IRON, JEFFERSON, LINCOLN, MADISON, MISSISSIPPI, NEW MADRID, PEMISCOT, PERRY, REYNOLDS, RIPLEY, ST. CHARLES, ST. FRANCOIS, ST. LOUIS (City and County), STE. GENEVIEVE, SCOTT, STODDARD, WARREN, WASHINGTON AND WAYNE COUNTIES

	Rates	Fringes
Electricians	\$ 43.56	29.10
ELEC0002-001 09/04/2022		

ADAIR, AUDRAIN, BOONE, CALLAWAY, CAMDEN, CARTER, CHARITON, CLARK, COLE, COOPER, CRAWFORD, DENT, FRANKLIN, GASCONADE, HOWARD, HOWELL, IRON, JEFFERSON, KNOX, LEWIS, LINCON, LINN, MACON, MARIES, MARION, MILLER, MONITEAU, MONROE, MONTGOMERY, MORGAN, OREGON, OSAGE, PERRY, PHELPS, PIKE, PULASKI, PUTNAM, RALLS, RANDOLPH, REYNOLDS, RIPLEY, ST. CHARLES, ST. FRANCOIS, ST. LOUIS (City and County), STE. GENEVIEVE, SCHUYLER, SCOTLAND, SHANNON, SHELBY, SULLIVAN, TEXAS, WARREN AND WASHINGTON COUNTIES

			Rates	Fringes
Line	Construct	ion:		
	Equipment	Operator\$	44.16	23.14
	Groundman	& Truck Driver\$	33.74	19.34
	Lineman &	Cable Splicer\$	51.45	25.81

\* ELEC0053-004 01/01/2023

Rates	Fringes
-------	---------

Line Construction: (ANDREW, ATCHINSON, BARRY, BARTON, BUCHANAN, CALDWELL, CEDAR, CHRISTIAN, CLINTON, DADE, DALLAS, DAVIES,, DEKALB, DOUGLAS, GENTRY, GREENE, GRUNDY, HARRISON, HICKORY, HOLT, JASPER, LACLEDE, LAWRENCE, LIVINGSTON, MCDONALD, MERCER, NEWTON, NODAWAY, OZARK, POLK, ST. CLAIR, STONE, TANEY, VERNON, WEBSTER, WORTH AND WRIGHT COUNTIES)

4/27/23, 3:42 PM		SAM.gov
Groundman Powderman	\$ 34.25	18.81
Groundman	\$ 31.96	18.03
Lineman Operator	\$ 46.74	23.09
lineman.	\$ 51.82	24.89
Line Construction: (BATES.		0.000
RENTON CAPROLI CASS CLAV		
HENRY JACKEON JOUNSON		
HENRY, JACKSON, JOHNSON,		
LAFAYETTE, PETTIS, PLATTE,		
RAY AND SALINE COUNTIES)		44.24
Groundman Powderman	\$ 33.58	18.34
Groundman	\$ 31.33	17.60
Lineman Operator	\$ 45.60	22.48
Lineman	\$ 50.31	24.11
ELEC0095-001 06/01/2020		
BARRY, BARTON, CEDAR, DADE, J ST CLAIR, AND VERNON COUNTIES	ASPER, LAWRENCE,	MCDONALD, NEWTON,
	Rates	Fringes
Electricians:		
Cable Splicers	\$ 25.40	12.19
Electricians	\$ 27.43	17.44
ELEC0124-007 09/28/2021		
JOHNSON, LAFAYETTE, MORGAN, P COUNTIES:	ETTIS, PLATTE, R	AY AND SALINE
	Rates	Fringes
Electricians	\$ 41.79	23.67
ELEC0257-003 03/01/2023		
AUDRAIN (Except Cuivre Townsh CHARITON, COLE, CRAWFORD, DEN MILLER, MONITEAU, OSAGE, PHEL	ip), BOONE, CALL T, GASCONADE, HO PS AND RANDOLPH	AWAY, CAMDEN, WARD, MARIES, COUNTIES
	Rates	Fringes
Electricians:		
Cable Splicers	\$ 30.42	16.085
Electricians	\$ 37.00	20.88
ELEC0350-002 12/01/2022		
ADAIR, AUDRAIN (East of Highw	av 19), CLARK K	NOX. LEWIS. LINN
MACON, MARION, MONROE, MONTGO SCHUYLER, SCOTLAND, SHELBY AN	MERY, PIKE, PUTN D SULLIVAN COUNT	AM, RALLS, IES
	Rates	Fringes
Electricians	\$ 35.50	19.94
ELEC0453-001 09/01/2022		
	and the second second	1. C. C. C.
	Rates	Fringes

SAM.gov

Electricians: CHRISITAN, DALLAS, DOUGLAS, GREENE, HICKORY, HOWELL, LACLEDE, OREGON, OZARK, POLK, SHANNON,		
WEBSTER and WRIGHT COUNTIES.\$	30.00	17.26
PULASKI and TEXAS COUNTIES\$	35.29	26.40
STONE and TANEY COUNTIES\$	25.88	16.45
ELEC0545-003 06/01/2022		
ANDREW, BUCHANAN, CLINTON, DEKALB, GENTRY, HARRISON, DAVIESS, GRUNDY, AND CALDWELL COUNTIES	ATCHISON WORTH, I	N, HOLT, MERCER, LIVINGSTON, NODAWAY,
I	Rates	Fringes
Electricians:\$	36.00	16.39
ELEC0702-004 01/02/2023		
BOLLINGER, BUTLER, CAPE GIRARDEAU, MISSISSIPPI, NEW MADRID, PEMISCOT, COUNTIES	DUNKLIN, SCOTT, S	, MADISON, STODDARD AND WAYNE
	Rates	Fringes
Line Construction: Groundman - Class A\$ Groundman-Equipment	33.63	29%+8.35
other equipment)\$ Heavy-Equipment Operator	42.65	29%+8.35
class I (all crawler type	18 67	20%+8 35
Lineman.	59.34	29%+8.35
ENGI0101-001 05/01/2020		
ANDREW, ATCHISON, BATES, BENTON, BL CHARITON, CLINTON, COOPER, DAVIESS, HARRISON, HENRY, HOLT, HOWARD, JOHN LIVINGSTON, MERCER, NODAWAY, PETTIS COUNITES	JCHANAN, DEKALB, NSON, LAF 5, SALINE	CALDWELL, CARROLL, GENTRY, GRUNDY, AYETTE, LINN, , SULLIVAN AND WORTH
R	Rates	Fringes
Power equipment operators:		
GROUP 1\$	34.73	18.20
GROUP 2\$	34.33	18.20
GROUP 3\$	32.33	18.20
OWER EQUIPMENT OPERATORS CLASSIFIC	ATIONS	
GROUP 1: Asphalt roller operator spreader; asphalt plant operator;	, finish auto gr	; asphalt paver and ader or trimmer or

spreader; asphalt plant operator; auto grader or trimmer or sub-grader; backhoe; blade operator (all types); boilers -2; booster pump on dredge; bulldozer operator; boring machine (truck or crane mounted); clamshell operator; concrete mixer paver; concrete plant operator; concrete pump operator; crane operator; derrick or derrick trucks; ditching machine; dragline operator; dredge engineman;

SAM.gov

dredge operator; drill cat with compressor mounted (self-contained) or similar type self- propelled rotary drill (not air tract); drilling or boring machine (rotary-self-propelled); finishing machine operator; greaser; high loader-fork lift-skid loader (all types); hoisting engineer (2 active drums); locomotive operator (standard guage); mechanics and welders (field and plants); mucking machine operator; pile drive operator; pitman crane or boom truck (all types); push cat; quad track; scraper operators (all types); shovel operator; sideboom cats; side discharge spreader; skimmer scoop operators; slip form paver operator (CMI, Rex, Gomeco or equal); la tourneau rooter (all tiller types); tow boat operator; truck crane; wood and log chippers (all types).

GROUP 2: A-frame truck operator; articulated dump truck; back filler operator; boilers (1); chip spreader; churn drill operator; compressor; concrete mixer operator, skip loader; concrete saws (self-propelled); conveyor operator; crusher operator; distributor operator; elevating grader operator; farm tractor (all attachments); fireman rig; float operator; form grade operator; hoisting engine (one drum); maintenance operator; multiple compactor; pavement breaker, self-propelled hydra-hammer (or similar type); paymill operator; power shield; pumps; roller operator (with or without blades); screening and washing plant; self-propelled street broom or sweeper; siphons and jets; straw blower; stump cutting machine; siphons and jets; tank car heater operator (combination boiler and booster); welding machine; vibrating machine operator (not hand held); welding machine.

GROUP 3: (a) Oiler;

(b) Oiiler driver(c) Mechanic.

HOURLY PREMIUMS:

THE FOLLOWING CLASSIFICATIONS SHALL RECEIVE (\$ .25) ABOVE GROUP 1 RATE: Dragline operator - 3 yds. & over; shovel 3 yds. & over; clamshell 3 yds. & over; Crane, rigs or piledrivers, 100' of boom or over (incl. jib.), hoist each additional active drum over 2 drums

THE FOLLOWING CLASSIFICATIONS SHALL RECEIVE (\$ .50) ABOVE GROUP 1 RATE: Tandem scoop operator; crane, rigs or piledrivers 150' to 200' of boom (incl. jib.)

THE FOLLOWING CLASSIFICATIONS SHALL RECEIVE (\$ .75) ABOVE GROUP 1 RATE: Crane rigs, or piledrivers 200 ft. of boom or over (including jib.)

ENGI0101-005 04/01/2022

CASS, CLAY, JACKSON, PLATTE AND RAY COUNTIES

Rates Fringes

Power equipment operators:

GRO	UP 1\$ 38.42	20.44
GRO	UP 2\$ 37.38	20.44
GRO	UP 3\$ 32.91	20.44
GRO	UP 4\$ 36.26	20.44

### POWER EQUIPMENT OPERATORS CLASSIFICATIONS

SAM.gov

GROUP 1: Asphalt roller operator, finish; asphalt paver and spreader; asphalt plant operator; auto grader or trimmer or sub-grader; backhoe; blade operator (all types); boilers-2; booster pump on dredge; boring machine (truck or crane mounted): bulldozer operator: clamshell operator; concrete cleaning decontamination machine operator; concrete mixer paver; concrete plant operator; concrete pump operator; crane operator; derrick or derrick trucks; ditching machine; dragline operator; dredge engineman; dredge operator; drillcat with compressor mounted (self-contained) or similar type self propelled rotary drill (not air tract); drilling or boring machine (rotary self-propelled); finishing machine operator; greaser; heavy equipment robotics operator/mechanic; horizontal directional drill operator; horizontal directional drill locator; loader-forklift - skid loader (all types); hoisting engineer (2 active drums): locomotive operator (standard guage); master environmental maintenance mechanic; mechanics and welders (field and plants); mucking machine operator; piledrive operator; pitman crane or boom truck (all types); push cat; quad-track; scraper operators (all types); shovel operator; side discharge spreader; sideboom cats; skimmer scoop operator; slip-form paver (CMI, REX, Gomaco or equal); la tourneau rooter (all tiller types); tow boat operator; truck crane; ultra high perssure waterjet cutting tool system operator/mechanic; vacuum blasting machine operator/mechanic; wood and log chippers (all types)

GROUP 2: ""A"" Frame truck operator; back filler operator; boilers (1); chip spreader; churn drill operator; concrete mixer operator, skip loader; concrete saws (self-propelled); conveyor operator; crusher operator; distributor operator; elevating grader operator; farm tractor (all attachments); fireman rig; float operator; form grader operator; hoisting engine (1 drum); maintenance operator; multiple compactor; pavement breaker, self-propelled hydra- hammer (or similar type); power shield; paymill operator; pumps; siphons and jets; stump cutting machine; tank car heater operator (combination boiler and booster); compressor; roller operator (with or without blades); screening and washing plant; self-propelled street broom or sweeper; straw blower; tank car heater operator (combination boiler and booster); vibrating machine operator (not hand held)

GROUP 3: Oilers

GROUP 4: Oiler Driver (All Types)

FOOTNOTE: HOURLY PREMIUMS FOLLOWING CLASSIFICATIONS SHALL RECEIVE (\$1.00) ABOVE GROUP 1 RATE: Clamshells - 3 yd. capacity or over; Cranes or rigs, 80 ft. of boom or over (including jib); Draglines, 3 yd. capacity or over; Piledrivers 80 ft. of boom or over (including jib); Shovels & backhoes, 3 yd. capacity or over.

ENGI0101-022 05/01/2019

BARRY, BARTON, CAMDEN, CEDAR, CHRISTIAN, DADE, DALLAS, DOUGLAS, GREENE, HICKORY, JASPER, LACLEDE, LAWRENCE, MCDONALD, NEWTON,

OZARK, POLK, ST. CLAIR, STONE, TANEY, VERNON, WEBSTER AND WRIGHT COUNTIES and CITY OF SPRINGFIELD

		Rates	Fringes
Power equip	oment operators:		
GROUP	1\$	31.72	14.88
GROUP	2\$	31.37	14.88
GROUP	3\$	31.17	14.88
GROUP	4\$	29.12	14.88

#### POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Asphalt finishing machine & trench widening spreader; asphalt plant console operator; autograder; automatic slipform paver; backhoe; blade operator - all types: boat operator - tow; boilers-2; central mix concrete plant operator; clamshell operator; concrete mixer paver; crane operator; derrick or derrick trucks; ditching machine; dozer operator; dragline operator; dredge booster pump; dredge engineman; dredge operator; drill cat with compressor mounted on cat; drilling or boring machine rotary self-propelled; highloader; hoisting engine - 2 active drums: launch hammer wheel: locomotive operator: standard guage; mechanic and welders; mucking machine; off-road trucks; piledriver operator; pitman crane operator; push cat operator; quad trac; scoop operator all types; shovel operator; sideboom cats; skimmer scoop operators; trenching machine operator; truck crane.

GROUP 2: A-frame; asphalt hot-mix silo; asphalt plant fireman (drum or boiler); asphalt plant man; asphalt plant man; asphalt plant mixer operator; asphalt roller operator; backfiller operator; barber-greene loader; boat operator (bridges and dams); chip spreader; concrete mixer operator - skip loader; concrete plant operator; concrete pump operator; crusher operator; dredge oiler; elevating grader operator; fork lift; greaser-fleet; hoisting engine - 1; locomotive operator - narrow gauge; multiple compactor; pavement breaker; powerbroom - self-propelled; power shield; rooter; side discharge concrete spreader; slip form finishing machine; stumpcutter machine; throttle man; tractor operator (over 50 h.p.); winch truck.

GROUP 3: Boilers - 1; chip spreader (front man); churn drill operator; clef plane operator; concrete saw operator (selfpropelled); curb finishing machine; distributor operator; finishing machine operator; flex plane operator; float operator; form grader operator; pugmill operator; roller operator, other than high type asphalt; screening & washing plant operator; siphons & jets; sub-grading machine operator; spreader box operator, self-propelled (not asphalt); tank car heater operator (combination boiler & booster); tractor operator (50 h.p. or less); Ulmac, Ulric or similar spreader; vibrating machine operator, not hand;

GROUP 4: Grade checker; Oiler; Oiler-Driver

#### HOURLY PREMIUMS:

The following classifications shall receive \$ .25 above GROUP 1 rate: Clamshells - 3 yds. or over; Cranes - Rigs or Piledrivers, 100 ft. of boom or over (including jib);

SAM.gov

Draglines - 3 yds. or over; Hoists - each additional active drum over 2 drums; Shovels - 3 yds. or over;

The following classifications shall receive \$ .50 above GROUP 1 rate: Tandem scoop operator; Cranes - Rigs or Piledrivers, 150 ft. to 200 ft. of boom (including jib); Tandem scoop.

The following classifications shall receive \$ .75 above GROUP 1 rate: Cranes - Rigs or Piledrivers, 200 ft. of boom or over (including jib.).

.....

ENGI0513-004 05/05/2022

FRANKLIN, JEFFERSON, LINCOLN, ST CHARLES, AND WARREN COUNTIES

Rates Fringes

Power equipment operators:

GROUP 1	\$ 38.36	28.93
GROUP 2	\$ 38.36	28.93
GROUP 3	\$ 37.06	28,93
GROUP 4	\$ 36.61	28.93

### POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Backhoe, Cable; Backhoe, Hydraulic (2 cu yds bucket and under regardless of attachment, one oiler for 2 or 3, two oilers for 4 through 6); Backhoe, Hydraulic over 2 cu yds; Cableway; Crane, Crawler or Truck; Crane, Hydraulic -Truck or Cruiser mounted, 16 tons and over; Crane, Locomotive; crane with boom including jib over 100 ft from pin to pin; Crane using rock socket tool; Derrick, Steam; Derrick Car and Derrick Boat; Dragline, 7 cu yds and over; Dredge; Gradall, Crawler or tire mounted; Locomotive, Gas, Steam & other powers; Pile Driver, Land or Floating; Scoop, Skimmer; Shovel, Power (Electric, Gas, Steam or other powers); Shovel, Power (7 cu yds and over); Switch Boat; Whirley; Air Tugger with air compressor; Anchor Placing Barge; Asphalt Spreaker; Athey Force Feeder Loader, self-propelled; Backfilling Machine; Boat Operator - Push Boat or Tow Boat (job site); Boiler, High Pressure Breaking in Period; Boom Truck, Placing or Erecting; Boring Machine, Footing Foundation; Bullfloat; Cherry Picker; Combination Concrete Hoist and Mixer (such as Mixermobile); Compressor, Two 125 CFM and under; Compressor, Two through Four over 125 CFM; Compressor when operator runs throttle; Concrete Breaker (Truck or Tractor mounted); Concrete Pump (such as Pumpcrete machine); Concrete Saw (self-propelled); Concrete Spreader; Conveyor, Large (not selfpropelled) hoisting or moving brick and concrete into, or into and on floor level, one or both; Crane, Cimbing (such as Linden); Crane, Hydraulic - Rough Terrain, self-propelled; Crane, Hydraulic - Truck or Cruiser mounted - under 16 tons; Drilling machine - Self-powered, used for earth or rock drilling or boring (wagon drills and any hand drills obtaining power from other souces including concrete breakers, jackhammers and Barco equipmnet no engineer required); Elevating Grader; Engine Man, Dredge; Excavator or Powerbelt Machine; Finishing Machine, self- propelled oscillating screed; Forklift; Generators, Two through Six 30 KW or over; Grader, Road with power blade; Greaser; Highlift; Hoist, Concrete and Brick (Brick cages or concrete skips operating

SAM.gov

or on tower, Towermobile, or similar equipment); Hoist, Three or more drums in use; Hoist, Stack; Hydro-Hammer; Lad-A-Vator, hoisting brick or concrete; Loading Machine such as Barber-Greene; Mechanic on job site

GROUP 2: Air Tugger with plant air; Boiler (for power or heating shell of building or temporary enclosures in connection with construction work); Boiler, Temporary; Compressor, One over 125 CFM; Compressor, truck mounted; Conveyor, Large (not self- propelled); Conveyor, Large (not self- propelled) moving brick and concrete (distributing) on floor level; Curb Finishing Machine; Ditch Paving Machine; Elevator (outside); Endless Chain Hoist; Fireman (as required); Form Grader; Hoist, One Drum regardless of size (except brick or concrete); Lad-A-Vator, other hoisting; Manlift; Mixer, Asphalt, over 8 cu ft capacity; Mixer, one bag capacity or less; Mixer, without side loader, two bag capacity or more; Mixer, with side loader, regardless of size, not Paver; Mud Jack (where mud jack is used in conjenction with an air compressor, operator shall be paid \$ .55 per hour in addition to his basic hourly rate for covering both operations); Pug Mill operator; Pump, Sump - self powered, automatic controlled over 2""; Scissor Lift (used for hoisting); Skid Steer Loader; Sweeper, Street; Tractor, small wheel type 50 HP and under with grader blade and similar equipment; Welding Machine, One over 400 amp; Winch, operating from truck

GROUP 3: Boat operator - outboard motor, job site; Conveyors (such as Con-Vay-It) regardless of how used; Elevator (inside); Heater operator, 2 through 6; Sweeper, Floor

GROUP 4: Crane type

HOURLY PREMIUMS:

Backhoe, Hydraulic 2 cu yds or less without oiler - \$2.00; Crane, climbing (such as Linden) - \$.50; Crane, Pile Driving and Extracting - \$ .50 Crane with boom (including job) over 100 ft from pin to pin - add \$.01 per foot to maximum of \$4.00); Crane, using rock socket tool - \$ .50; Derrick, diesel, gas or electric hoisting material and erecting steel (150 ft or more above ground) - \$ .50; Dragline, 7 cu yds and over - \$ .50; Hoist, Three or more drums in use - \$ .50; Scoop, Tandem - \$.50; Shovel, Power - 7 cu yds and over - \$ .50; Tractor, Tandem Crawler - \$ .50; Tunnel, man assigned to work in tunnel or tunnel shaft - \$ .50; Wrecking, when machines are working on second floor or higher - \$ .50

#### .....

ENGI0513-006 05/01/2022

ADAIR, AUDRAIN, BOLLINGER, BOONE, BUTLER, CALLAWAY, CAPE GIRARDEAU, CARTER, CLARK, COLE, CRAWFORD, DENT, DUNKLIN, GASCONADE, HOWELL, IRON, KNOX, LEWIS, MACON, MADISON, MARIES, MARION, MILLER, MISSISSIPPI, MONITEAU, MONROE, MONTGOMERY, MORGAN, NEW MADRID, OREGON, OSAGE, PEMISCOT, PERRY, PHELPS, PIKE, PULASKI, PUTNAM, RALLS, RANDOLPH, REYNOLDS, RIPLEY, ST. FRANCOIS, STE. GENEVIEVE, SCHUYLER, SCOTLAND, SCOTT, SHANNON,

SHELBY, STODDARD, TEXAS, WASHINGTON, AND WAYNE COUNTIES

		Rates	Fringes
Power equip	oment operators:		
GROUP	1\$	33.24	28.75
GROUP	2\$	32.89	28.75
GROUP	3\$	32.69	28.75
GROUP	4\$	29.04	28.75

#### POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Asphalt finishing machine & trench widening spreader, asphalt plant console operator; autograder; automatic slipform paver; back hoe; blade operator - all types; boat operator tow; boiler two; central mix concrete plant operator; clam shell operator; concrete mixer paver; crane operator; derrick or derrick trucks; ditching machine; dozer operator; dragline operator; dredge booster pump; dredge engineman; dredge operator; drill cat with compressor mounted on cat; drilling or boring machine rotary self-propelled; highloader; hoisting engine 2 active drums; launchhammer wheel; locomotive operator standrad guage; mechanics and welders; mucking machine; piledriver operator; pitman crane operator; push cat operator; guad-trac; scoop operator; sideboom cats; skimmer scoop operator; trenching machine operator; truck crane, shovel operator.

GROUP 2: A-Frame; asphalt hot-mix silo; asphalt roller operator asphalt plant fireman (drum or boiler); asphalt plant man; asphalt plant mixer operator; backfiller operator; barber-greene loader; boat operator (bridge & dams); chip spreader; concrete mixer operator skip loader; concrete plant operator; concrete pump operator; dredge oiler; elevating graded operator; fork lift; grease fleet; hoisting engine one; locomotive operator narrow guage; multiple compactor; pavement breaker; powerbroom self-propelled; power shield; rooter; slip-form finishing machine; stumpcutter machine; side discharge concrete spreader; throttleman; tractor operator (over 50 hp); winch truck; asphalt roller operator; crusher operator.

GROUP 3: Spreader box operator, self-propelled not asphalt; tractor operator (50 h.p. or less); boilers one; chip spreader (front man); churn drill operator; compressor over 105 CFM 2-3 pumps 4"" & over; 2-3 light plant 7.5 KWA or any combination thereof; clef plane operator; compressor maintenance operator 2 or 3; concrete saw operator (self-propelled); curb finishing mancine; distributor operator; finishing machine operator; flex plane operator; float operator; form grader operator; pugmill operator; riller operator other than high type asphalt; screening & washing plant operator; siphons & jets; subgrading machine operator; tank car heater (combination boiler & booster); ulmac, ulric or similar spreader; vibrating machine operator; hydrobroom.

GROUP 4: Oiler; grout machine; oiler driver; compressor over 105 CFM one; conveyor operator one; maintenance operator; pump 4"" & over one.

FOOTNOTE: HOURLY PREMIUMS

SAM.gov

Backhoe hydraulic, 2 cu. yds. or under Without oiler - \$2.00 Certified Crane Operator - \$1.50; Certified Hazardous Material Operator \$1.50; Crane, climbing (such as Linden) - \$0.50; Crane, pile driving and extracting - \$0.50; Crane, with boom (including jib) over 100' from pin to pin add \$0.01 per foot to maximum of \$4.00; Crane, using rock socket tool - \$0.50; Derrick, diesel, gas or electric, hoisting material and erecting steel (150' or more above the ground) - \$0.50; Dragline, 7 cu. yds, and over - \$0.50; Hoist, three or more drums in use - \$0.50; Scoop, Tandem -\$0.50; Shovel, power - 7 cu. yds. or more - \$0.50; Tractor, tandem crawler - \$0.50; Tunnel, man assigned to work in tunnel or tunnel shaft -\$0.50; Wrecking, when machine is working on second floor or higher -\$0.50;

ENGI0513-007 05/05/2022

ST. LOUIS CITY AND COUNTY

Rates Fringes

Power equipment operators:

GROUP	1\$	38.36	28.93
GROUP	2\$	38.36	28.93
GROUP	3\$	37.06	28.93
GROUP	4\$	36.61	28.93

POWER EQUIPMENT OPERATORS CLASSIFICATIONS

GROUP 1: Backhoe, cable or hydraulic; cableway; crane crawler or truck; crane, hydraulic-truck or cruiser mounted 16 tons & over; crane locomotive; derrick, steam; derrick car & derrick boat; dragline; dredge; gradall, crawler or tire mounted; locomotive, gas, steam & other powers; pile driver, land or floating; scoop, skimmer; shovel, power (steam, gas, electric or other powers); switch boat; whirley.

GROUP 2: Air tugger w/air compressor; anchor-placing barge; asphalt spreader; athey force feeder loader (selfpropelled); backfilling machine; backhoe-loader; boat operator-push boat or tow boat (job site); boiler, high pressure breaking in period; boom truck, placing or erecting; boring machine, footing foundation; bull- float; cherry picker; combination concrete hoist & mixer (such as mixer mobile); compressor (when operator runs throttle); concrete breaker (truck or tractor mounted); concrete pump, such as pump-crete machine; concrete saw (self-propelled), concrete spreader; conveyor, large (not self-propelled), hoisting or moving brick and concrete into, or into and on floor level, one or both; crane, hydraulic-rough terrain, self-propelled; crane hydraulic-truck or cruiser mounted-under 16 tons; drilling machines, self-powered use for earth or rock drilling or boring (wagon drills nd any hand drills obtaining power from other sources including concrete breakers, jackhammers and barco equipment-no engineer required); elevating grader; engineman, dredge; excavator or powerbelt machine; finishing machine, self-propelled oscillating screed; forklift; grader, road

SAM.gov

with power blade; highlift. greaser; hoist, stack, hydro-hammer; loading machine (such as barber-greene); machanic, on job site; mixer, pipe wrapping machines; plant asphalt; plant, concrete producing or ready-mix job site; plant heating-job site; plant mixing-job site; plant power, generating-job site; pumps, two through six self-powered over 2""; pumps, electric submersible, two through six, over 4""; quad-track; roller, asphalt, top or sub-grade; scoop, tractor drawn; spreader box; sub-grader; tie tamper; tractor-crawler, or wheel type with or without power unit, power take-offs and attachments regardless of size; trenching machine; tunnel boring machine; vibrating machine automatic, automatic propelled; welding machines (gasoline or diesel) two through six; well drilling machine

GROUP 3: Conveyor, large (not self-propelled); conveyor, large (not self-propelled) moving brick and concrete distributing) on floor level; mixer two or more mixers of one bag capacity or less; air tugger w/plant air; boiler, for power or heating on construction projects; boiler, temporary; compressor (mounted on truck; curb finishing machine; ditch paving machine; elevator; endless chain hoist; form grader; hoist, one drum regardless of size; lad-a-vator; manlift; mixer, asphalt, over 8 cu. ft. capacity, without side loader, 2 bag capacity or more; mixer, with side loader, regardless of size; pug mill operator; pump, sump-self-powered, automatic controlled over 2"" during use in connection with construction work; sweeper, street; welding machine, one over 400 amp.; winch operating from truck; scissor lift (used for hoisting); tractor, small wheel type 50 h.p. & under with grader blade & similar equipment; Oiler on dredge and on truck crane.

GROUP 4: Boat operator-outboard motor (job site); conveyor (such as con-vay-it) regardless of how used; sweeper, floor

#### HOURLY PREMIUMS:

Backhoe, hydraulic		
2 cu. yds. or under without oiler	\$2.00	
Certified Crane Operator	1.50	
Certified Hazardous Material Operator	1.50	
Crane, climbing (such as Linden)	.50	
Crane, pile driving and extracting	.50	
Crane, with boom (including jib) over		
100' (from pin to pin) add \$.01		
per foot to maximum of	4.00	
Crane, using rock socket tool	.50	
Derrick, diesel, gas or electric,		
hoisting material and erecting steel		
(150' or more above ground)	.50	
Dragline, 7 cu. yds. and over	.50	
Hoist, three (3) or more drums in use	.50	
Scoop, Tandem	.50	
Shovel, power - 7 cu. yds. or more	.50	
Tractor, tandem crawler	.50	
Tunnel, man assigned to work in tunnel		
or tunnel snatt	.50	
Wrecking, when machine is working on	50	
second floor or nigher	.50	

\* IRON0010-012 04/01/2023

Rates

Fringes

SAM.gov

Ironworkers: ANDREW, BARTON, BENTON, CAMDEN, CEDAR, CHARITON, CHRISTIAN, COOPER, DADE, DALLAS, DAVIESS, DE KALB, GENTRY, GREENE, GRUNDY, HARRISON, HICKORY, HOLT, HOWARD, LACLEDE, LINN, LIVINGSTON, MERCER, MONITEAU, MORGAN, NODAWAY, PETTIS, POLK, PUTNAM, RANDLOPH, ST. CLAIR, SULLIVAN, TANEY, VERNON, WEBSTER, WRIGHT and WORTH Counties and portions of ADAIR, BOONE, MACON, MILLER and RANDOLPH Counties.....\$ 33.50 33.38 ATCHISON, BATES, BUCHANAN, CALDWELL, CARROLL, CASS, CLAY, CLINTON, HENRY, JACKSON, JOHNSON, LAFAYETTE, PETTIS, PLATTE, SALINE, AND RAY COUNTIES....\$ 36.50 33.38 IRON0321-002 08/01/2022 DOUGLAS, HOWELL and OZARK COUNTIES Rates Fringes Ironworker....\$ 23.50 19.96 IRON0396-004 08/04/2021 ST. LOUIS (City and County), ST. CHARLES, JEFFERSON, IRON, FRANKLIN, LINCOLN, WARREN, WASHINGTON, ST. FRANCOIS, STE. GENEVIEVE, and REYNOLDS Counties; and portions of MADISON, PERRY, BOLLINGER, WAYNE, and CARTER Counties Rates Fringes Ironworker....\$ 36.71 28.96 IRON0396-009 08/04/2021 AUDRAIN, CALLAWAY, COLE, CRAWFORD, DENT, GASCONADE, MARIES, MONTGOMERY, OSAGE, PHELPS, PIKE, PULASKI, TEXAS and WRIGHT Counties; and portions of BOONE, CAMDEN, DOUGLAS, HOWELL, LACLEDE, MILLER, MONROE, OREGON, SHANNON and RALLS Counties Rates Fringes Ironworker.....\$ 32.24 28.96 IRON0577-005 06/01/2022 ADAIR, CLARK, KNOX, LEWIS, MACON, MARION, MONROE, RALLS, SCHUYLER, SCOTLAND, AND SHELBY COUNTIES

Rates Fringes

4/27/23, 3:42 PM		SAM.gov
Ironworker\$ 28.	80	25.05
IRON0584-004 06/01/2022		
BARRY, JASPER, LAWRENCE, MCDONALD, NEW	TON AND STONE	Counties
Rate	s Fri	nges
Ironworkers:\$ 28.	.00	16.00
IRON0782-003 08/01/2022		
CAPE GIRARDEAU, MISSISSIPPI, NEW MADRI Counties; and portions of BOLLINGER, E MADISON, PEMISCOT, PERRY, RIPLEY, and	D, SCOTT, & ST UTLER, CARTER, WAYNE Counties	ODDARD DUNKLIN,
Rate	s Fri	nges
Ironworkers: Locks, Dams, Bridges and other major work on the Mississippi and Ohio River		
only\$ 35. All Other Work\$ 30.	13 73	28.27 24.12
LAB00042-003 03/01/2023		
ST. LOUIS (City and County)		
Rate	s Fri	nges
LABORER Plumber Laborer\$ 36.	65	17.12
LAB00042-005 03/01/2023		
ST. LOUIS (City and County)		
Rate	s Fri	nges
LABORER		17 10
Dynamiter, Powderman\$ 36.	65	17.12
Wrecking\$ 36.	65	17.12
LABO0110-005 05/01/2022		
Jefferson and Washington Counties		
Rate	s Fri	nges
LABORER (Jefferson County) GROUP 1\$ 34. GROUP 2\$ 35.	49 09	15.42 15.42
GROUP 1\$ 32.	10	15.42
LABORERS CLASSIFICATIONS		-91.76
		3.5 <sup>10</sup> 2.5
GROUP 1 - General laborer-tlagman, c	arpenter tende	rs:

SAM.gov

material batch hopper man; spreader on asphalt machine; material mixer man (except on manholes); coffer dams; riprap pavers rock, block or brick; scaffolds over ten feet not self-supported from ground up; skip man on concrete paving; wire mesh setters on concrete paving; all work in connection with sewer, water, gas, gasoling, oil, drainage pipe, conduit pipe, tile and duct lines and all other pipe lines; power tool operator; all work in connection with hydraulic or general dredging operations; form setters, puddlers (paving only); straw blower nozzleman; asphalt plant platform man; chuck tender; crusher feeder; men handling creosote ties or creosote materials; men working with and handling epoxy material; topper of standing trees; feeder man on wood pulverizers, board and willow mat weavers and cabelee tiers on river work; deck hands; pile dike and revetment work; all laborers working on underground tunnels less than 25 ft. where compressed air is not used; abutement and pier hole men working six (6) ft. or more below ground; men working in coffer dams for bridge piers and footing in the river; barco tamper; jackson or any other similar tamp; cutting torch man; liners, curb, gutters, ditch lines; hot mastic kettlemen; hot tar applicator; hand blade operator; mortar men or brick or block manholes; rubbing concrete, air tool operator under 65 lbs.; caulker and lead man; chain or concrete saw under 15 h.p.; signal Gan; Guard rail and sign erectors.

GROUP 2 - Skilled laborers - Vibrator man; asphalt raker; head pipe layer on sewer work; batterboard man on pipe and ditch work; cliff scalers working from bosun's chairs; scaffolds or platforms on dams or power plants over 10 ft. high; air tool operator over 65 lbs.; stringline man on concrete paving; sandblast man; laser beam man; wagon drill; churn drill; air track drill and all other similar type drills, gunite nozzle man; pressure grout man; screed man on asphalt; concrete saw 15 h.p. and over; grade checker; strigline man on electronic grade control; manhole builder; dynamite man; powder man; welder; tunnel man; waterblaster - 1000 psi or over; asbestos and/or hazardous waste removal and/or disposal

.....

LAB00579-005 05/01/2022

Rates

Fringes

LABORER (ANDREW, ATCHISON,	
BUCHANAN, CALDWELL, CLINTON,	
DAVIESS, DEKALB, GENTRY,	
GRUNDY, HARRISON, HOLT,	
LIVINGSTON, MERCER, NODAWAY	
and WORTH COUNTIES.)	
GROUP 1\$ 28.29	16.34
GROUP 2\$ 28.64	16.34
LABORER (BARRY, BARTON,	
BATES, BENTON, CAMDEN,	
CARROLL, CEDAR, CHRISTIAN,	
DADE, DALLAS, DOUGLAS,	
GREENE, HENRY. HICKORY,	
JASPER, JOHNSON, LACLEDE,	
LAWRENCE, MCDONALD, MORGAN,	
NEWTON, OZARK, PETTIS, POLK,	
ST.CLAIR, SALINE, STONE,	
TANEY, VERNON, WEBSTER and	

WRIGHT COUNTIES)		
GROUP 1\$	27.28	15.55
GROUP 2\$	27.83	15.55
LABORER (LAFAYETTE COUNTY)		
GROUP 1\$	28.83	15.80
GROUP 2\$	29.18	15.80

### LABORERS CLASSIFICATIONS

GROUP 1: General Laborers - Carpenter tenders; salamander tenders; loading trucks under bins; hoppers & conveyors; track men & all other general laborers; air tool operator; cement handler-bulk or sack; dump man on earth fill; georgie buggie man; material batch hopper man; material mixer man (except on manholes); coffer dams; riprap pavers - rock, block or brick; signal man; scaffolds over ten feet not self-supported from ground up; skipman on concrete paving; wire mesh setters on concrete paving; all work in connection with sewer, water, gas, gasoline, oil drainage pipe, conduit pipe, tile and duct lines and all other pipe lines; power tool operator, all work in connection with hydraulic or general dredging operations; puddlers (paving only); straw blower nozzleman; asphalt plant platform man; chuck tender; crusher feeder; men handling creosote ties or creosote materials; men working with and handling epoxy material or materials (where special protection is required); rubbing concrete; topper of standing trees; batter board man on pipe and ditch work; feeder man on wood pulverizers; board and willow mat weavers and cable tiers on river work; deck hands; pile dike and revetment work; all laborers working on underground tunnels less than 25 feet where compressed air is not used; abutment and pier hole men working six (6) feet or more below ground; men working in coffer dams for bridge piers and footings in the river; ditchliners; pressure groutmen; caulker; chain or concrete saw; cliffscalers working from scaffolds, bosuns' chairs or platforms on dams or power plants over (10) feet above ground; mortarmen on brick or block manholes; toxic and hazardous waste work.

GROUP 2: Skilled Laborers - Head pipe layer on sewer work; laser beam man; Jackson or any other similar tamp; cutting torch man; form setters; liners and stringline men on concrete paving, curb, gutters; hot mastic kettleman; hot tar applicator; sandblasting and gunite nozzlemen; air tool operator in tunnels; screed man on asphalt machine; asphalt raker; barco tamper; churn drills; air track drills and all similar drills; vibrator man; stringline man for electronic grade control; manhole builders-brick or block; dynamite and powder men; grade checker.

LAB00660-004 05/01/2022

Clark, Knox, Lewis, Marion, Pike, Ralls, Scotland, Shelby Counties

			Rates	Fringes
LABO	DRER			
	GROUP	1\$	32.10	15.42
	GROUP	2\$	32.10	15.42

#### LABORERS CLASSIFICATIONS

SAM.gov

GROUP 1 - General laborer-flagman, carpenter tenders; salamander Tenders; Dump Man; Ticket Takers; loading trucks under bins, hoppers, and conveyors; track man; cement handler; dump man on earth fill; georgie buggie man; material batch hopper man; spreader on asphalt machine; material mixer man (except on manholes); coffer dams; riprap pavers rock, block or brick; scaffolds over ten feet not self-supported from ground up; skip man on concrete paving; wire mesh setters on concrete paving; all work in connection with sewer, water, gas, gasoling, oil, drainage pipe, conduit pipe, tile and duct lines and all other pipe lines; power tool operator; all work in connection with hydraulic or general dredging operations; form setters, puddlers (paving only); straw blower nozzleman; asphalt plant platform man; chuck tender; crusher feeder; men handling creosote ties or creosote materials; men working with and handling epoxy material; topper of standing trees; feeder man on wood pulverizers, board and willow mat weavers and cabelee tiers on river work; deck hands; pile dike and revetment work; all laborers working on underground tunnels less than 25 ft. where compressed air is not used; abutement and pier hole men working six (6) ft. or more below ground; men working in coffer dams for bridge piers and footing in the river; barco tamper; jackson or any other similar tamp; cutting torch man; liners, curb, gutters, ditch lines; hot mastic kettlemen; hot tar applicator; hand blade operator; mortar men or brick or block manholes; rubbing concrete, air tool operator under 65 lbs.; caulker and lead man; chain or concrete saw under 15 h.p.; signal Gan; Guard rail and sign erectors.

GROUP 2 - Skilled laborers - Vibrator man; asphalt raker; head pipe layer on sewer work; batterboard man on pipe and ditch work; cliff scalers working from bosun's chairs; scaffolds or platforms on dams or power plants over 10 ft. high; air tool operator over 65 lbs.; stringline man on concrete paving; sandblast man; laser beam man; wagon drill; churn drill; air track drill and all other similar type drills, gunite nozzle man; pressure grout man; screed man on asphalt; concrete saw 15 h.p. and over; grade checker; strigline man on electronic grade control; manhole builder; dynamite man; powder man; welder; tunnel man; waterblaster - 1000 psi or over; asbestos and/or hazardous waste removal and/or disposal

## 

LAB00660-006 03/01/2023

Lincoln, Montgomery, St Charles and Warren Counties

				Rates	Fringes
LABORER	(Common	or	General)\$	36.91	15.62

LAB00662-001 05/01/2022

Callaway, Cole, Miller and Moniteau Counties

Rates Fr.	inges
-----------	-------

LABORER			
GROUP	1\$	32.10	15.42
GROUP	2\$	32.10	15.42

SAM.gov

### LABORERS CLASSIFICATIONS

GROUP 1 - General laborer-flagman, carpenter tenders; salamander Tenders; Dump Man; Ticket Takers; loading trucks under bins, hoppers, and conveyors; track man; cement handler; dump man on earth fill; georgie buggie man; material batch hopper man; spreader on asphalt machine; material mixer man (except on manholes); coffer dams; riprap pavers rock, block or brick; scaffolds over ten feet not self-supported from ground up; skip man on concrete paving; wire mesh setters on concrete paving; all work in connection with sewer, water, gas, gasoling, oil, drainage pipe, conduit pipe, tile and duct lines and all other pipe lines; power tool operator; all work in connection with hydraulic or general dredging operations; form setters, puddlers (paving only); straw blower nozzleman; asphalt plant platform man; chuck tender; crusher feeder; men handling creosote ties or creosote materials; men working with and handling epoxy material; topper of standing trees; feeder man on wood pulverizers, board and willow mat weavers and cabelee tiers on river work; deck hands; pile dike and revetment work; all laborers working on underground tunnels less than 25 ft. where compressed air is not used; abutement and pier hole men working six (6) ft. or more below ground; men working in coffer dams for bridge piers and footing in the river; barco tamper; jackson or any other similar tamp; cutting torch man; liners, curb, gutters, ditch lines; hot mastic kettlemen; hot tar applicator; hand blade operator; mortar men or brick or block manholes; rubbing concrete, air tool operator under 65 lbs.; caulker and lead man; chain or concrete saw under 15 h.p.; signal Gan; Guard rail and sign erectors.

GROUP 2 - Skilled laborers - Vibrator man; asphalt raker; head pipe layer on sewer work; batterboard man on pipe and ditch work; cliff scalers working from bosun's chairs; scaffolds or platforms on dams or power plants over 10 ft. high; air tool operator over 65 lbs.; stringline man on concrete paving; sandblast man; laser beam man; wagon drill; churn drill; air track drill and all other similar type drills, gunite nozzle man; pressure grout man; screed man on asphalt; concrete saw 15 h.p. and over; grade checker; strigline man on electronic grade control; manhole builder; dynamite man; powder man; welder; tunnel man; waterblaster - 1000 psi or over; asbestos and/or hazardous waste removal and/or disposal

......

### \* LAB00663-002 04/01/2023

CASS, CLAY, JACKSON, PLATTE AND RAY COUNTIES

	F	Rates	Fringes
ABORER			
GROUP 1.	\$	34.15	17.06
GROUP 2		35.36	17.06

### LABORERS CLASSIFICATIONS

L

GROUP 1: General laborers, Carpenter tenders, salamander tenders, loading trucks under bins, hoppers and conveyors, track men and all other general laborers, air tool

SAM.gov

operator, cement handler (bulk or sack), chain or concrete saw, deck hands, dump man on earth fill, Georgie Buggies man, material batch hopper man, scale man, material mixer man (except on manholes), coffer dams, abutments and pier hole men working below ground, riprap pavers rock, black or brick, signal man, scaffolds over ten feet not self-supported from ground up, skipman on concrete paving, wire mesh setters on concrete paving, all work in connection with sewer, water, gas, gasoling, oil, drainage pipe, conduit pipe, tile and duct lines and all other pipelines, power tool operator, all work in connection with hydraulic or general dredging operations, straw blower nozzleman, asphalt plant platform man, chuck tender, crusher feeder, men handling creosote ties on creosote materials, men working with and handling epoxy material or materials (where special protection is required), topper of standing trees, batter board man on pipe and ditch work, feeder man on wood pulverizers, board and willow mat weavers and cable tiers on river work, deck hands, pile dike and revetment work, all laborers working on underground tunnels less than 25 feet where compressed air is not used, abutment and pier hole men working six (6) feet or more below ground, men working in coffer dams for bridge piers and footings in the river, ditchliners, pressure groutmen, caulker and chain or concrete saw, cliffscalers working from scaffolds, bosuns' chairs or platforms on dams or power plants over (10) feet above ground, mortarmen on brick or block manholes, signal man.

GROUP 2: Skilled Laborer - spreader or screed man on asphalt machine, asphalt raker, grade checker, vibrator man, concrete saw over 5 hp., laser beam man, barco tamper, jackson or any other similar tamp, wagon driller, churn drills, air track drills and other similar drills, cutting torch man, form setters, liners and stringline men on concrete paving, curb, gutters and etc., hot mastic kettleman, hot tar applicator, hand blade operators, mortar men on brick or block manholes, sand blasting and gunnite nozzle men, rubbing concrete, air tool operator in tunnels, head pipe layer on sewer work, manhole builder (brick or block), dynamite and powder men.

LAB00840-011 05/01/2022

Crawford, Dent, Franklin, Gasconade, Howell, Maries, Oregon, Osage, Phelps, Pulaski, Shannon and Texas Counties

Dates

Ful wasa

LABORER (Crawford, Dent, Gasconade, Howell, Maries, Oregon, Osage, Phelps, Pulaski, Shannon and Texas Counties) GROUP 1\$ 32.10 15.42 GROUP 2\$ 32.10 15.42 LABORER (Franklin County) GROUP 1\$ 34.44 15.42 GROUP 2\$ 35.04	ĸ	ates	Fringes
Gasconade, Howell, Maries, Oregon, Osage, Phelps, Pulaski, Shannon and Texas Counties) GROUP 1\$ 32.10 15.42 GROUP 2\$ 32.10 15.42 LABORER (Franklin County) GROUP 1\$ 34.44 15.42 GROUP 2\$ 35.04 15.42	LABORER (Crawford, Dent,		
Oregon, Osage, Phelps, Pulaski, Shannon and Texas Counties) GROUP 1\$ 32.10 15.42 GROUP 2\$ 32.10 15.42 LABORER (Franklin County) GROUP 1\$ 34.44 15.42 GROUP 2\$ 35.04 15.42	Gasconade, Howell, Maries,		
Pulaski, Shannon and Texas Counties) GROUP 1\$ 32.10 GROUP 2\$ 32.10 LABORER (Franklin County) GROUP 1\$ 34.44 I5.42 GROUP 2\$ 35.04	Oregon, Osage, Phelps,		
Counties) GROUP 1\$ 32.10 GROUP 2\$ 32.10 LABORER (Franklin County) GROUP 1\$ 34.44 GROUP 2\$ 35.04 15.42	Pulaski, Shannon and Texas		
GROUP 1\$ 32.10       15.42         GROUP 2\$ 32.10       15.42         LABORER (Franklin County)       34.44         GROUP 1\$ 34.44       15.42         GROUP 2\$ 35.04       15.42	Counties)		
GROUP 2\$ 32.10         15.42           LABORER (Franklin County)         GROUP 1\$ 34.44         15.42           GROUP 2\$ 35.04         15.42	GROUP 1\$	32.10	15.42
LABORER (Franklin County) GROUP 1\$ 34.44 15.42 GROUP 2\$ 35.04 15.42	GROUP 2\$	32.10	15.42
GROUP 1\$ 34.44         15.42           GROUP 2\$ 35.04         15.42	LABORER (Franklin County)		
GROUP 2\$ 35.04 15.42	GROUP 1\$	34.44	15.42
	GROUP 2\$	35.04	15.42

LABORERS CLASSIFICATIONS

GROUP 1 - General laborer-flagman, carpenter tenders;

SAM.gov

salamander Tenders; Dump Man; Ticket Takers; loading trucks under bins, hoppers, and conveyors; track man; cement handler; dump man on earth fill; georgie buggie man; material batch hopper man; spreader on asphalt machine; material mixer man (except on manholes); coffer dams; riprap pavers rock, block or brick; scaffolds over ten feet not self-supported from ground up; skip man on concrete paving; wire mesh setters on concrete paving; all work in connection with sewer, water, gas, gasoling, oil, drainage pipe, conduit pipe, tile and duct lines and all other pipe lines; power tool operator; all work in connection with hydraulic or general dredging operations; form setters, puddlers (paving only); straw blower nozzleman; asphalt plant platform man; chuck tender; crusher feeder; men handling creosote ties or creosote materials; men working with and handling epoxy material; topper of standing trees; feeder man on wood pulverizers, board and willow mat weavers and cabelee tiers on river work; deck hands; pile dike and revetment work; all laborers working on underground tunnels less than 25 ft. where compressed air is not used; abutement and pier hole men working six (6) ft. or more below ground; men working in coffer dams for bridge piers and footing in the river; barco tamper; jackson or any other similar tamp; cutting torch man; liners, curb, gutters, ditch lines; hot mastic kettlemen; hot tar applicator; hand blade operator; mortar men or brick or block manholes; rubbing concrete, air tool operator under 65 lbs.; caulker and lead man; chain or concrete saw under 15 h.p.; signal Gan; Guard rail and sign erectors.

GROUP 2 - Skilled laborers - Vibrator man; asphalt raker; head pipe layer on sewer work; batterboard man on pipe and ditch work; cliff scalers working from bosun's chairs; scaffolds or platforms on dams or power plants over 10 ft. high; air tool operator over 65 lbs.; stringline man on concrete paving; sandblast man; laser beam man; wagon drill; churn drill; air track drill and all other similar type drills, gunite nozzle man; pressure grout man; screed man on asphalt; concrete saw 15 h.p. and over; grade checker; strigline man on electronic grade control; manhole builder; dynamite man; powder man; welder; tunnel man; waterblaster - 1000 psi or over; asbestos and/or hazardous waste removal and/or disposal

LAB00955-012 05/01/2022

Adair, Audrain, Boone, Chariton, Cooper, Howard, Linn, Macon, Monroe, Putnam, Randolph, Schuyler and Sullivan Counties

		Rates	Fringes
LABORER			
GROUP	1\$	32.10	15.42
GROUP	2\$	32.10	15.42

#### LABORERS CLASSIFICATIONS

GROUP 1 - General laborer-flagman, carpenter tenders; salamander Tenders; Dump Man; Ticket Takers; loading trucks under bins, hoppers, and conveyors; track man; cement handler; dump man on earth fill; georgie buggie man; material batch hopper man; spreader on asphalt machine;

SAM.gov

material mixer man (except on manholes); coffer dams; riprap pavers rock, block or brick; scaffolds over ten feet not self-supported from ground up; skip man on concrete paving; wire mesh setters on concrete paving; all work in connection with sewer, water, gas, gasoling, oil, drainage pipe, conduit pipe, tile and duct lines and all other pipe lines; power tool operator; all work in connection with hydraulic or general dredging operations; form setters, puddlers (paving only); straw blower nozzleman; asphalt plant platform man; chuck tender; crusher feeder; men handling creosote ties or creosote materials; men working with and handling epoxy material; topper of standing trees; feeder man on wood pulverizers, board and willow mat weavers and cabelee tiers on river work; deck hands; pile dike and revetment work; all laborers working on underground tunnels less than 25 ft. where compressed air is not used; abutement and pier hole men working six (6) ft. or more below ground; men working in coffer dams for bridge piers and footing in the river; barco tamper; jackson or any other similar tamp; cutting torch man; liners, curb, gutters, ditch lines; hot mastic kettlemen; hot tar applicator; hand blade operator; mortar men or brick or block manholes; rubbing concrete, air tool operator under 65 lbs.; caulker and lead man; chain or concrete saw under 15 h.p.; signal Gan; Guard rail and sign erectors.

GROUP 2 - Skilled laborers - Vibrator man; asphalt raker; head pipe layer on sewer work; batterboard man on pipe and ditch work; cliff scalers working from bosun's chairs; scaffolds or platforms on dams or power plants over 10 ft. high; air tool operator over 65 lbs.; stringline man on concrete paving; sandblast man; laser beam man; wagon drill; churn drill; air track drill and all other similar type drills, gunite nozzle man; pressure grout man; screed man on asphalt; concrete saw 15 h.p. and over; grade checker; strigline man on electronic grade control; manhole builder; dynamite man; powder man; welder; tunnel man; waterblaster - 1000 psi or over; asbestos and/or hazardous waste removal and/or disposal

LAB01104-005 05/01/2022

Bollinger, Butler, Cape Girardeau, Carter, Dunklin, Iron, Madison, Mississippi, New Madrid, Pemiscot, Perry, Reynolds, Ripley, Scott, St Francois, Ste Genevieve, Stoddard and Wayne Counties

	Ra	ites	Fringes
LABORER			
GROUP	1\$ 3	2.10	15.42
GROUP	2\$ 3	2.10	15.42

#### LABORERS CLASSIFICATIONS

GROUP 1 - General laborer-flagman, carpenter tenders; salamander Tenders; Dump Man; Ticket Takers; loading trucks under bins, hoppers, and conveyors; track man; cement handler; dump man on earth fill; georgie buggie man; material batch hopper man; spreader on asphalt machine; material mixer man (except on manholes); coffer dams; riprap pavers rock, block or brick; scaffolds over ten feet

SAM.gov

not self-supported from ground up; skip man on concrete paving; wire mesh setters on concrete paving; all work in connection with sewer, water, gas, gasoling, oil, drainage pipe, conduit pipe, tile and duct lines and all other pipe lines; power tool operator; all work in connection with hydraulic or general dredging operations; form setters, puddlers (paving only); straw blower nozzleman; asphalt plant platform man; chuck tender; crusher feeder; men handling creosote ties or creosote materials; men working with and handling epoxy material; topper of standing trees; feeder man on wood pulverizers, board and willow mat weavers and cabelee tiers on river work; deck hands; pile dike and revetment work; all laborers working on underground tunnels less than 25 ft. where compressed air is not used; abutement and pier hole men working six (6) ft. or more below ground; men working in coffer dams for bridge piers and footing in the river; barco tamper; jackson or any other similar tamp; cutting torch man; liners, curb, gutters, ditch lines; hot mastic kettlemen; hot tar applicator; hand blade operator; mortar men or brick or block manholes; rubbing concrete, air tool operator under 65 lbs.; caulker and lead man; chain or concrete saw under 15 h.p.; signal Gan; Guard rail and sign erectors.

GROUP 2 - Skilled laborers - Vibrator man; asphalt raker; head pipe layer on sewer work; batterboard man on pipe and ditch work; cliff scalers working from bosun's chairs; scaffolds or platforms on dams or power plants over 10 ft. high; air tool operator over 65 lbs.; stringline man on concrete paving; sandblast man; laser beam man; wagon drill; churn drill; air track drill and all other similar type drills, gunite nozzle man; pressure grout man; screed man on asphalt; concrete saw 15 h.p. and over; grade checker; strigline man on electronic grade control; manhole builder; dynamite man; powder man; welder; tunnel man; waterblaster - 1000 psi or over; asbestos and/or hazardous waste removal and/or disposal

### PAIN0002-002 09/01/2007

CLARK, FRANKLIN, JEFFERSON, LEWIS, LINCOLN, MARION, PIKE, RALLS, ST. CHARLES, ST. LOUIS (CITY & COUNTY), AND WARREN COUNTIES

	Rates	Fringes
Painters:		
Brush and Roller; Taper\$	28.61	10.24
High work over 60 feet\$	29.11	10.24
Lead Abatement\$ Pressure Roller; High work	29.36	10.24
under 60 ft\$ Spray & Abrasive Blasting; Water Blasting (Over 5000	28.86	10.24
PSI)\$ Taper (Ames Tools &	30.61	10.24
Bazooka)\$	30.21	10.24

\* PAIN0002-006 04/01/2023

ADAIR, AUDRAIN, BOONE, CALLAWAY, CHARITON, COLE, GASCONADE, HOWARD, KNOX, LINN, MACON, MONROE, MONTGOMERY, OSAGE, PUTNAM,
SAM.gov

- -

RANDOLPH, SCHUYLER, SCOTLAND, SHELBY AND SULLIVAN COUNTIES and the City of Booneville.

	Rates	Fringes	
Painters:			
Bridges, Dams, Locks or			
Powerhouses Brush and Roll; Taping,	.\$ 28.49	15.03	
Paperhanging Epoxy or Any Two Part Coating; Sandblasting; Stage or other Aerial Work - Platforms over 50 feet	.\$ 26.49	15.03	
high; Lead Abatement Spray; Structural Steel	.\$ 27.49	15.03	
(over 50 feet) Tapers using Ames or	.\$ 27.49	15.03	
Comparable Tools	.\$ 27.24	15.03	
			-

PAIN0003-004 04/01/2019

CASS, CLAY, CLINTON, JACKSON, JOHNSON, LAFAYETTE, PLATTE & RAY COUNTIES

	Rates	Fringes
Painters:		
Bridgeman; Lead Abatement;		
Sandblast; Storage Bin &		
Tanks	.\$ 33.41	17.76
Brush & Roller	.\$ 30.54	17.76
Drywall	.\$ 31.74	17.76
Paper Hanger	.\$ 31.04	17.76
Stageman; Beltman;		
Steelman; Elevator Shaft;		
Bazooka, Boxes and Power		
Sander; Sprayman; Dipping	.\$ 32.41	17.76
Steeplejack	.\$ 36.98	17.76

PAIN0003-011 04/01/2019

BATES, BENTON, CALDWELL, CARROLL, COOPER, DAVIESS, GRUNDY, HARRISON, HENRY, LIVINGSTON, MERCER, MONITEAU, MORGAN, PETTIS & SALINE COUNTIES

R	ates	Fringes
Painters:		
Bridgeman; Lead Abatement;		
Sandblast; Storage Bin &		
Tanks\$	26.73	17.76
Brush & Roller\$	24.43	17.76
Drywall\$	25.39	17.76
Paper Hanger\$	24.83	17.76
Stageman; Beltman;		
Steelman; Elevator Shaft;		
Bazooka, Boxes and Power		
Sander; Sprayman; Dipping\$	26.35	17.76
Steeplejack\$	29.58	17.76

PAIN0203-001 04/01/2012

https://sam.gov/wage-determination/MO20230001/5

SAM.gov

BARRY, BARTON, CEDAR, CHRISTIAN, DADE, DALLAS, DOUGLAS, GREENE, HICKORY, HOWELL, JASPER, LAWRENCE, MCDONALD, NEWTON, OZARK, POLK, ST. CLAIR, STONE, TANEY, VERNON, WEBSTER, and WRIGHT COUNTIES

	Rates	Fringes
Painters:		
Finisher\$	20.18	11.33
Painter\$	19.75	11.76
Sandblaster, High Man,		
Spray Man, Vinyl Hanger,		
Tool Operator\$	21.18	11.33
* PAIN1185-008 04/01/2023		

CAMDEN, CRAWFORD, DENT, LACLEDE, MARIES, MILLER, PHELPS, PULASKI AND TEXAS COUNTIES

	Rates	Fringes
Painters:		
Brush and Roller\$	31.83	15.13
Floor Work\$	32.83	15.13
Lead Abatement\$	32.83	15.13
Spray\$ Structural Steel,	32.83	15.13
Sandblasting and All Tank		
Work\$	33.83	15.13
Taping, Paperhanging\$	32.83	15.13

PAIN1292-002 09/01/2022

BOLLINGER, BUTLER, CAPE GIRARDEAU, CARTER, DUNKLIN, MISSISSIPPI, NEW MADRID, OREGON, PEMISCOT, PERRY, REYNOLDS, RIPLEY, SCOTT, SHANNON, STODDARD and WAYNE COUNTIES

	Rates	Fringes
Painters:		
Bridges, Stacks & Tanks	33.93	15.36
Brush & Roller Spray & Abrasive Blasting; Waterblasting (over 5000	\$ 29.58	15.36
PSI)	31.58	15.36
Height Rates (All Areas): Over 60 ft. \$0.50 per hour. Under 60 ft. \$0.25 per hour.		
PAIN1292-003 09/01/2022		
IRON, MADISON, ST. FRANCOIS, STE. COUNTIES	GENEVIEVE and	WASHINGTON
	Rates	Fringes
Painters:		
Bridges, Stacks & Tanks	33.93	15.36

Bridges, Stacks & Tanks.....\$ 33.93

4/27/23, 3:42 PM		SAM.gov
Brush & Roller Spray & Abrasive Blasting	\$ 29.58	15.36
PSI)	\$ 31.58	15.36
Height Rates (All Areas): Øver 60 ft. \$0.50 per hour Under 60 ft. \$0.25 per hour.		
PAIN2012-001 04/20/2022		
ANDREW, ATCHISON, BUCHANAN, DE WORTH COUNTIES	KALB, GENTRY,	HOLT, NODAWAY &
	Rates	Fringes
Painters:		
Brush & Roller	\$ 33.35	18.73
Steenleiack	\$ 40 84	18.73
PLAS0518-006 03/01/2023		
HICKORY, JASPER, LACLEDE, LAWRE POLK, ST. CLAIR, STONE, TANEY, COUNTIES	N, DADE, DALLA ENCE, MCDONALD VERNON, WEBST	S, DOUGLAS, GREENE, , NEWTON, OZARK, ER, AND WRIGHT
	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER.	\$ 26.57	12.43
* PLAS0518-007 04/01/2023		
CASS (Richards-Gebaur AFB only) COUNTIES	), CLAY, JACKSO	DN, PLATTE AND RAY
	Rates	Fringes
Cement Masons:	\$ 36.57	18.30
* PLAS0518-011 04/01/2023		
ANDREW, ATCHISON, BATES, BUCHAN HENRY, HOLT, JOHNSON, LAFAYETTE	NNAN, CLINTON, E, NODAWAY & WO	DEKALB, GENTRY, DRTH COUNTIES
	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER	\$ 36.03	20.50
PLAS0527-001 04/01/2021		
	Rates	Fringes
CEMENT MASON		
HRANKLIN, LINCOLN AND WARREN COUNTIES JEFFERSON, ST. CHARLES	\$ 34.79	19.58
COUNTIES AND ST.LOUIS		
(City and County)	\$ 35.96	19.56

https://sam.gov/wage-determination/MO20230001/5

SAM.gov

PLAS0527-004 06/01/2021

CRAWFORD, DENT, IRON, MADISON, MARION, PHELPS, PIKE, PULASKI, RALLS, REYNOLDS, ST. FRANCOIS, STE. GENEVIEVE, SHANNON, TEXAS, WASHINGTON COUNTIES

.....

Rates Fringes

PLAS0908-001 05/01/2021

BOLLINGER, BUTLER, CAPE GIRARDEAU, CARTER, DUNKLIN, HOWELL, MISSISSIPPI, NEW MADRID, OREGON, PEMISCOT, PERRY, RIPLEY, SCOTT, STODDARD, AND WAYNE COUNTIES

BENTON, CALDWELL, CALLAWAY, CAMDEN, CARROLL, COLE, DAVIESS, GASCONADE, GRUNDY, HARRISON, LIVINGSTON, MACON, MARIES, MERCER, MILLER, MONTGOMERY, MORGAN, OSAGE, PETTIS & SALINE COUNTIES

Rates Fringes CEMENT MASON.....\$ 30.30 17.53 PLUM0008-003 06/01/2022 CASS, CLAY, JACKSON, JOHNSON, AND PLATTE COUNTIES Rates Fringes Plumbers.....\$ 51.28 23.29 PLUM0008-017 06/01/2022 BATES, BENTON, CARROLL, HENRY, LAFAYETTE, MORGAN, PETTIS, RAY, ST. CLAIR, SALINE AND VERNON COUNTIES Rates Fringes Plumbers.....\$ 51.28 23.29 PLUM0045-003 08/01/2022 ANDREW, ATCHISON, BUCHANAN, CALDWELL, CLINTON, DAVIESS, DEKALB, GENTRY, HARRISON, HOLT, NODAWAY AND WORTH COUNTIES Rates Fringes Plumbers and Pipefitters.....\$ 41.35 25.45 PLUM0178-003 11/01/2022 BARRY, CEDAR, CHRISTIAN, DADE, DALLAS, DOUGLAS, GREENE,

SAM.gov

HICKORY, LACLEDE, LAWRENCE, POLK, STONE, TANEY, WEBSTER AND WRIGHT COUNTIES

			Rates	Fringes
Plumbers	and	Pipefitters\$	35.75	15.32
PLUM0178	3-006	5 11/01/2022		

BARTON, JASPER, MCDONALD AND NEWTON COUNTIES

Rates Fringes

Plumbers and Pipefitters			
Projects \$750,000 & under\$	32.78	15.32	
Projects over \$750,000\$	35.75	15.32	

PLUM0533-004 06/01/2022

BATES, BENTON, CARROLL, CASS, CLAY, HENRY, HICKORY, JACKSON, JOHNSON, LAFAYETTE, MORGAN, PETTIS, PLATTE, RAY, SALINE, ST. CLAIR AND VERNON COUNTIES

	Rates	Fringes
Pipefitters	\$ 51.43	23.35
PLUM0562-004 07/01/2022		

ADAIR, AUDRAIN, BOLLINGER, BOONE, BUTLER, CALLAWAY, CAMDEN, CAPE GIRARDEAU, CARTER, CHARITON, CLARK, COLE, COOPER, CRAWFORD, DENT, DUNKLIN, FRANKLIN, GASCONADE, GRUNDY, HOWARD, HOWELL, IRON, JEFFERSON, KNOX, LEWIS, LINCOLN, LINN, LIVINGSTON, MACON, MADISON, MARIES, MARION, MERCER, MILLER, MISSISSIPPI, MONITEAU, MONROE, MONTGOMERY, NEW MADRID, OREGON, OSAGE, PEMISCOTT, PERRY, PHELPS, PIKE, PULASKI, PUTNAM, RALLS, RANDOLPH, REYNOLDS, RIPLEY, ST. CHARLES, ST.FRANCOIS, STE. GENEVIEVE, ST. LOUIS, SCHUYLER, SCOTLAND, SCOTT, SHANNON, SHELBY, STODDARD, SULLIVAN, TEXAS, WARREN, WASHINGTON, AND WAYNE COUNTIES.

Fringes Plumbers and Pipefitters Mechanical Contracts including all piping and temperature control work \$7.0 million & under.....\$ 44.66 21.49 Mechanical Contracts including all piping and temperature control work over \$7.0 million.....\$ 44.66 21.49 

Rates

PLUM0562-016 07/01/2022

CAMDEN, COLE, CRAWFORD, FRANKLIN, JEFFERSON, MARIES, MILLER, MONITEAU, OSAGE, PHELPS, PULASKI, ST. CHARLES, ST. LOUIS (City and County), WARREN and WASHINGTON COUNTIES

> Rates Fringes

Plumbers

SAM.gov

Mechanical Contracts including all piping and temperature control work \$7.0 million & under Mechanical Contracts including all piping and temperature control work over \$7.0 million	.\$ 44.66 .\$ 44.66	21.49 21.49
TEAM0012 001 05/01/2022		
TEAM0013-001 03/01/2022		
	Rates	Fringes
Truck drivers (ADAIR, BUTLER, CLARK, DUNKIN, HOWELL, KNOX, LEWIS, OREGON, PUTNAM, RIPLEY, SCHUYLER AND SCOTLAND		
GROUP 1	\$ 32.44	14.75
GROUP 2	\$ 32.60	14.75
GROUP 3	.\$ 32.59	14.75
GROUP 4	\$ 32.71	14.75
Truck drivers (AUDRAIN,		
BOLLINGER, BOONE, CALLAWAY,		
CAPE GIRARDEAU, CARTER, COLE,		
TRANFORD, DENT, GASCONADE,		
MARTON MILLER MISSISSIDDI		
MONROE MONTGOMERY NEW		
MADRID, OSAGE, PEMISCOT.		
PERRY, PHELPS, PIKE, PULASKI,		
RALLS, REYNOLDS, ST.		
FRANCOIS, STE. GENEVIEVE,		
SCOTT, SHANNON, SHELBY,		
STODDARD, TEXAS, WASHINGTON		
AND WAYNE COUNTIES)	10000	
GROUP 1	\$ 33.17	14.75
GROUP 2	\$ 33.33	14.75
GROUP 3	\$ 33.32	14.75
Thuck drivers (FRANKLTN	.\$ 33.44	14.75
TEEEERSON and ST CHARLES		
COUNTIES)		
GROUP 1	\$ 35.53	14.75
GROUP 2	\$ 35.64	14.75
GROUP 3	\$ 35.68	14.75
GROUP 4	\$ 35.75	14.75
Truck drivers (LINCOLN and		
WARREN COUNTIES)	a les an	
GROUP 1	\$ 35.18	14.75
GROUP 2	\$ 34.29	14.75
GROUP 3	\$ 35.33	14.75
GROUP 4	.> 34.40	14.75

TRUCK DRIVERS CLASSIFICATIONS:

GROUP 1: Flat Bed Trucks, Single Axle; Station Wagons; Pickup Trucks; Material Trucks, Single Axle; Tank Wagon, Single Axle

GROUP 2: Agitator and Transit Mix Trucks

GROUP 3: Flat Bed Trucks, Tandem Axle; Articulated Dump Trucks; Material Trucks, Tandem Axle; Tank Wagon, Tandem Axle GROUP 4: Semi and/or Pole Trailers; Winch, Fork & Steel Trucks; Distributor Drivers and Operators; Tank Wagon, Semi-Trailer; Insley Wagons, Dumpsters, Half-Tracks, Speedace, Euclids and other similar equipment; A-Frame and Derrick Trucks; Float or Low Boy

TEAM0056-001 05/01/2020

Rates Fringes

-----

Truck drivers (ANDREW, BARTON, BATES, BENTON, CALDWELL, CAMDEN, CARROLL, CEDAR, CHARITON, CHRISTIAN, CLINTON, COOPER, DADE, DALLAS, DAVIESS, DEKALB, DOUGLAS, GREENE, HENRY, HICHKORY, HOWARD, JASPER, LACLEDE, LAWRENCE, LINN, LIVINGSTON, MONITEAU, MORGAN, NEWTON, PETTIS, POLK, RANDOLPH, ST. CLAIR, SALINE,		
VERNON, WEBSTER AND WRIGHT		
COUNTIES)		
GROUP 1\$	31.37	14.25
GROUP 2\$	31.53	14.25
GROUP 3\$	31.52	14.25
GROUP 4\$	31.64	14.25
Truck drivers: (ATCHISON,		
BARRY, GENTRY, GRUNDY,		
HARRISON, HOLT, MCDONALD,		
MERCER, NODAWAY, OZARK,		
STONE, SULLIVAN, TANEY AND		
WORTH COUNTIES)		
GROUP 1\$	30.64	14.25
GROUP 2\$	30.80	14.25
GROUP 3\$	30.79	14.25
GROUP 4\$	30.91	14.25
Truck drivers; (BUCHANAN,		
JOHNSON AND LAFAYETTE		
COUNTIES)		
GROUP 1\$	32.58	14.25
GROUP 2\$	32.69	14.25
GROUP 3\$	32.73	14.25
GROUP 4\$	32.80	14.25

TRUCK DRIVER CLASSIFICATIONS

GROUP 1: Flat bed trucks single axle; station wagons; pickup trucks; material trucks single axle; tank wagons single axle.

GROUP 2: Agitator and transit mix-trucks.

GROUP 3: Flat bed trucks tandem axle; articulated dump trucks; material trucks tandem axle; tank wagons tandem axle.

GROUP 4: Semi and/or pole trailers; winch, fork & steel trucks; distributor drivers & operators; tank wagons semitrailer; insley wagons, dumpsters, half-tracks, speedace, euclids & other similar equipment; A-frames and derrick trucks; float or low boy.

#### TEAM0245-001 03/26/2012

BARRY, BARTON, CAMDEN, CEDAR, CHRISTIAN, DALLAS, DENT, DOUGLAS, GREENE, HICKORY, HOWELL, JASPER, LACLEDE, LAWRENCE, MCDONALD, MILLER, NEWTON, OZARK, PHELPS, POLK, PULASKI, SHANNON, STONE, TANEY, TEXAS, VERNON, WEBSTER AND WRIGHT COUNTIES

Rates Fringes

Truck drivers: Traffic Control Service Driver.....\$ 20.45 0.00

PAID HOLIDAYS: New Year's Day, Decoration Day, July 4th, Labor Day, Thanksgiving Day, Christmas Day, employee's birthday and 2 personal days.

.....

\* TEAM0541-001 04/01/2023

CASS, CLAY, JACKSON, PLATTE AND RAY COUNTIES

Rates Fringes

Truck drivers:

GROUP	1\$	35.31	17.55
GROUP	2\$	34.74	17.55
GROUP	3\$	34.22	17.55

TRUCK DRIVERS CLASSIFICATIONS

GROUP 1: Mechanics and Welders, Field; A-Frame Low Boy-Boom ruck Driver.

GROUP 2: Articulated Dump Truck; Insley Wagons: Dump Trucks, Excavating, 5 cu yds and over; Dumpsters; Half-Tracks: Speedace: Euclids & similar excavating equipment Material trucks, Tandem Two teams; Semi-Trailers; Winch trucks-Fork trucks; Distributor Drivers and Operators; Agitator and Transit Mix; Tank Wagon Drivers, Tandem or Semi; One Team; Station Wagons; Pickup Trucks; Material Trucks, Single Axle; Tank Wagon Drivers, Single Axle

GROUP 3: Oilers and Greasers - Field

TEAM0682-002 05/01/2017

ST LOUIS CITY AND COUNTY

Rates Fringes

Truck drivers:

13.79+a+b+c+d
13.79+a+b+c+d
13.79+a+b+c+d

a. PENSION: 5/1/2012 - \$182.20 per week.

b. HAZMAT PREMIUM: If Hazmat certification on a job site is required by a state or federal agency or requested by project owner or by the employer, employees on that job

SAM.gov

site shall receive \$1.50 premium pay.

#### TRUCK DRIVERS CLASSIFICATIONS

GROUP 1 - Pick-up trucks; forklift, single axle; flatbed trucks; job site ambulance, and trucks or trailers of a water level capacity of 11.99 cu. yds. or less

GROUP 2 - Trucks or trailers of a water level capacity of 12.0 cu yds. up to 22.0 cu yds. including euclids, speedace and similar equipment of same capacity and compressors

GROUP 3 - Trucks or trailers of a water level capacity of 22.0 cu. yds & over including euclids, speedace & all floats, flatbed trailers, boom trucks, winch trucks, including small trailers, farm wagons tilt-top trailers, field offices, tool trailers, concrete pumps, concrete conveyors & gasoline tank trailers and truck mounted mobile concrete mixers

FOOTNOTE FOR TRUCK DRIVERS:

c. PAID HOLIDAYS: Christmas Day, Independence Day, Labor Day, Memorial Day, Veterans Day, New Years Day, Thanksgiving Day

d. PAID VACATION: 3 days paid vacation for 600 hours of service in any one contract year; 4 days paid vacation for 800 hours of service in any one contract year; 5 days paid vacation for 1,000 hours of service in any one contract year. When such an employee has completed 3 years of continuous employment with the same employer and then works the above required number of hours, he shall receive double the number of days of vacation specified above. When such an employee has completed 10 years of continuous employment with the same employer and then works the above required number of hours, he shall receive triple the number of days of vacation specified above. When such an employee has completed 15 years of continuous employment with the same employer and then works the above required number of hours, he shall receive 4 times the number of days of vacation specified above.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

\_\_\_\_\_

Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information

SAM.gov

on contractor requirements and worker protections under the EO is available at

https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

......

The body of each wage determination lists the classification and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of ""identifiers"" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

#### Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than ""SU"" or ""UAVG"" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

#### Survey Rate Identifiers

Classifications listed under the ""SU"" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate

SAM.gov

that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

#### WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

- \* an existing published wage determination
- \* a survey underlying a wage determination
- \* a Wage and Hour Division letter setting forth a position on a wage determination matter
- \* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour National Office because National Office has responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

> Branch of Construction Wage Determinations Wage and Hour Division U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

SAM.gov

Administrative Review Board U.S. Department of Labor 200 Constitution Avenue, N.W. Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

END OF GENERAL DECISIO"



# Missouri

# **Division of Labor Standards**

WAGE AND HOUR SECTION



MICHAEL L. PARSON, Governor

# Annual Wage Order No. 29

## Section 033 DENT COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by Todd Smith, Director Division of Labor Standards

Filed With Secretary of State: \_

March 10, 2022

Last Date Objections May Be Filed: April 11, 2022

Prepared by Missouri Department of Labor and Industrial Relations

#### Building Construction Rates for DENT County

and and a second stands and a second	**Prevailing		
OCCUPATIONAL TITLE	Hourly		
	Rate		
Asbestos Worker	\$66.70		
Boilermaker	\$20.63*		
Bricklayer	\$20.63*		
Carpenter	\$57.89		
Lather			
Linoleum Layer			
Millwright			
Pile Driver			
Cement Mason	\$20.63*		
Plasterer			
Communications Technician	\$20.63*		
Electrician (Inside Wireman)	\$74.88		
Electrician Outside Lineman	\$20.63*		
Lineman Operator			
Lineman - Tree Trimmer			
Groundman			
Groundman - Tree Trimmer			
Elevator Constructor	\$20.63*		
Glazier	\$20.63*		
Ironworker	\$20.63*		
Laborer	\$20.63*		
General Laborer			
First Semi-Skilled			
Second Semi-Skilled			
Mason	\$20.63*		
Marble Mason			
Marble Finisher			
Terrazzo Worker			
Terrazzo Finisher			
Tile Setter			
Tile Finisher			
Operating Engineer	\$20.63*		
Group I			
Group II			
Group III			
Group III-A			
Group IV			
Group V			
Painter	\$20.63*		
Plumber	\$20.63*		
Pipe Fitter			
Roofer	\$20.63*		
Sheet Metal Worker	\$20.63*		
Sprinkler Fitter	\$20.63*		
Truck Driver	\$20.63*		
Truck Control Service Driver			
Group I			
Group II			
Group III			
Group IV			

Section 033

\*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center. \*\*The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in Section 290.210 RSMo.

#### Heavy Construction Rates for DENT County

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	\$20.63*
Millwright	
Pile Driver	1
Electrician (Outside Lineman)	\$20.63*
Lineman Operator	
Lineman - Tree Trimmer	
Groundman	
Groundman - Tree Trimmer	
Laborer	\$47.43
General Laborer	
Skilled Laborer	
Operating Engineer	\$20.63*
Group I	
Group II	
Group III	
Group IV	
Truck Driver	\$20.63*
Truck Control Service Driver	
Group I	
Group II	
Group III	
Group IV	

Use Heavy Construction Rates on Highway and Heavy construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title as shown on the Building Construction Rate Sheet.

\*The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.

\*\*The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in Section 290.210 RSMo.

# OVERTIME and HOLIDAYS

## OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, **"overtime work"** shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

## HOLIDAYS

January first; The last Monday in May; July fourth; The first Monday in September; November eleventh; The fourth Thursday in November; and December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

## **SECTION 5**

### **ITEM C-105**

## MOBILIZATION

**105-1 Description.** This item of work shall consist of, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

105-2 Mobilization limit. Mobilization shall be limited to ten (10) percent of the total project cost.

**105-3 Posted notices.** Prior to commencement of construction activities, the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster "Equal Employment Opportunity is the Law" in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL "Notice to All Employees" Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

105-4 Engineer/RPR field office. An Engineer/RPR field office is not required.

## METHOD OF MEASUREMENT

**105-5 Basis of measurement and payment.** Based upon the contract lump sum price for "Mobilization (NTE 10% of Total Bid Amount)" partial payments will be allowed as follows:

a. With first pay request, 25%.

b. When 25% or more of the original contract is earned, an additional 25%.

c. When 50% or more of the original contract is earned, an additional 40%.

d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by Section 90, paragraph 90-11, *Contractor Final Project Documentation*, the final 10%.

#### **BASIS OF PAYMENT**

105-6 Payment will be made under:

Mobilization (NTE 10% of Total Bid Amount)

- - Per Lump Sum

#### REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended

EEOC-P/E-1 - Equal Employment Opportunity is the Law Poster

United States Department of Labor, Wage and Hour Division (WHD) WH 1321 – Employee Rights under the Davis-Bacon Act Poster

## **END OF ITEM C-105**

## **SECTION 6**

## LOCHNER MODIFICATION

## ITEM TEMP

## TEMPORARY MARKING, LIGHTING, AND BARRICADES

Item **Temporary Marking**, Lighting, and Barricades is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

1. <u>DESCRIPTION</u>: This item shall consist of all temporary marking, barricades and lighting shown on the safety and phasing plans, and required in accordance with FAA AC 150/5370-2G. This item shall include all materials, labor, installation, maintenance and removal to provide temporary markings from diluted paint, fabric, plastic, plywood, temporary relocated threshold light assemblies, low profile barricades, and temporary measures for blacking out or powering down runway lights in closed pavement areas.

2. <u>BASIS OF MEASUREMENT AND PAYMENT</u>: Based on the contract lump sum price for "Temporary Marking, Lighting, and Barricades", partial payments will be made based on the estimated percent completion of the project.

Payment will be made under:

Temporary Marking, Lighting, and Barricades

- - Per Lump Sum

## CONSTRUCTION METHODS

**901-3.1** Advance preparation and cleanup. After grading of areas has been completed and before applying fertilizer and ground limestone, areas to be seeded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage include filling gullies, smoothing irregularities, and repairing other incidental damage.

An area to be seeded shall be considered a satisfactory seedbed without additional treatment if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches (125 mm) as a result of grading operations and, if immediately prior to seeding, the top 3 inches (75 mm) of soil is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter, and if shaped to the required grade.

When the area to be seeded is sparsely sodded, weedy, barren and unworked, or packed and hard, any grass and weeds shall first be cut or otherwise satisfactorily disposed of, and the soil then scarified or otherwise loosened to a depth not less than 5 inches (125 mm). Clods shall be broken and the top 3 inches (75 mm) of soil shall be worked into a satisfactory seedbed by discing, or by use of cultipackers, rollers, drags, harrows, or other appropriate means.

### 901-3.2 Dry application method.

### a. Liming. Not required.

## b. Fertilizing. Not required.

c. Seeding. Grass seed shall be sown at the rate specified in paragraph 901-2.1 immediately after fertilizing. The fertilizer and seed shall be raked within the depth range stated in the special provisions. Seeds of legumes, either alone or in mixtures, shall be inoculated before mixing or sowing, in accordance with the instructions of the manufacturer of the inoculant. When seeding is required at other than the seasons shown on the plans or in the special provisions, a cover crop shall be sown by the same methods required for grass and legume seeding.

**d. Rolling.** After the seed has been properly covered, the seedbed shall be immediately compacted by means of an approved lawn roller, weighing 40 to 65 pounds per foot (60 to 97 kg per meter) of width for clay soil (or any soil having a tendency to pack), and weighing 150 to 200 pounds per foot (223 to 298 kg per meter) of width for sandy or light soils.

#### 901-3.3 Wet application method.

a. General. The Contractor may elect to apply seed and fertilizer (and lime, if required) by spraying them on the previously prepared seedbed in the form of an aqueous mixture and by using the methods and equipment described herein. The rates of application shall be as specified in the special provisions.

**b.** Spraying equipment. The spraying equipment shall have a container or water tank equipped with a liquid level gauge calibrated to read in increments not larger than 50 gallons (190 liters) over the entire range of the tank capacity, mounted so as to be visible to the nozzle operator. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

The unit shall also be equipped with a pressure pump capable of delivering 100 gallons (380 liters) per minute at a pressure of 100 lb / sq inches (690 kPa). The pump shall be mounted in a line that will recirculate the mixture through the tank whenever it is not being sprayed from the nozzle. All pump passages and pipe lines shall be capable of providing clearance for 5/8 inch (16 mm) solids. The power unit for the pump and agitator shall have controls mounted so as to be accessible to the nozzle operator.

There shall be an indicating pressure gauge connected and mounted immediately at the back of the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture delivered to the nozzle. At least three different types of nozzles shall be supplied so that mixtures may be properly sprayed over distance varying from 20 to 100 feet (6 to 30 m). One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For case of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings.

In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet (15 m) in length shall be provided to which the nozzles may be connected.

**c. Mixtures.** Lime, if required, shall be applied separately, in the quantity specified, prior to the fertilizing and seeding operations. Not more than 220 pounds (100 kg) of lime shall be added to and mixed with each 100 gallons (380 liters) of water. Seed and fertilizer shall be mixed together in the relative proportions specified, but not more than a total of 220 pounds (100 kg) of these combined solids shall be added to and mixed with each 100 gallons (380 liters) of water.

All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. The Contractor shall identify to the RPR all sources of water at least two (2) weeks prior to use. The RPR may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source that is disapproved by the RPR following such tests.

All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within two (2) hours from the time they were mixed or they shall be wasted and disposed of at approved locations.

**d. Spraying.** Lime, if required, shall be sprayed only upon previously prepared seedbeds. After the applied lime mixture has dried, the lime shall be worked into the top 3 inches (75 mm), after which the seedbed shall again be properly graded and dressed to a smooth finish.

Mixtures of seed and fertilizer shall only be sprayed upon previously prepared seedbeds on which the lime, if required, shall already have been worked in. The mixtures shall be applied by means of a high-pressure spray that shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.

Particular care shall be exercised to ensure that the application is made uniformly and at the prescribed rate and to guard against misses and overlapped areas. Proper predetermined quantities of the mixture in accordance with specifications shall be used to cover specified sections of known area.

Checks on the rate and uniformity of application may be made by observing the degree of wetting of the ground or by distributing test sheets of paper or pans over the area at intervals and observing the quantity of material deposited thereon.

On surfaces that are to be mulched as indicated by the plans or designated by the RPR, seed and fertilizer applied by the spray method need not be raked into the soil or rolled. However, on surfaces on which mulch is not to be used, the raking and rolling operations will be required after the soil has dried.

**901-3.4 Maintenance of seeded areas.** The Contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the RPR. Surfaces gullied or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The Contractor shall mow,

water as directed, and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

When either the dry or wet application method outlined above is used for work done out of season, it will be required that the Contractor establish a good stand of grass of uniform color and density to the satisfaction of the RPR. A grass stand shall be considered adequate when bare spots are one square foot (0.01 sq m) or less, randomly dispersed, and do not exceed 3% of the area seeded.

#### METHOD OF MEASUREMENT

908-4.1 The quantity for seeding shall not be measured.

## **BASIS OF PAYMENT**

**908-5.1** No separate payment shall be made for seeding, but the cost for furnishing all materials and for placing and anchoring the materials, and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item will be subsidiary to the Bid Item, **Haul Road, Staging Area, and Site Restoration, Per Lump Sum**.

#### REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM C602 Standard Specification for Agricultural Liming Materials

Federal Specifications (FED SPEC)

FED SPEC JJJ-S-181, Federal Specification, Seeds, Agricultural

Advisory Circulars (AC)

AC 150/5200-33 Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

#### **END OF ITEM T-901**

## **SECTION 8**

#### **ITEM T-908**

## MULCHING

#### DESCRIPTION

**908-1.1** This item shall consist of furnishing, hauling, placing, and securing mulch on surfaces indicated on the plans or designated by the RPR.

## MATERIALS

**908-2.1 Mulch material.** Acceptable mulch shall be the materials listed below or any approved locally available material that is similar to those specified. Mulch shall be free from noxious weeds, mold, and other deleterious materials. Mulch materials, which contain matured seed of species that would volunteer and be detrimental to the proposed overseeding, or to surrounding farm land, will not be acceptable. Straw or other mulch material which is fresh and/or excessively brittle, or which is in such an advanced stage of decomposition as to smother or retard the planted grass, will not be acceptable.

- a. Hay. (Not Used).
- b. Straw. (Not Used).

c. Hay mulch containing seed. (Not Used).

**d. Manufactured mulch**. Cellulose-fiber or wood-pulp mulch shall be products commercially available for use in spray applications.

e. Asphalt binder. Asphalt binder material shall conform to the requirements of ASTM D977, Type SS 1 or RS 1.

**908-2.2 Inspection.** The RPR shall be notified of sources and quantities of mulch materials available and the Contractor shall furnish him with representative samples of the materials to be used 30 days before delivery to the project. These samples may be used as standards with the approval of the RPR and any materials brought on the site that do not meet these standards shall be rejected.

#### CONSTRUCTION METHODS

**908-3.1 Mulching.** Before spreading mulch, all large clods, stumps, stones, brush, roots, and other foreign material shall be removed from the area to be mulched. Mulch shall be applied immediately after seeding. The spreading of the mulch may be by hand methods, blower, or other mechanical methods, provided a uniform covering is obtained.

Mulch material shall be furnished, hauled, and evenly applied on the area shown on the plans or designated by the RPR. Straw or hay shall be spread over the surface to a uniform thickness at the rate of 2 to 3 tons per acre (1800 – 2700 kg per acre) to provide a loose depth of not less than 1–1/2 inches (38 cm) nor more than 3 inches (75 mm). Other organic material shall be spread at the rate directed by the RPR. Mulch may be blown on the slopes and the use of cutters in the equipment for this purpose will be permitted to the extent that at least 95% of the mulch in place on the slope shall be 6 inches (150 mm) or more in length. When mulches applied by the blowing method are cut, the loose depth in place shall be not less than one inch (25 mm) nor more than 2 inches (50 mm).

**908-3.2 Securing mulch.** The mulch shall be held in place by light discing, a very thin covering of topsoil, pins, stakes, wire mesh, asphalt binder, or other adhesive material approved by the RPR. Where mulches have been secured by either of the asphalt binder methods, it will not be permissible to walk on the slopes after the binder has been applied. When an application of asphalt binder material is used to secure the mulch, the Contractor must take every precaution to guard against damaging or disfiguring structures or property on or adjacent to the areas worked and will be held responsible for any such damage resulting from the operation.

If the "peg and string" method is used, the mulch shall be secured by the use of stakes or wire pins driven into the ground on 5-foot (1.5-m) centers or less. Binder twine shall be strung between adjacent stakes in straight lines and crisscrossed diagonally over the mulch, after which the stakes shall be firmly driven nearly flush to the ground to draw the twine down tight onto the mulch.

#### 908-3.3 Care and repair.

**a.** The Contractor shall care for the mulched areas until final acceptance of the project. Care shall consist of providing protection against traffic or other use by placing warning signs, as approved by the RPR, and erecting any barricades that may be shown on the plans before or immediately after mulching has been completed on the designated areas.

**b.** The Contractor shall be required to repair or replace any mulch that is defective or becomes damaged until the project is finally accepted. When, in the judgment of the RPR, such defects or damages are the result of poor workmanship or failure to meet the requirements of the specifications, the cost of the necessary repairs or replacement shall be borne by the Contractor.

c. If the "asphalt spray" method is used, all mulched surfaces shall be sprayed with asphalt binder material so that the surface has a uniform appearance. The binder shall be uniformly applied to the mulch at the rate of approximately 8 gallons (32 liters) per 1,000 square feet (100 sq m), or as directed by the RPR, with a minimum of 6 gallons (24 liters) and a maximum of 10 gallons (40 liters) per 1,000 square feet (100 sq m) depending on the type of mulch and the effectiveness of the binder securing it. Asphalt binder material may be sprayed on the mulched slope areas from either the top or the bottom of the slope. An approved spray nozzle shall be used. The nozzle shall be operated at a distance of not less than 4 feet (1.2 m) from the surface of the mulch and uniform distribution of the asphalt material shall be required. A pump or an air compressor of adequate capacity shall be used to ensure uniform distribution of the asphalt material.

**d.** If the "asphalt mix" method is used, the mulch shall be applied by blowing, and the asphalt binder material shall be sprayed into the mulch as it leaves the blower. The binder shall be uniformly applied to the mulch at the rate of approximately 8 gallons (32 liters) per 1,000 square feet (100 sq m) or as directed by the RPR, with a minimum of 6 gallons (24 liters) and a maximum of 10 gallons (40 liters) per 1,000 square feet (100 sq m) depending on the type of mulch and the effectiveness of the binder securing it.

#### METHOD OF MEASUREMENT

908-4.1 The quantity for mulching shall not be measured.

#### **BASIS OF PAYMENT**

**908-5.1** No separate payment shall be made for mulching, but the cost for furnishing all materials and for placing and anchoring the materials, and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item will be subsidiary to the Bid Item, **Haul Road, Staging Area**, and **Site Restoration, Per Lump Sum**.

## REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D977 Standard Specification for Emulsified Asphalt

Advisory Circulars (AC)

AC 150/5200-33 Hazardous Wildlife Attractants on or Near Airports

FAA/United States Department of Agriculture

Wildlife Hazard Management at Airports, A Manual for Airport Personnel

## **END OF ITEM T-908**

This Page Intentionally Left Blank.

## **SECTION 03 3100**

## **GHN MODIFICATIONS**

## **ITEM SCO**

### STRUCTURAL CONCRETE

Item **SCO** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

## PART 1 - GENERAL

## 1.1 SCOPE

A. Provide all cast-in-place concrete work, unless otherwise specified. Provide all reinforcing steel, dowels, chairs, and accessories as specified for concrete work.

### 1.2 CODES & STANDARDS

A. ACI 301 "Specifications for Structural Concrete Buildings"; ACI 318, "Building Code Requirements for Reinforced Concrete"; comply with applicable provisions except as otherwise indicated.

### **1.3 QUALITY ASSURANCE**

- A. Concrete Testing Services: Employ at Contractor's expense an acceptable testing laboratory to perform materials evaluation, testing and design of concrete mixes.
- B. Quality Control: Perform sampling and testing during concrete placement, as follows:
  - 1. Sampling: ASTM C 172.
  - 2. Slump: ASTM C 143, one test for each load at point of discharge.
  - 3. Air Content: ASTM C 173, one for each set of compressive strength specimens.
  - Compressive Strength: ASTM C 39, one set of 4 cylinders for each 50 cu. yds. or fraction thereof of each class of concrete; one specimens tested at 7 days, two specimens tested at 28 days, and one retained for later testing if required.
    - a. When the total quantity of a given class of concrete is less than 50 cu. yds., strength tests may be waived by Architect if field experience indicates evidence of satisfactory strength.
- C. Test Reports: Test results shall be submitted in writing to Architect, Contractor, and concrete producer on same day tests are made.

### 1.4 SUBMITTALS

- A. Submit manufacturer's product data with installation instructions for proprietary materials including reinforcement and forming accessories, admixtures, joint materials, hardeners, curing materials and others as requested by Architect.
- B. Laboratory Reports: Submit 2 copies of laboratory test or evaluation reports for concrete materials and mix designs.

Salem Memorial Airport/ 19-526.00

- C. Mix Proportions and Design: Proportion mixes by either laboratory trial batch or field experience method complying with ACI 301.
  - Submit written report to Architect for each proposed concrete mix at least 15 days prior to start of work. do not begin concrete production until mixes have been reviewed and are acceptable to Architect.
  - Mix designs may be adjusted when material characteristics, job conditions, weather, test results or other circumstances warrant. Do not use revised concrete mixes until submitted to and accepted by Architect.
  - Use air-entraining admixture in all concrete, providing not less than 4% nor more than 7% entrained air for concrete exposed to freezing and thawing, and from 2% to 4% for other concrete.
- D. Shop Drawings: Submit to the Architect for review prior to installation, shop drawings of all reinforcing steel, including bar cutting lists.

## PART 2 - PRODUCTS

- 2.1 CONCRETE MATERIALS
  - A. Portland Cement: ASTM C 150, Type as required.
  - B. Aggregates: ASTM C 33, except local aggregates of proven durability may be used when acceptable to Architect.
  - C. Water: Clean, drinkable.
  - D. Air-Entraining Admixture: ASTM C 260.
  - E. Water-Reducing Admixture: ASTM C 494. Only use admixtures which have been tested and accepted in mix designs, unless otherwise acceptable.

## 2.2 RELATED MATERIALS

- A. Moisture Barrier: Clear 10-mils thick polyethylene; polyethylene-coated barrier paper; or 1/8" thick asphalt core membrane sheet.
- B. All concrete shall be properly cured and protected by the Contractor. The concrete shall be protected from the weather, flowing water, and from defacement of any nature during the project. The concrete shall be cured by covering with an approved material as soon as it has sufficiently hardened. Water-absorptive coverings shall be thoroughly saturated when placed and kept saturated for at least three (3) days following concrete placement. All curing mats or blankets shall be sufficiently weighted or tied down to keep the concrete surface covered and to prevent the surface from being exposed to air currents. Wooden forms shall be kept wet at all times until removed to prevent opening of joints and drying out of the concrete. Traffic shall not be allowed on concrete surfaces for seven (7) days after the concrete has been placed.
- C. Joint Fillers: See Division-7.

Salem Memorial Airport/ 19-526.00

## 2.3 FORM MATERIALS

- A. Provide form materials with sufficient stability to withstand pressure of placed concrete without bow or deflection.
- B. Exposed Concrete Surfaces: Suitable material to suit project conditions.

## 2.4 REINFORCING MATERIALS

- A. Deformed Reinforcing Bars: ASTM A 615, Grade 60, unless otherwise indicated.
- B. Welded Wire Fabric: ASTM A 185.

## 2.5 PROPORTIONING OF MIXES

- A. Compressive Strength:
  - 1. Footings: 3,000 psi minimum ultimate strength at 28 days, unless noted otherwise on structural drawings. No air entrainment.
    - a. Water/Cement Ratio: 0.45 to 0.50 by weight.
  - Stem Walls and Slabs: 3,500 psi minimum ultimate strength at 28 days, unless noted otherwise on structural drawings. No air entrainment.
    a. Water/Cement Ratio: 0.45 maximum by weight.
  - Exterior Paving: 4,000 psi minimum ultimate strength at 28 days, unless noted otherwise on structural drawings. 6% +/- 1.5% air entrainment.
    - a. Water/Cement Ratio: 0.45 maximum by weight.
- B. Slump Limits: 4" ± 1-1/2".

## 2.6 BASE ROCK

- A. Crushed aggregate shall consist of clean, sound, durable particles of crushed stone, crushed gravel, and shall be free from coatings of clay, silt, organic material, or other objectionable materials. Aggregates shall contain no clay lumps or balls. Fine aggregate passing the No. 4 sieve shall consist of fines from the coarse aggregate crushing operation. If necessary, fine aggregate may be added to produce the correct gradation. The fine aggregate shall be produced by crushing stone, gravel, that meet the coarse aggregate requirements for wear and soundness.
- B. The coarse aggregate portion, defined as the material retained on the No. 4 sieve, shall not have a loss of greater than 45% when tested per ASTM C131. The sodium sulfate soundness loss shall not exceed 12%, or the magnesium sulfate soundness loss shall not exceed 18%, after five cycles, when tested in accordance with ASTM C88. The aggregate shall contain no more than 15%, by weight, of flat, elongated, or flat and elongated particles per ASTM D4791. A flat particle is one having a ratio of width to thickness greater than 3; an elongated particle is one having a ratio of length to width greater than three (3). The aggregate shall have at least 90% by weight of particles with at least two fractured faces and 100% with at least one fractured face per ASTM D5821. The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle

between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

- C. Samples shall be taken by the Contractor in the presence of the Engineer. Material shall meet the requirements in paragraph 209-2.1 and 209-2.2. This sampling and testing will be the basis for approval of the aggregate base quality requirements.
- D. The gradation of the aggregate base material shall meet the requirements of the gradation given in the following table when tested per ASTM C117 and ASTM C136. The gradation shall be well graded from coarse to fine as defined by ASTM D2487 and shall not vary from the lower limit on one sieve to the high limit on an adjacent sieve or vice versa. The fraction of material passing the No. 200 sieve shall not exceed one-half the fraction passing the No. 40 sieve.

Sieve Size	Design Range % by Weight	Contractor's Final Gradation	Job Control Grading Band Tolerances for Contractor's Final Gradation %
2 inch	100		0
1 1/2 inch	95-100		+/- 5
1 inch	70-95		+/- 8
3/4 inch	55-85		+/- 8
No. 4	30-60		+/- 8
No. 40	10-30		+/- 5
No. 200	0-8		+/- 3

E. Requirements For Gradation Of Aggregate Base

- The "Job Control Grading Band Tolerances for Contractor's Final Gradation" in the table shall be applied to "Contractor's Final Gradation" to establish a job control grading band. The full tolerance still applies if application of the tolerances results in a job control grading band outside the design range.
- F. Gradation tests shall be performed by the Contractor per ASTM C136 and sieve analysis on material passing the No. 200 sieve per ASTM C112. The Contractor shall take at least two aggregate base samples per pad to check the final gradation. Sampling shall be per ASTM D75. The lot will be consistent with the lot size used for density. The samples shall be taken from the in-place, un-compacted material in the presence of the Engineer. Sampling points and intervals will be designated by the Engineer.

## G. CONSTRUCTION METHODS

- 1. The underlying subgrade and/or subbase shall be checked and accepted by the Engineer before base course placing and spreading operations begin. Re-proof rolling of the subgrade or proof rolling of the subbase as required, at the Contractor's expense, if the Contractor fails to ensure proper drainage or protect the subgrade and/or subbase. Any ruts or soft, yielding areas due to improper drainage conditions, hauling, or any other cause, shall be corrected before the base course is placed. To ensure proper drainage, the spreading of the base shall begin along the centerline of the pavement on a crowned section or on the high side of the pavement with a one-way slope.
- The aggregate shall be uniformly blended and, when at a satisfactory moisture content, the approved material may be transported directly to the spreading equipment.
- 3. The aggregate base material shall be placed on the prepared underlying subgrade and/or subbase and compacted in layers to the thickness shown on the plans. Work shall progress without interruption. The material shall be deposited and spread in lanes in a uniform layer without segregation to such loose depth that, when compacted, the layer shall have the specified thickness. The aggregate base course shall be constructed in layers of uniform thickness of not less than 3 inches nor more than 6 inches of compacted thickness. The aggregate as spread shall be of uniform grading with no pockets of fine or coarse materials. The aggregate, unless otherwise permitted by the Engineer, shall not be spread more than 2,000 square yards in advance of the rolling. Any necessary sprinkling shall be kept within these limits. Care shall be taken to prevent cutting into the underlying layer during spreading. No material shall be placed in snow or on a soft, muddy, or frozen course. The aggregate base material shall be spread by spreader boxes or other approved devices. This equipment shall have positive thickness controls that spread the aggregate in the required amount to avoid or minimize the need for hand manipulation. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the un-compacted base course shall not be permitted.
- 4. When more than one layer is required, the construction procedure described herein shall apply similarly to each layer.
- 5. Immediately after completion of the spreading operations, compact each layer of the base course, as specified, with approved compaction equipment. The number, type, and weight of rollers shall be sufficient to compact the material to the required density within the same day that the aggregate is placed on the subgrade. The moisture content of the material during placing operations shall be within ±2 percentage points of the optimum moisture content as determined by ASTM.

- 6. Each lot will be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens. The specimens shall be compacted and tested per ASTM D698. If the specified density is not attained, the entire lot shall be reworked and/or re-compacted and two additional random tests made at the Contractor's expense. This procedure shall be followed until the specified density is reached.
- 7. After the course has been compacted, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and recompacted to grade. until the required smoothness and accuracy are obtained and approved by the Engineer. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.
- 8. The finished surface shall not vary more than 3/8 inch when tested with a 12-foot straightedge applied parallel with and at right angles to the centerline. The straightedge shall be moved continuously at half the length of the 12-foot straightedge for the full length of each line on a 50-foot grid.
- 9. The grade and crown shall be measured on a 50-foot grid and shall be within +0 and -1/2 inch of the specified grade.
- 10. The thickness of the base course shall be within +0 and -1/2 inch of the specified thickness as determined by depth tests taken by the Contractor in the presence of the Engineer. Tests shall be taken at intervals representing no more than 300 square yards per test. Sampling locations will be determined by the Engineer per ASTM D3665. Where the thickness is deficient by more than 1/2 inch, the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches, adding new material of proper gradation, and the material shall be blended and recompacted to grade. Additional test holes may be required to identify the limits of deficient areas. The Contractor shall replace, at his expense, base material where depth tests have been taken.
- 11. Perform construction when the atmospheric temperature is above 35°F. When the temperature falls below 35°F, protect all completed areas by approved methods against detrimental effects of freezing. Correct completed areas damaged by freezing, rainfall, or other weather conditions to meet specified requirements. When the aggregates contain frozen materials or when the underlying course is frozen or wet, the construction shall be stopped. Hauling equipment may be routed over completed portions of the base course, provided no damage results. Equipment shall be routed over the full width of the base course to avoid rutting or uneven compaction. The Engineer will stop all hauling over completed or partially completed base course when, in the Engineer's opinion, such hauling is causing damage. Any damage to the base course shall be repaired by the Contractor at the Contractor's expense.

- 12. The Contractor shall maintain the base course in a satisfactory condition until the full pavement section is completed and accepted by the Engineer. The surface shall be kept clean and free from foreign material and properly drained at all times. Maintenance shall include immediate repairs to any defects and shall be repeated as often as necessary to keep the area intact. Any base course that is not paved over prior to the onset of winter shall be retested to verify that it still complies with the requirements of this specification. Any area of base course that is damaged shall be reworked or replaced as necessary to comply with this specification.
- 13. Equipment used in the construction of an adjoining section may be routed over completed base course, if no damage results and the equipment is routed over the full width of the base course to avoid rutting or uneven compaction.

## PART 3 - EXECUTION

## 3.1 FORMING & PLACING CONCRETE

- A. Job-Site Mixing: Use drum type batch machine mixer, mixing not less than 1-1/2 minutes for one cu. yd. or smaller capacity. Increase mixing time at least 15 seconds for each additional cu. yd. or fraction thereof. Hand mixing not permitted.
- B. Ready-Mix Concrete: ASTM C 94.
- C. Formwork: Construct so that concrete members and structures are of correct size, shape, alignment, elevation, and position. Concrete shall not be placed until all the forms and reinforcements have been inspected and approved by the Engineer. Forms shall be of suitable material and shall be of the type, size, shape, quality, and strength to build the structure as shown on the plans. The forms shall be true to line and grade and shall be mortar-tight and sufficiently rigid to prevent displacement and sagging between supports. The surfaces of forms shall be smooth and free from irregularities, dents, sags, and holes. The Contractor shall be responsible for their adequacy. The internal form ties shall be arranged so no metal will show in the concrete surface or discolor the surface when exposed to weathering when the forms are removed. All forms shall be wetted with water or with a non-staining mineral oil, which shall be applied immediately before the concrete is placed. Forms shall be constructed so they can be removed without injuring the concrete or concrete surface. The forms shall not be removed until at least 30 hours after concrete placement for vertical faces, walls, slender columns, and similar structures. Forms supported by falsework under slabs, beams, girders, arches, and similar construction shall not be removed until tests indicate the concrete has developed at least 60% of the design strength.
- D. Provide openings in formwork to accommodate work of other trades. Accurately place and securely support items built into forms.
- E. Clean and adjust forms prior to concrete placement. Apply form release agents or wet forms, as required. Retighten forms during concrete placement if required to eliminate mortar leaks.

Salem Memorial Airport/ 19-526.00 STRUCTURAL CONCRETE 03 3100/7

- F. Reinforcement: Position, support and secure reinforcement against displacement. Locate and support with metal chairs, runners, bolsters, spacers and hangers, as required. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces. Provide supports for reinforcement in slabs-on-grade.
- G. Install welded wire fabric in as long lengths as practicable, lapping at least one mesh.
- H. Joints: Provide construction, isolation, and control joints as indicated or required. Locate construction joints so as to not impair strength and appearance of structure. Place isolation and control joints in slabs-on-ground to stabilize differential settlement and random cracking. If the placement of concrete is suspended, necessary provisions shall be made for joining future work before the placed concrete takes its initial set. For the proper bonding of old and new concrete, provisions shall be made for grooves, steps, reinforcing bars or other devices as specified. The work shall be arranged so that a section begun on any day shall be finished during daylight of the same day. Before depositing new concrete shall be cleaned by a heavy steel broom, roughened slightly, wetted, and covered with a neat coating of cement paste or grout.
- Installation of Embedded Items: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by cast-inplace concrete. Use setting diagrams, templates and instructions provided by others for locating and setting.
- J. Concrete Placement: Comply with ACI, placing concrete in a continuous operation within planned joints or sections. Do not begin placement until work of other trades affecting concrete is completed.
- K. Consolidate placed concrete using mechanical vibrating equipment with hand rodding and tamping, so that concrete is worked around reinforcement and other embedded items and into forms.
- L. Protect concrete from physical damage or reduced strength due to weather extremes during mixing, placement and curing.
  - 1. In cold weather comply with ACI 306.
  - 2. In hot weather comply with ACI 305.

## 3.2 CONCRETE FINISHES

- A. Slab Trowel Finish: Apply trowel finish to monolithic slab surfaces that are exposedto-view or are to be covered with resilient flooring, paint or other thin film coating. Consolidate concrete surfaces by finish troweling, free of trowel marks, uniform in texture and appearance.
- B. Curing: Begin initial curing as soon as free water has disappeared from exposed surfaces. Where possible, keep continuously moist for not less than 72 hours. Continue curing by use of moisture-retaining cover or membrane-forming curing compound. Cure formed surfaces by moist curing until forms are removed. Provide protection as required to prevent damage to exposed concrete surfaces.

## **3.3 PROTECTION**

## A. General:

- 1. Protect concrete that has not received its initial set from precipitation to avoid excess water in mix and unsatisfactory surface finish.
- 2. Remove and replace concrete that does not meet the 28 day compressive strength described within this section. Removal and replacement of unsatisfactory concrete is a Contractor's expense.

END OF SECTION 810531:1910221602
**BLANK PAGE** 

## **SECTION 05 4000**

## **GHN MODIFICATIONS**

## ITEM CFM

### COLD FORMED (LIGHTGAGE) METAL FRAMING

Item **CFM** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

## PART 1 - GENERAL

- 1.1 SCOPE
  - A. Provide all light gage metal framing (exterior wall studs and related framing), complete.
- 1.2 MANUFACTURERS
  - A. Dietrich Industries, Inc., Clark Western Building Systems, Inc. and The Steel Network are approved manufacturers.
- 1.3 SUBMITTALS
  - A. Manufacturer's Data: Submit copy of installation instructions for each item of lightgage framing and accessories. Transmit a copy to the Installer.
  - B. Shop Drawings: Submit shop drawings including placing drawings for framing members showing size and gage designations, number, type, location and spacing. Indicate supplemental bracing, accessories, and details as may be required for proper installation.
- 1.4 PRODUCT DELIVERY AND STORAGE
  - A. Protect metal framing units from rusting and damage. Deliver to the project site in manufacturer's unopened containers or bundles, fully identified with name, brand, type, location and spacing. Indicate supplemental bracing, accessories, and details as maybe required for proper installation.

## PART 2 - PRODUCTS

- 2.1 METAL FRAMING
  - A. System Components: With each type of metal framing required, provide manufacturer's standard steel runners (tracks), blocking, lintels, clip angles, shoes, reinforcements, fasteners, and accessories as recommended by manufacturer for the applications indicated, as needed to provide a complete metal framing system.
  - B. Materials and Finishes:
    - For 16 gage and heavier units, fabricate metal framing components of structural quality steel sheet with a minimum yield point of 40,000 psi; ASTM A 446, A 570, or A 611.

- For 18 gage and lighter units, fabricate metal framing components of commercial quality steel sheet with a minimum yield point of 33,000 psi; ASTM A 446, A 570, or A 611.
- 3. Provide galvanized finish to metal framing components complying with ASTM A 525 for minimum G 60 coating.
- 4. Provide prime coated finish with one coat of shop-applied red-oxide, zincchromate, or other similar rust-inhibitive primer.
- 5. Studs: Provide Dietrich UST-series or equal.
- 6. Top and Bottom Tracks: Provide Dietrich UT-Series, or equal.
- 7. Fasteners: Manufacturer's standard, non-corrosive fasteners.
- 8. Touch-Up Paint: Use compatible primer for prime coated surface.

## 2.2 PREFABRICATION

- A. General: At Contractor's option framing components may be prefabricated into panels prior to erection. Fabricate panels plumb, square, true to line and braced against racking with joints welded. Perform lifting of prefabricated panels in a manner to prevent damage or distortion in any members in the assembly.
- B. Fastenings: Attach similar components by welding. Attach dissimilar components by welding, bolting, or screw fasteners, as standard with the manufacturer. Wire tying of framing components is not permitted.

## PART 3 - EXECUTION

## 3.1 INSTALLATION

A. Install metal framing systems in accordance with manufacturer's printed or written instructions and recommendations, and accepted shop drawings.

### B. General:

- Runner Tracks: Install continuous tracks sized to match studs. Align tracks accurately to the layout at base and top of studs. Secure tracks as recommended by the stud manufacturer for the type of construction involved, except do not exceed 24" o.c. spacing for nail or power-driven fasteners, nor 16" o.c. for other types of attachment. Provide fasteners at corners and ends of tracks.
- Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar requirements.
- Where stud system abuts structural columns or walls anchor ends of stiffeners to supporting structure.
- 4. Install supplementary framing, blocking and bracing in the metal framing system wherever walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim and furnishings, and similar work requiring attachment to the wall or partition. Where type of supplementary support is not otherwise indicated, comply with the stud manufacturer's recommendations and industry standards in each case, considering the weight or loading resulting from the item supported.

- C. Installation of Wall Stud System:
  - 1. Secure studs to top and bottom runner tracks by either welding or screw fastening at both inside and outside flanges.
  - 2. Frame wall openings larger than 2'-0" square with double stud at each jamb of frame except where more than 2 are either shown or indicated in manufacturer's instructions. Install runner tracks and jamb studs with stud shoes or by welding, and space jack studs same as full-height studs of the wall. Secure stud system all around to wall opening frame in the manner indicated.
  - 3. Frame both sides of expansion and control joints, as shown for the wall system, with a separate stud and do not bridge the joint with components of the stud system.
  - 4. Install horizontal stiffeners in stud system, spaced (vertical distance) at not more than 5 ft o.c. Weld at each intersection.
- 3.2 FIELD PAINTING
  - A. Touch-up shop-applied protective coatings damaged during handling and installation.

END OF SECTION 870429:1910221604

**BLANK PAGE** 

### **SECTION 07 2100**

## GHN MODIFICATIONS

## **ITEM INS**

### BUILDING INSULATION

Item **INS** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

### PART 1 - GENERAL

- 1.1 SCOPE
  - A. Provide roof insulation, complete.
- 1.2 SUBMITTALS
  - A. Submit manufacturer's installation instructions for each type of insulation. Include data substantiating that materials comply with physical and thermal properties, and other requirements of specified insulation.
- 1.3 PRODUCT HANDLING
  - A. Do not allow insulation materials to become wet or soiled. Comply with manufacturer's instructions for handling, storage, and protection during installation. Protect plastic insulation from damage by sunlight.
- 1.4 JOB CONDITIONS
  - A. Do not proceed with the installation of insulation until the work which follows (and which conceals the insulation) is scheduled to follow immediately.

### PART 2 - PRODUCTS

- 2.1 INSULATION
  - A. Roof Insulation: Provide in 3" minimum thickness as indicated in Tee Hangar specification.
- 2.2 MISCELLANEOUS MATERIALS
  - A. Provide adhesive for bonding insulation, mechanical anchors, or other required items, as recommended by the insulation manufacturer. Friction fit only will not be permitted.
- PART 3 EXECUTION
  - 3.1 INSTALLATION
    - A. Comply with manufacturer's instructions. Extend insulation full thickness over entire surface to be insulated. Cut and fit tightly around obstructions and fill voids with insulation.

Salem Memorial Airport / 19-526.00

BUILDING INSULATION 07 2100/1

## 3.2 INSULATION SCHEDULE

## A. PERIMETER AND UNDERSLAB INSULATION

1. 2" (R-10), typical.

END OF SECTION 870515:1910221607

### **SECTION 07 6000**

## **GHN MODIFICATIONS**

## **ITEM FSM**

## FLASHING & SHEET METAL

Item **FSM** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

### PART 1 - GENERAL

- 1.1 SCOPE
  - A. Provide all sheet metal work, complete, including flashing and counter flashing.
- 1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS
  - A. Sealants; Section 07 9000.
- 1.3 SHOP DRAWINGS
  - A. Prior to fabrication, submit shop drawings for each typical sheet metal item indicating materials, gauges, jointing, and fastening.
- 1.4 JOB CONDITIONS
  - A. Coordinate work of this section with interfacing and adjoining work for proper sequencing of each installation. Ensure best possible weather resistance and durability of the work and protection of materials and finishes.

## PART 2 - PRODUCTS

- 2.1 MATERIALS
  - A. Sheet Metal:
    - Steel Sheets: ASTM A 653, hot-dip galvanized in compliance with ASTM D2201-99, mill phosphatized.
    - Soft Temper Sheet Metal: Lead sheet, Fed. Spec. QQ-L-201, Grade B, formed from common desilvered pig lead, complying with ASTM B 29-03, 4 lb. per sq. ft.
    - Prefinished Steel Sheets: 24 ga. galv. steel sheets factory pre-finished with 70% Kynar coating, color as selected; Firestone, Peterson Pac-Clad, or approved equal.
    - Extruded Aluminum: Manufacturer's standard extrusion size and profiles indicated, 6063-T52 AA-C22A41 clear anodized finish, .08" minimum thickness for primary legs of extrusions.
  - B. Nails, Screws, and Rivets: Same metal as flashing/sheet metal or other noncorrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with materials being fastened.

- C. Solder for Steel and Lead: ASTM B 32, 50% tin and 50% lead, used with rosin flux.
- D. Solder for Stainless Steel: ASTM B 32, 60% tin and 40% lead, used with acidchloride type flux, except use rosin flux over tinned surfaces.
- E. Roofing Cement: Fed. Spec. SS-C-153, Type I, Class A (summer grade) or Class B (winter grade) as applicable.
- F. Bitumastic Coating: Fed. Spec. TT-C-494, MIL-C-18480, or SSPC Paint 12, cold applied solvent type bitumastic coating for application in dry film thickness of 15 mils per coat.
- G. Metal Accessories: Sheet metal clips, cleats, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.
- H. Sealants: As specified in Section 07 9000.
- I. Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by manufacturer for non-moving joints including riveted joints.
- J. Polyethylene Underlayment: 6 mil carbonated (black) polyethylene film.

## 2.2 FABRICATION

- A. Fabricate metal flashings, counter-flashings, trim and similar items to comply with the profiles and sizes indicated. Fabricate to comply with "SMACNA" Architectural Sheet Metal Manual", metal manufacturer's recommendations, and recognized industry practices. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form work to fit substrates. Comply with material manufacturer's instructions and recommendations. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels as indicated, with exposed edges folded back to form hems. Fabricate work of the following metals:
  - 1. Flashing, Counter flashing, & Trim: 24 gage galvanized steel.
- B. Seams: Fabricate non-moving seams in sheet metal with flat-lock seams. For metal other than aluminum, tin edges to be seamed, form seams, and solder. Form aluminum seams with epoxy seam sealer; rivet joints for additional strength where required.
- C. Expansion Provisions: Where lapped or bayonet-type expansion provisions cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of

intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed within joints).

- D. Aluminum Extrusions Units: Fabricate extruded aluminum running units with formed or extruded aluminum joint covers, for installation behind main members. Fabricate mitered and welded corner units.
- E. Separate dissimilar metals from each other by painting each metal surface in area of contact with a heavy application of bitumastic coating, or by other permanent separation as recommended by manufacturers of dissimilar metals.

## PART 3 - EXECUTION

- 3.1 INSPECTION
  - A. Examine substrates and conditions under which metal flashing and trim will be installed. Do not proceed with installation until unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION

- A. SMACNA Details: Except as otherwise indicated or specified, comply with applicable recommendations and details of "Architectural Sheet Metal Manual" by SMACNA.
- B. Manufacturer's Recommendations: Except as otherwise indicated or specified, comply with recommendations and instructions of manufacturer of sheet metal being installed.
- C. Anchor units of work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints and seams which will be permanently watertight and weatherproof.

### 3.3 CLEAN-UP

A. After completion of work, clean roofing cement, sealant and bituminous paint from flashing, floors, and all surfaces so defaced. Remove all excess materials and scraps from the job and leave all surfaces neat and clean.

END OF SECTION 141001:1910221607 **BLANK PAGE** 

## **SECTION 07 9000**

## **GHN MODIFICATIONS**

## **ITEM JOS**

### JOINT SEALERS

Item **JOS** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

### PART 1 - GENERAL

- 1.1 SCOPE
  - A. Completely close with caulking compound or sealant all joints, including joints around frames of doors or other openings in exterior walls, flooring joints, joints at penetrations of walls, decks, and floors by piping and other services and equipment, joints between items of equipment and other construction, and other joints indicated or specified to be caulked or sealed.

### **1.2 QUALITY ASSURANCE**

A. Obtain elastomeric materials only from manufacturer who will, if required, send a qualified technical representative to project site, for the purpose of advising the Installer of proper procedures and precautions for the use of the material.

#### 1.3 SUBMITTALS

- A. Manufacturer's Data: Submit manufacturer's specifications, recommendations, and installation instructions for each type of sealant, caulking compound and miscellaneous materials. Include letter of certification, or certified test laboratory reports indicating that each material complies with the requirements and is intended for the applications indicated. Transmit a copy of recommendations and instructions to the Installer.
- B. Samples: Submit 12" long sample of each color required (except black) for each type of sealant or caulking compound exposed to view. Install sample between 2 strips of material similar to or representative of typical surfaces where sealant or caulking compound will be used, held apart to represent typical joint widths. Samples will be viewed for color and texture only.

## 1.4 JOB CONDITIONS

- A. Examine joint surfaces, backing, and anchorage of units forming sealant rabbet. Do not proceed with work until unsatisfactory conditions have been corrected.
- B. Do not proceed with installations of sealants under adverse weather conditions, or when temperatures are above or below manufacturer's recommended limitations for installation. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength.

Salem Memorial Airport/ 19-526.00 JOINT SEALERS 07 9000/ 1

## 2.1 MATERIALS

- A. Sealant; Contractor's option: One component polyurethane sealant conforming to Fed. Spec. TT-S-230, Class A, Type II (non-sag). BASF "MasterSeal NP I", Bostik "915 FS", Pecora "Dynatrol I-XL", Tremco "Dymonic 100", or equal. Use two component polyurethane sealant specified above where Type I (self-leveling) is required. Standard color(s) as selected by the Architect from industry available colors.
- B. Miscellaneous Materials:
  - 1. Joint Cleaner: Type of joint cleaning compound recommended by the sealant or caulking compound manufacturer for the joint surfaces to be cleaned.
  - Joint Primer/Sealer: Type recommended by the sealant manufacturer for the joint surfaces to be primed or sealed.
  - 3. Bond Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to the substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.
  - 4. Sealant Backer Rod: Compressible rod stock polyethylene foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by the sealant manufacturer. Provide size and shape of rod which will control the joint depth for sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead on back side, and provide a highly compressible backer to minimize the possibility of sealant extrusion when joint is compressed.

## PART 3 - EXECUTION

## 3.1 JOINT SURFACE PREPARATION

- A. Clean joint surfaces immediately before installation of sealant or caulking compound. Remove dirt, loose coatings, moisture, and other substances which would interfere with bond of sealant or caulking compound.
- B. For elastomeric sealants, do not proceed with installation of sealant over joint surfaces which have been painted, lacquered, waterproofed or treated with water repellent or other treatment or coating. Remove coating or treatment from joint surfaces before installing sealant.
- C. Etch concrete joint surfaces to remove excess alkalinity. Etch with 5% solution of muriatic acid; neutralize with dilute ammonia solution, rinse thoroughly with water and allow to dry before sealant installation.
- D. Roughen joint surfaces on vitreous coated and similar non-porous materials, wherever sealant manufacturer's data indicates lower bond strength than for porous surfaces. Rub with fine abrasive cloth or wool to produce a dull sheen.

### 3.2 INSTALLATION

- A. Comply with sealant manufacturer's printed instructions, except where more stringent requirements are indicated or specified and except where manufacturer's technical representative directs otherwise, subject to Architect's approval.
- B. Prime or seal the joint surfaces wherever shown or recommended by the sealant manufacturer. Do not allow primer/sealer to spill or migrate onto adjoining surfaces.
- C. Install sealant backer rod for liquid elastomeric sealants, except where shown to be omitted or recommended to be omitted by sealant manufacturer for the application shown.
- D. Install bond breaker tape wherever shown and wherever required by manufacturer's recommendations to ensure that elastomeric sealants will perform properly.
- E. Employ only proven installation techniques, which will ensure that sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of the joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface, slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove, so that joint will not trap moisture and dirt.
- F. Install sealants to depths as shown or, if not shown, as recommended by the sealant manufacturer but within the following general limitations, measured at the center (thin) section of the bead.
  - For sidewalks, pavements and similar joints sealed with elastomeric sealants and subject to traffic and other abrasion and indentation exposures, fill joints to a depth equal to 75% of joint width, but neither more than 5/8" deep nor less than 3/8" deep.
  - For normal moving joints sealed with elastomeric sealants, but not subject to traffic, fill joints to a depth equal to 50% of joint width, but neither more than 1/2" deep nor less than 1/4" deep.
  - 3. For joints sealed with non-elastomeric sealants and caulking compounds, fill joints to a depth in the range of 75% to 125% of joint width.
- G. Do not allow sealants or compounds to overflow or spill onto adjoining surfaces. Use masking tape or other precautionary devices to prevent staining of adjoining surfaces, by either the primer/sealer or the sealant/caulking compound.
- H. Do not overheat hot applied sealants.
- Remove excess and spillage of compounds promptly as the work progresses. Clean the adjoining surfaces by whatever means may be necessary to eliminate evidence of spillage, without damage to the adjoining surfaces of finishes.

## 3.3 CURE AND PROTECTION

A. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength, and surface durability.

END OF SECTION 880201:1910221608

Salem Memorial Airport/ 19-526.00 JOINT SEALERS 07 9000/ 4

## **SECTION 08 1100**

## GHN MODIFICATIONS

### **ITEM MDF**

### METAL DOORS & FRAMES

Item **MDF** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

### PART 1 - GENERAL

- 1.1 SCOPE
  - A. Provide all metal frames, hollow metal doors, and related items required to complete the work.
- 1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS
  - A. Furnishing of Finish Hardware; Section 08 7000.
- 1.3 QUALITY ASSURANCE
  - A. Provide metal doors and frames manufactured by a single firm; Mesker, Steelcraft, Republic Doors and Frames, Ceco Door, or Curries.

### 1.4 SUBMITTALS

- A. Manufacturer's Data: Submit copy of manufacturer's technical data and installation instructions. Transmit a copy of installation instructions to Installer.
- B. Shop Drawings: Prior to fabrication of any work, submit shop drawings indicating gage of metals, details of construction, profile of moldings, connections to other work, fastenings and anchors.

### 1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver, handle, and store all metal doors and frames in a manner to prevent damage and deterioration.
- B. Provide packaging such as cardboard or other containers, separators, banding, spreaders, and paper wrappings as required to completely protect all metal doors and frames during transportation and storage.
- C. Store doors upright, in a protected dry area, at least 1" off ground and with at least 1/4" air space between individual pieces. Protect all primed and hardware surfaces as required.

## 2.1 MATERIALS

A. Steel Sheet:

- Doors: 24 gage, stretcher leveled; free of scale, pitting or other surface defects. At exterior locations provide door face sheets with minimum 0.10 oz./sq. ft. zinc coating.
- 2. Frames: 16 gage hot rolled, pickled and oiled, or cold rolled as specified above. At exterior locations provide frames with minimum 0.10 oz./sq. ft. zinc coating.
- B. Hollow Core: Continuously reinforced with a full core of resin- impregnated kraft fiber honeycomb with 1" nested, hexagonal-shaped cells, or provide solid slab of expanded polystyrene at exterior doors. Bond core to inside of both face sheets.
- C. Hollow Metal Welded Frames: Steelcraft, Mesker, Ceco Door, Republic Door, Curries, or approved equal.
- D. Primer: Manufacturer's standard rust inhibitive primer.
- E. Anchors, Fasteners, Accessories: Manufacturer's standard, hot-dipped galvanized at exterior.
- F. Channel Fillers: Flush Steel channel fillers for top channel of exterior doors.

### 2.2 FABRICATION

- A. General Requirements: Comply with Steel Door Institute Standard 100-85 for Grade II, Model 3, except as otherwise specified herein.
  - Fabricate steel doors and frames rigid, neat in appearance and free from defects, warp, or buckle. Provide clean cut, straight and true molded members, well-formed and aligned miters, dressed and ground smooth, and where applicable, concealed fasteners. Reinforce at corners as required to prevent sagging. Accurately form metal to required sizes and profiles, including astragals.
  - 2. Fit, assemble, and weld units at factory or shop.
- B. Doors: Flush construction of sizes and designs as indicated.
- C. Frames: Combination stop and frame channel section, rabbeted for doors, of type and styles indicated.
  - 1. Anchors/Fasteners: Supply the proper fastenings and/or anchors to secure frames in each type of structural framing indicated.
  - Silencers/Mutes: Drill stops to receive a minimum of 3 silencers on strike jamb on single swing frames and 2 on heads of double swing frames.

## 2.3 HARDWARE

- A. Preparation: Prepare hollow metal units to receive mortised and concealed finished hardware, including cutouts, reinforcing, drilling and tapping, in accordance with final Finish Hardware Schedule and templates provided by the hardware supplier. Reinforce hollow metal units to receive surface-applied hardware. Drilling and tapping for surface-applied hardware will be done on the job site.
- B. Location of Hardware: Locate finish hardware as indicated in final shop drawings and/or in compliance with NBHA publication "Recommended Location for Builder's Hardware".

## 2.4 FINISH

A. Dress tool marks and surface imperfections to smooth surfaces and remove irregularities. Chemically treat and clean doors and frames. Apply manufacturer's standard baked-on rust inhibitive primer.

## PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Install hollow metal units and accessories in compliance with final shop drawings, manufacturer's instructions, and as specified below.
- B. Set frames accurately in position, plumb and aligned, and securely anchor to adjacent construction.
- C. Erect fire doors and frames in compliance with NFPA 80 and certification agency's requirements.
- D. Clearances: Provide clearances of not more than 1/8" at jambs and heads and not more than 3/4" from floor or 3/16" from thresholds.
- E. Hardware: Install hardware, adjust as required to provide smooth and proper operation with secure latching or locking.

## 3.2 PRIME COAT TOUCH-UP

A. Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up with compatible air-drying primer.

END OF SECTION 880111:1910221609

# **BLANK PAGE**

### SECTION 08 3613

## GHN MODIFICATIONS

## **ITEM SOD**

## SECTIONAL OVERHEAD DOOR

Item **SOD** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

## PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. This Section includes the following types of sectional overhead doors:
    - 1. Doors with steel-framed steel panels & vision lights.
    - 2. Tracks configured for the following lift types:
      - a. Standard.
  - B. Related Sections include the following:
    - Division 26 Section "Conductors and Cables" for electrical service and connections for powered operators, and accessories.
    - Division 26 Section "Disconnect Switches and Circuit Breakers" for disconnect switches and circuit breakers for powered operators.
- 1.3 DEFINITIONS
  - B. Operation Cycle: One complete cycle of a door begins with the door in the closed position. The door is then moved to the open position and back to the closed position.
- 1.4 PERFORMANCE REQUIREMENTS
  - A. Structural Performance: Provide sectional overhead doors capable of withstanding the effects of gravity loads and the following loads and stresses without evidencing permanent deformation of door components:
    - 1. Wind Load: Uniform pressure (velocity pressure) of 20 lbf/sq. ft. (960 Pa), acting inward and outward.
  - B. Operation-Cycle Requirements: Design sectional overhead door components and operator to operate for not less than 10,000 cycles.

## 1.5 SUBMITTALS

- A. Product Data: For each type and size of sectional overhead door and accessory. Include details of construction relative to materials, dimensions of individual components, profiles, and finishes. Provide roughing-in diagrams, operating instructions, and maintenance information. Include the following:
  - 1. Setting drawings, templates, and installation instructions for built-in or embedded anchor devices.
  - 2. Summary of forces and loads on walls and jambs.
  - Motors: Show nameplate data and ratings; characteristics; mounting arrangements; size and location of winding termination lugs, conduit entry, and grounding lug; and coatings.
- B. Shop Drawings: For special components and installations not dimensioned or detailed in manufacturer's data sheets.
  - 1. Wiring Diagrams: Detail wiring for power, signal, and control systems. Differentiate between manufacturer-installed and field-installed wiring and between components provided by door manufacturer and those provided by others.
- C. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for units with factory-applied finishes.
- D. Samples for Verification: Of each type of exposed finish required, prepared on Samples of size indicated below and of same thickness and material indicated for Work. Where finishes involve normal color and texture variations, include Sample sets showing the full range of variations expected.
  - 1. Frame: 6-inch length.
  - 2. Panel: 6 inches square.
- E. Installer Certificates: Signed by manufacturer certifying that installers comply with specified requirements.
- F. Manufacturers' Certificates: Signed by manufacturers certifying that they comply with requirements specified in "Quality Assurance" Article. On request, submit evidence of manufacturing experience.

## **1.6 QUALITY ASSURANCE**

- A. Installer Qualifications: Engage an experienced installer who is an authorized representative of the sectional overhead door manufacturer for both installation and maintenance of units required for this Project.
- B. Manufacturer Qualifications: Engage a firm experienced in manufacturing sectional overhead doors similar to those indicated for this Project and with a record of successful in-service performance.
- C. Source Limitations: Obtain sectional overhead doors through one source from a single manufacturer.
  - 1. Obtain operators and controls from the sectional overhead door manufacturer.

- D. Product Options: Drawings indicate size, profiles, and dimensional requirements of sectional overhead doors and accessories and are based on the specific system indicated. Other manufacturers' systems with equal performance and dimensional characteristics may be considered. Refer to Division 1 Section "Substitutions."
- E. Listing and Labeling: Provide electrically operated fixtures specified in this Section that are listed and labeled.
  - 1. The Terms "Listed" and "Labeled": As defined in NFPA 70, Article 100.
  - 2. Listing and Labeling Agency Qualifications: A "Nationally Recognized Testing Laboratory" as defined in OSHA Regulation 1910.7.

## PART 2 - PRODUCTS

- 2.1 MANUFACTURERS
  - A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - 1. Amarr Garage Doors.
    - 2. Arm-R-Lite Door Manufacturing Co., Inc.
    - 3. Clopay Building Products Co.
    - 4. Fimbel Paunet Corporation.
    - 5. Haas Door Co.
    - 6. McKee Door, Inc.
    - 7. Overhead Door Corporation.
    - 8. Raynor Garage Doors.
    - 9. Wayne-Dalton Corp.
    - 10. Windsor Door
    - 11. Or Equal.

## 2.2 STEEL SECTIONS

- A. Construct door sections from galvanized, structural-quality carbon-steel sheets complying with ASTM A 653(ASTM A 653M), commercial quality, with a minimum yield strength of 33,000 psi (225 MPa) and a minimum G60 (Z180) zinc coating.
  - 1. Steel Sheet Thickness: 0.040 inch.
  - 2. Exterior Section Face: Flat, grooved, ribbed, or fluted, to suit manufacturer's standards.
- B. Fabricate door panels from a single sheet to provide sections not more than 24 inches high and nominally 2 inches deep. Roll horizontal meeting edges to a continuous, interlocking, keyed, rabbeted, shiplap, or tongue-in-groove weather-tight seal, with a reinforcing flange return.
- C. Enclose open section with not less than 0.064-inch (1.6-mm) galvanized steel channel end stiles welded in place. Provide not less than 0.064-inch (1.6-mm) galvanized intermediate stiles, cut to door section profile, spaced at not more than 48 inches o.c., and welded in place.

- D. Reinforce bottom section with a continuous channel or angle complying with bottom section profile and allowing installation of astragal.
- E. Reinforce sections with continuous horizontal and diagonal reinforcement, as required to stiffen door and for wind loading. Provide galvanized steel bars, struts, trusses or strip steel, formed to depth and bolted or welded in place.
- F. Provide reinforcement for hardware attachment.
- G. Insulation: Manufacturer's standard rigid cellular polystyrene or polyurethanefoam-type thermal insulation, foamed in place to completely fill inner core of section, pressure bonded to face sheets to prevent delamination under wind load and with maximum flame-spread and smoke-developed indices of 75 and 450, respectively, according to ASTM E 84. Enclose insulation completely, with no exposed insulation material evident.
  - 1. Steel Sheet Inside Face: 0.040 inch thick.
- H. Fabricate sections so finished door assembly is rigid and aligned, with tight hairline joints, and free of warp, twist, and deformation.
- I. Finish galvanized steel door sections as follows:
  - 1. General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
  - 2. Surface Preparation: Clean galvanized surfaces with nonpetroleum solvent so surfaces are free of oil and surface contaminants.
  - Pretreat zinc-coated steel, after cleaning, with a conversion coating of type suited to organic coating applied over it.
  - Apply manufacturer's standard primer and powder-coat-applied finish coats to interior and exterior door faces after forming, according to coating manufacturer's written instructions for application, thermosetting, and minimum dry film thickness.
    - Color and Gloss: As selected by Architect from manufacturer's full range of colors and glosses.

## 2.3 TRACKS, SUPPORTS, AND ACCESSORIES

- A. Tracks: Provide manufacturer's standard, galvanized steel track system, sized for door size and weight, designed for lift type indicated and clearances shown, and complying with ASTM A 653(ASTM A 653M), for minimum G60 (Z180) zinc coating. Provide complete track assembly including brackets, bracing, and reinforcement for rigid support of ball-bearing roller guides for required door type and size. Slot vertical sections of track at 2 inches (50 mm) o.c. for door-drop safety device. Slope tracks at proper angle from vertical or otherwise design to ensure tight closure at jambs when door unit is closed. Weld or bolt to track supports.
- B. Track Reinforcement and Supports: Provide galvanized steel track reinforcement and support members, complying with ASTM A 36 (ASTM A 36M) and ASTM A 123. Secure, reinforce, and support tracks as required for door size and weight to provide strength and rigidity without sag, sway, and vibration during opening and closing of doors.

- C. Support and attach tracks to opening jambs with continuous angle welded to tracks and attached to wall. Support horizontal (ceiling) tracks with continuous angle welded to track and supported by laterally braced attachments to overhead structural members at curve and end of tracks.
- D. Weatherseals: Provide replaceable, adjustable, continuous, compressible weather-stripping gaskets of flexible vinyl, rubber, or neoprene fitted to bottom and at top of overhead door.
  - 1. Provide motor-operated doors with bottom weatherseal.
  - 2. In addition, provide continuous flexible seals at door jambs for a weathertight installation.
- E. Windows: Provide windows of type and size indicated and in arrangement shown. Set glazing in vinyl, rubber, or neoprene glazing channel for metal-framed doors and elastic glazing compound for wood doors, as required. Provide removable stops of same material as door section frames.
  - 1. Size: Manufacturer's standard panel for type of insulated glazing indicated.

## 2.4 HARDWARE

- A. General: Provide heavy-duty, corrosion-resistant hardware, with hot-dip galvanized, stainless-steel, or other corrosion-resistant fasteners, to suit door type.
- B. Hinges: Provide heavy-duty galvanized steel hinges, of not less than 0.0747-inch-(1.9-mm-) thick uncoated steel, at each end stile and at each intermediate stile, per manufacturer's written recommendations for door size. Attach hinges to door sections through stiles and rails with bolts and lock nuts or lock washers and nuts. Use rivets or self-tapping fasteners where access to nuts is not possible. Provide double-end hinges, where required, for doors exceeding 16 feet (4.87 m) in width, unless otherwise recommended by door manufacturer.
- C. Rollers: Provide heavy-duty rollers, with steel ball bearings in case-hardened steel races, mounted with varying projections to suit slope of track. Extend roller shaft through both hinges where double hinges are required. Provide 3-inch- diameter roller tires for 3-inch track, 2-inch- diameter roller tires for 2-inch track, and as follows:
  - 1. Case-hardened steel tires.
- D. Slide Bolt: Fabricate with side locking bolts to engage through slots in tracks for locking by padlock, located on single-jamb side, operable from inside only.
- E. Fabricate locking device assembly with lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bar to engage through slots in tracks.
  - 1. Locking Bars: Single-jamb side, operable from inside only.
- F. Where door unit is power operated, provide safety interlock switch to disengage power supply when door is locked.

## 2.5 COUNTERBALANCING MECHANISM

- A. Extension Spring: Operation by extension-spring counterbalance mechanism with aircraft-type steel cable over ball-bearing sheaves. Provide oil-tempered wired springs with internal safety rods. Combine operation with a spring bumper in each horizontal track to cushion door at end of opening operation.
- B. Torsion Spring: Operation by torsion-spring counterbalance mechanism consisting of adjustable-tension torsion springs, fabricated from oil-tempered-steel wire complying with ASTM A 229(ASTM A 229M), Class II, mounted on a crossheader tube or steel shaft. Connect to door with galvanized aircraft-type lift cables with cable safety factor of at least 5 to 1. Provide springs calibrated for 10,000 cycles minimum.
- C. Cable Drums: Provide cast-aluminum or gray-iron casting cable drums grooved to receive cable. Mount counterbalance mechanism with manufacturer's standard ball-bearing brackets at each end of shaft. Provide 1 additional midpoint bracket for shafts up to 16 feet long and 2 additional brackets at one-third points to support shafts more than 16 feet long, unless closer spacing is recommended by door manufacturer.
- D. Cable Safety Device: Include a spring-loaded, steel or bronze cam mounted to bottom door roller assembly on each side, designed to automatically stop door if either cable breaks.
- E. Bracket: Provide anchor support bracket, as required to connect stationary end of spring to the wall, to level shaft and prevent sag.
- F. Provide a spring bumper at each horizontal track to cushion door at end of opening operation.

## 2.6 ELECTRIC DOOR OPERATORS

- A. General: Provide electric door operator assembly of size and capacity recommended and provided by door manufacturer for door and operational life specified, complete with electric motor and factory-prewired motor controls, starter, gearreduction unit, solenoid-operated brake, clutch, remote-control stations, control devices, integral gearing for locking door, and accessories required for proper operation.
- B. Comply with NFPA 70.
- C. Disconnect Device: Provide hand-operated disconnect or mechanism for automatically engaging sprocket-chain operator and releasing brake for emergency manual operation while disconnecting motor, without affecting timing of limit switch. Mount disconnect and operator so they are accessible from floor level. Include interlock device to automatically prevent motor from operating when emergency operator is engaged.
- D. Design operator so motor may be removed without disturbing limit-switch adjustment and without affecting emergency auxiliary operator.
- E. Provide control equipment complying with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6, with NFPA 70 Class 2 control circuit, maximum 24-V, ac or dc.

- F. Door-Operator Type: Provide unit consisting of electric motor and the following:
  - Gear-head trolley type, with enclosed worm-gear running-in-oil primary drive, chain and sprocket secondary drive, and quick disconnect-release for manual operation.
- G. Electric Motors: Provide high-starting torque, reversible, continuous-duty, Class A insulated, electric motors, complying with NEMA MG 1, with overload protection, sized to start, accelerate, and operate door in either direction, from any position, at not less than 2/3 fps and not more than 1 fps, without exceeding nameplate ratings or considering service factor.
  - 1. Type: Polyphase, medium-induction type.
  - 2. Service Factor: According to NEMA MG 1, unless otherwise indicated.
  - 3. Coordinate wiring requirements and electrical characteristics of motors with building electrical system.
  - Provide open dripproof-type motor, and controller with NEMA ICS 6, Type 1 enclosure.
  - Provide totally enclosed, nonventilated or fan-cooled motors, fitted with plugged drain, and controller with NEMA ICS 6, Type 4 enclosure where indicated.
- H. Remote-Control Station: Provide momentary-contact, 3-button control station with push-button controls labeled "Open," "Close," and "Stop."
  - 1. Provide interior units, full-guarded, surface-mounted, heavy-duty type, with general-purpose NEMA ICS 6, Type 1 enclosure.
  - Provide exterior units, full-guarded, standard-duty, surface-mounted, weatherproof type, NEMA ICS 6, Type 4 enclosure, key operated.
- I. Obstruction Detection Device: Provide each motorized door with indicated external automatic safety sensor able to protect full width of door opening. Activation of sensor immediately stops and reverses downward door travel.
  - 1. Photoelectric Sensor: Manufacturer's standard system designed to detect an obstruction in door opening without contact between door and obstruction.
    - a. Self-Monitoring Type: Provide self-monitoring sensor designed to interface with door operator control circuit to detect damage to or disconnection of sensing device. When self-monitoring feature is activated, door operates to close only with constant pressure on close button.
- J. Limit Switches: Provide adjustable switches, interlocked with motor controls and set to automatically stop door at fully opened and fully closed positions.

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine wall and overhead areas, including opening framing and blocking, with Installer present, for compliance with requirements for installation tolerances, clearances, and other conditions affecting performance of Work of this Section.
  - Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 INSTALLATION

- A. General: Install door, track, and operating equipment complete with necessary hardware, jamb and head mold strips, anchors, inserts, hangers, and equipment supports according to Shop Drawings, manufacturer's written instructions, and as specified.
- B. Fasten vertical track assembly to framing at not less than 24 inches o.c. Hang horizontal track from structural overhead framing with angle or channel hangers welded and bolt fastened in place. Provide sway bracing, diagonal bracing, and reinforcement as required for rigid installation of track and door-operating equipment.
- 3.3 ADJUSTING
  - A. Lubricate bearings and sliding parts; adjust doors to operate easily, free from warp, twist, or distortion and fitting weathertight for entire perimeter.
- 3.4 DEMONSTRATION
  - A. Startup Services: Engage a factory-authorized service representative to perform startup services and to train Owner's maintenance personnel as specified below:
    - 1. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
    - Train Owner's maintenance personnel on procedures and schedules related to startup and shutdown, troubleshooting, servicing, and preventive maintenance.
    - Review data in the maintenance manuals. Refer to Division 1 Section "Operation and Maintenance Data."
    - 4. Schedule training with Owner with at least 7 days' advance notice.

END OF SECTION 880831:1910221617

### **SECTION 08 7000**

#### **GHN MODIFICATIONS**

## **ITEM HAR**

#### HARDWARE

Item **HAR** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

#### PART 1 - GENERAL

- 1.1 SCOPE
  - A. Furnish complete hardware of every sort and description as required to adequately equip all movable parts throughout the building for perfect operation. Furnish hardware not specified but obviously required for completion of the project, conforming to size, function, quality, and utility of other hardware specified.

#### **1.2 QUALITY ASSURANCE**

- A. Qualification of Supplier: The finish hardware supplier shall have in his employ an AHC member of the American Society of Architectural Hardware Consultants.
- B. AHC Inspection: Before final inspection of the work under this contract and acceptance of the project by the Owner, visit the site and carefully inspect all hardware for conformance to this specification, adequacy for intended use, proper functioning, appearance, finish, and successful operation, assuming joint responsibility with the Contractor for the achievement of these characteristics and a satisfactory installation.

### 1.3 MANUFACTURERS

- A. Obtain each kind of hardware (latch and lock sets, hinges, closers, etc.) from one manufacturer.
- B. The naming of manufacturers in Hardware Sets does not imply other manufacturer's products will not be acceptable.
- C. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80. Provide only hardware which has been tested and listed by an approved testing and inspection agency for the types and sizes of doors required and complies with requirements of door and door frame labels.

### 1.4 SUBMITTALS

- A. Hardware Schedule: As soon as practicable after award of contract and prior to ordering of hardware, submit to the Architect for review, a schedule of hardware to be furnished giving manufacturer's name, catalog number, finish, and location of each item.
- B. Samples: If requested, provide working samples of any items proposed for substitution. Samples will be returned.

Salem Memorial Airport/ 19-526.00 HARDWARE 08 7000/1 C. Manufacturer's Data: Deliver to installer instructions for installation and maintenance of operating parts and exposed finishes. Furnish templates to fabricators of other work to receive finish hardware. Furnish wiring diagrams to affected trades.

## 1.5 PRODUCT HANDLING

A. Furnish hardware separately unit packed (complete with all necessary attachments and fastenings), labeled, and numbered in accordance with Hardware Schedule.

## PART 2 - PRODUCTS

## 2.1 LOCKS

- A. Provide Corbin 9900 Series (or equal), mortise locks conforming to standard Class I, as adopted by ANSI; and meeting Fed. Spec. 87 and UL approved and listed for fire doors, whether specifically used in conjunction with fire doors, or not. Furnish latch bolts with full 3/4" throw of the mechanical anti-friction type and dead bolts with full 1" throw with hardened steel inserts.
- B. Furnish wrought boxes for locks used in conjunction with wood frames and pairs of doors.

## C. Keying:

- 1. All locksets and cylinders shall be masterkeyed as directed by Owner. Furnish a total of 12 master keys.
- Certain locksets and cylinders shall be keyed alike in sets as directed. All other locksets and cylinders shall be keyed different. Furnish three keys per lockset.

## 2.2 BUTTS

- A. Provide butt hinges of types and weights indicated. Provide sizes as follows.
  - 1. Width: 4-1/2" for 1-3/4" thick doors; 3-12/" for 1-3/8" thick doors.
  - 2. Height: 4-1/2" for doors 42" wide or less; 5" for doors wider than 42".
- B. Provide non-removable pins (NRP) or security studs (SH) for exterior, outswinging doors.

### 2.3 SILENCERS

- A. Provide door silencers as follows: 3 each for single swing doors.
- 2.4 FASTENINGS
  - A. Furnish all necessary screws, bolts, and other fasteners of suitable size and type to properly anchor the hardware.
  - B. Furnish fastenings, where necessary, with expansion shields, toggle bolts, sex bolts, and other anchors, according to the material to which hardware is to be applied and the recommendations of the hardware manufacturer.

C. Furnish fastenings compatible with both hardware and substrate material and, if exposed, matching hardware finish.

## 2.5 FINISHES

A. Furnish Satin Chrome US26D finish hardware throughout. Provide mill finish aluminum for thresholds, weather-stripping, sound and light stripping.

### 2.6 MANUFACTURERS

- A. Acceptable Manufacturers: Corbin Russwin in lieu of specified Corbin.
- B. Acceptable Manufacturers: Products of the following manufacturers will be considered acceptable provided they are of equivalent weight, function and design.
  - 1. Butts: Hager, Lawrence, Soss.
  - 2. Locks: Yale, Corbin, Schlage, Best.
  - 3. Door Trim: Rockwood, Brookline
  - 4. Door Stops and Miscellaneous Holders: Rockwood, Ives, Glynn-Johnson.

## PART 3 - EXECUTION

- 3.1 INSPECTION
  - A. Conditions of opening size shall be verified as to door frames being plumb and of correct tolerances to receive doors and hardware. Do not proceed with installation until discrepancies are corrected.
- 3.2 INSTALLATION
  - A. Installer shall be competent and have knowledge of hardware.
  - B. Mounting heights for all hardware shall be recommended by the Door and Hardware Institute.

## 3.3 ADJUSTING

A. Make necessary final adjustments. Replace or repair any items which are found to be defective or damaged.

## 3.4 PROTECTION

A. Protect hardware until completion of project.

### 3.5 HARDWARE SETS

A. Quality, function, design and finish are specified herein. Furnish in the amounts as indicated on the drawings or as required for complete and operable facility.

END OF SECTION 860301:1910221612

Salem Memorial Airport/ 19-526.00 HARDWARE 08 7000/3

10 E-1 1 C -

가 있는 것이 있는 것이 가지 않는 것이 있는 것이 가지 않는 것이 가지 않는 것이 있다. 이 가 아니었다. 이 가 아니었다. 이 가 가지 않는 것이 같은 것이 있다. 이 가 가 가 가 가 가 가 가 이 것이 있는 것이 있는 것이 가 있는 것이 있는 것이 있는 것이 같은 것이 있는 것이 있는 것이 있는 것이 있는 것이 있다. 이 가 있는 것이 있는 것이 있다. 이 같은 것이 있다. 이 같은 것이 있 같은 것이 있는 것이 있다. 것이 있는 것이 있는 것이 있는 것이 있는 것이 있다. 것이 있는 것이 있

BLANK PAGE

Salem Memorial Airport/ 19-526.00 HARDWARE 08 7000/4

### **SECTION 13 3401**

### GHN MODIFICATIONS

## ITEM TEE

### TEE HANGAR WITH ELECTRIC BI-FOLD DOORS

Item **TEE** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

#### PART 1 - GENERAL

### 1.1 SCOPE

A. Provide a pre-engineer tee hangar complete with electric bi-fold doors as indicated in the plans and this specification, including engineering of the structure, structural drawings sealed by an Engineer licensed in the state that the project is located, including major and minor structural elements as required for a complete structural system and building envelope.

#### 1.2 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. Metal Doors & Frames; Section 08 1100.

### 1.3 QUALITY ASSURANCE

- A. The design and construction of the Pre-Engineered Building System must conform strictly to these specifications.
- B. The building shall be the design of a manufacturer who is regularly engaged in the fabrication of pre-engineered structures. All materials shall be new, unused and free from defect.
- C. The following standards and criteria (of most recent issue) shall be used where applicable in the structural design of the building covered by this specification.
  - 1. "Recommended Design Practices Manual", Metal Building Manufacturers Association.
  - 2. "Steel Construction Manual", American Institute of Steel Construction.
  - 3. "Cold Formed Steel Design Manual", American Iron and Steel Institute.
  - 4. "Aluminum Construction Manual", The Aluminum Association.
  - 5. "Code for Welding in Building Construction", American Welding Society.
- D. Building Code: The 2012 International Building Code (IBC) shall be followed in every respect except where more stringent requirements are established herein.
- E. The following criteria shall be applicable in other phases of the design:
  - 1. Structural Steel Painting Council Standards.
  - 2. Federal, Military and Commercial Standards.
  - 3. ASTM Standards.
  - 4. Ratings by: Underwriters' Laboratories, Inc., Factory Mutual System.

Salem Memorial Airport/ 19-526.00 NESTED TEE HANGAR 13 3401/1

- F. Design Loads: Shall be as established by the current adopted edition of the International Building Code (IBC).
- G. Roof Construction shall carry an Underwriters' Laboratories Construction (Uplift) classification of not less than <u>Class 90</u>.
- H. Combination of Loads: The combining of normal loads and auxiliary loads for design purposes shall be as prescribed and recommended by the Metal Building Manufacturers Association "Design Practices Manual" of recent issue, unless otherwise specified.
- Lateral bracing shall be achieved within the inset girt thickness. Provide diagonal bracing that does not conflict with windows, doors, equipment and the efficient use of interior space as shown on plans.

## 1.4 SUBMITTALS

- A. Certification:
  - All bidders must include with their shop drawings submittals a letter from the metal building manufacturer certifying that the building proposed will be furnished to meet or exceed all the above design load criteria and that all structural design will be in strict conformance with that prescribed in the MBMA "Design Practices Manual: of recent issue, or as otherwise specified.
  - 2. After the awarding of the contract, complete structural analysis shall be submitted by the metal building manufacturer.
- B. Shop Drawings: Submit detailed shop drawings showing complete layout of all framing, connections, bracing, jointing, accessories, panel materials, insulation and miscellaneous items. Structural drawings shall also show design loading used and reactions both static and dynamic induced at the foundation. These drawings shall be sealed by a structural engineer licensed to practice in the state in which the project is located.

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. Erect-a-Tube, Inc., 701 West Park Street, Harvard, IL 60033. www.erect-a-tube.com
- B. Fulfab, Inc., 1525 Whipple Avenue Southwest, Canton, OH 44710. www.fulfab.com
- C. R&M Steel Company, 20595 Farmway Road, Caldwell, ID 83607 www.rmsteel.com

### 2.2 HANGAR SIZING

A. Sizing: Hangar sizes shall be as defined below:

Building Model Number: Number of Units – see drawings Building Length – see drawings Building Width – see drawings Building Eave Height - see drawings B. Minimum Clear Unit Dimensions:

Clear Door Opening – see drawings Wing Depth – see drawings Tail Bay Depth – see drawings Tail Bay Width - see drawings Overall Unit Depth – see drawings

- C. Building width shall be as measured from center line to center line of endwall columns.
- D. Building length shall be as measured from center line to center line of endwall columns.
- E. Eave height shall be as measured from the top of the eave purlin or door truss to the bottom of column base plate.
- F. Bi-fold hangar door size shall be <u>41'-6"</u> minimum clearances as stated or shown on plans.
- 2.3 ROOF & WALL COVERING AND SUPPORTS:
  - A. Primary structural framing shall be main load carrying structural members. They shall include door trusses, rafters, interior columns and exterior columns. Minimum design deflection of door truss shall be L/240.
  - B. Rafters shall be steel wide flange beams "W" shaped ASTM A36 and shall be prepunched for purlin connections, door truss, and interior column connections. Rafters shall be complete with factory welded ridge splice plates, and designed to support specified loads.
  - C. Door truss shall span width of bi-fold hangar door opening and shall be shipped full length for ease of construction. Door truss design shall be integral with door design. Door truss shall be factory welded with chords 4" x 4" x 1/8" minimum square structural welded steel tube ASTM A500 GR.B. and 3" x 1" x 1/8" minimum diagonal webbing. Door truss shall be pre- punched for column connection and bi-fold door hinges pre-located on upper door truss chord. Field welding of bi-fold door frames, door hinges or pick up plates are not acceptable.
  - D. Door columns shall be manufactured of steel wide flange beams "W" shapes ASTM A36 and shall be W6 x 15 pounds per foot minimum with pre-welded base plate and door truss saddles. Field welding of components is not acceptable.
  - E. Interior column shall be square structural welded steel tube ASTM A500 with prewelded four bolt base plates and girt clips.
  - F. Secondary framing shall be the structural members which carry the loads to the primary framing systems; and shall include the purlins, girts, wind bracing and miscellaneous structural members.
  - G. Purlins shall be nominal 8" deep "Z" shaped members; and shall be manufactured of 16, 14, or 12 gauge steel designed for specified loads, and shall be fabricated of material based on the requirements of ASTM A570 or ASTM A572 as applicable.

- H. Exterior wall girts shall be fabricated from 4" square structural weld steel tube or rolling formed cee sections of ASTM 570 or ASTM A572 as applicable. Flush mount design.
- Interior partition girt shall be fabricated from 4" x 16 ga. red oxide steel "CEE" sections, when specified.
- J. Provide wind bracing, rafter bracing, sheeting angles where required.
- K. Structural field connections shall be bolted (unless otherwise noted). All primary bolted connections, as shown on manufacturer's drawing, shall be furnished with high strength bolts conforming to the physical specifications of ASTM A-325 or shall be Grade 5. All Grade 5 bolts shall be zinc plated.
- L. All structural members shall be shop primed red oxide.
- M. Roof sheets shall be 26 ga. galvalume coating conforming to ASTM specification A-792 with panel configuration with 1-1/4" min. high major ribs 12" on-center. Sheeting should have a minimum yield of 80 ksi. Panel coverage shall be 36" and shall be furnished full length from building eave to ridge purlin. A preformed ridge cap shall be provided. Minimum 25-year limited warranty. Roof sheets shall extend 12" beyond the eave line.
- N. Wall sheet shall be 26 ga. galvalume coating conforming to ASTM specification A446 with a silicone polyester coating. Panel coverage shall be 36" and furnished full length. Panel configuration shall be 1-1/4" min. major ribs 12" on center. Sheeting should have a minimum yield of 80 ksi. Wall sheet shall be furnished full height. Minimum 35-year limited warranty. Finish as selected by Owner from manufacturers standard colors.
- O. Partition sheet shall be 29 ga. galvalume. Panel configuration shall be 5/8" minimum with major ribs 9" on center and 36" panel coverage. Sheeting should have a minimum yield of 80 ksi. Partition sheeting to be full-height or as specified. Panel shall be furnished in full height and include bird-proofing trim between partition sheet and roof decking. Minimum 20-year limited warranty. Finish as selected by Owner from manufacturers standard colors. Provide 3x8 gas angles at base on interior partitions. Bottom let of angle to be sealed both sides (length of angle); provide 2 continuous beads of sealant and overlap seams 8". Anchors by erector.
- P. Building trim shall include eave trim, gable trim, corner trim, service door trim, bifold hangar door trim. All trim shall be 26 ga. and manufactured of flat stock material equal in quality to wall sheets and color as selected from manufacturer's standard color chart. All trims to be hemmed. Trim pieces shall be packaged for shipment at factory.
- Q. Roof caulking shall be at all roof sheet side laps and at pre-formed ridge caps. Roof caulk shall be a tape sealant type and shall be pre-formed butyl rubber base and shall be supplied as a 3/16" x 3/8" extruded shape.
- R. Inside and outside semi-rigid cross-linked polyethylene foam closure shall be provided as required to provide a bird proof building. Closures are to be provided on bi-fold doors, gable end walls, side walls, roof overhang, eave and rake of end wall. Closure shall be self-adhesive.

- S. Provide a 2x4 16 ga G90 galvanized base angle for two endwalls and short side walls. <u>Include sealant</u>, Anchors by erector.
- 2.4 FASTENERS:
  - A. Roof fasteners shall be #12-14x1" 310 stainless steel head on carbon steel shank, hex head, with dual seal washer.
  - B. Roof stitch screws shall be #12x3/4" 310 stainless steel head screws with washers.
  - C. Wall fasteners shall be #12-14x1" stainless steel hex head color match self-drilling sheet metal screws with washer.
  - D. Wall sheet stitch screws shall be 1/4"-#14x3/4" steel hex head color match selfdrilling lap screw with washer.
  - E. Partition sheet fasteners shall be #12-3/4" 310 stainless steel hex head self-drilling screws.
  - F. All sheet metal screws shall be installed as shown on building manufacturer's erection plans.
  - 2.5 BUILDING DESIGN:
    - A. Design loads shall be as stated herein and as clearly set forth in order document and shall be in accordance with <u>2012 International Building</u> <u>code</u> standard design practices and ASCE 7-05.

Ground Snow Load	20 psf (non-reducible)
Live Load	_20psf
Dead Load	per PEMB psf
Collateral Load	5 psf
Wind Load	115 mph ultimate
Exposure	C
Seismic Design Category	D
Building Classification	
Construction Type	IIB
Occupancy Category	
Use Group	S-2
NFPA Construction Type	11 (000)
Importance Factors	1.0

- B. Design calculations, drawings and documents shall contain information requested for permits and approval and sufficient information for building erection and shall be as applied to products furnished.
- C. Building reactions shall be furnished by building supplier. Design of floors and foundation shall be the responsibility of foundation designer or others.
- D. Each unit shall be furnished with an electrically-operated bifold overhead door. Each door shall be controlled by a constant pressure cam switch controlling a single phase electric motor, worm gear speed reducer and dual chain drive.

E. Doors shall be designed to withstand their own dead load plus the Salem Memorial Airport/ NESTED TEE HANGAR 19-526.00 13 3401/5
required wind design load. Cables shall be galvanized and designed in accordance with current American Wire and Cable Codes. Cables shall be capable of supporting the door in the open position with a safety factor of two (2).

- F. Bifold door frames shall be made of galvanized steel complying with ASTM A653, Grade 50-Class 2, 14 gauge, G165 finish and fabricated for field bolted assembly.
- G. A walk-in door (approximately 36" x 77") opening inward, with a lockset shall be provided in the bifold door for each hangar. Door shall have a factory applied baked enamel finish. Lockset shall be an exterior commercial grade, stainless steel finish, cylinder type. That portion of the door and frame receiving the lockset and strike shall be solid core to provide a firm anchoring for the lock and strike. Hangar pass doors shall be keyed different. All door locks shall also be keyed alike to a master key system. Two (2) keys for each door lock and two (2) masterkeys shall be provided. Spring hinges shall be securely installed with pins inside the hangar.
- H. Provide a full length durable nylon, reinforced, two (2) ply astragal weatherstrip at sill and head of each door assembly. The material must resist sun, heat, freezing and tearing when frozen to ice. The weatherstrip at the door head shall also be attached to the roof in a manner to provide a weatherproof joint between the door and the top of the hangar. Door jambs shall be sealed by steel overlap flashings or appropriate rubber weatherstrips.
- I. The door shall be equipped with jamb locks to lock the door in the closed position. The locks may be manually operated to secure the door, but shall be so designed to release automatically when the door is to be opened to prevent warping and over stressing the door members and lifting mechanism. Provide automatic operating cane bolts at door sill. Cane bolts shall engage and disengage automatically in floor plates as door is opened and closed.
  - J. Provide hinges at head and meeting door leaves properly placed and adequately designed to carry loads applied from wind, door loads, etc. and to provide smooth door operation without binding. All roller assemblies on doors shall be provided with grease fittings.
  - K. Provide factory-trained assistance for door erection. Erect doors in accordance with manufacturer's recommendations and approved trade practice. Doors shall be hung plumb and true to building and shall open in a smooth continuous motion without binding and warping. Adjust all rollers, cables, shafts, hinges, locks, cane bolts, etc., for proper operation.
- L. The operating motor shall be one (1) H.P. minimum, driving a worm gear speed reducer; reversing, and capable of completely opening or closing the door within two (2) minutes. Motors shall be two hundred thirty (230) volts, single-phase. The door shall be capable of being stopped and restarted, up or down, in any position. The operating unit shall be equipped with limit switches for automatic stop at the fully-opened and

Salem Memorial Airport/ 19-526.00 NESTED TEE HANGAR 13 3401/6 fully-closed positions. The operating mechanism shall be controlled by a two button "dead man" control switch, wall-mounted approximately four (4) feet above the floor and (1) one foot (6) six inches from the hangar door. Provide a wall-mounted fused disconnect switch in vicinity of operating switch.

- M.Bi-fold door shall be installed according to manufacturer's installation instructions.
- N. Building manufacturer to provide contractor with anchor layout plan and building column reactions.
- 2.6 TRIM AND ACCESSORIES:
  - A. Passage Doors for End Units of Tee Hangars
    - 1. 3'-0" x 7'-0" white steel flush entry door, 1-3/4" 24 ga. polyurethane foam core thermal broke leaf with R-12 insulation value, 16 ga. white thermally broken frame, dual seal bulb weather-stripping, ADA compliant low profile sill and ANSI A156.2 Series 4000, Grade 2 lever lockset keyed and master keyed. Door leaf has blocking for future door closer. Doors to be ADA compliant.
  - B. Continuous low profile air-flow ridge vent
    - 1. Vent consists of 26 ga. galvalume or color finish ridge vent cap, ProfileVent ventilation core (or equal), roof sealant and mounting components.
  - C. Insulation
    - Insulation to be 3" (R-10) fiber glass insulation laminated to a white Metalized Polypropylene Scrim Kraft facing. System R values under ASTM C1136.
  - D. Interior partition wall inside and outside "L" corner trim should be provided to seal gaps and cover exposed rough edges of partition sheeting. Trim to be of 26 ga. material.
  - E. Lock out safety switches on manual door latches of bi-fold door so as to prevent bi-fold door system from opening unless both latches are unlocked. An automatic un-latch mechanism may be provided in lieu of lock out safety switches.
  - F. 3" x 8" 11 ga. fuel containment angle at the base of all interior partition walls to prevent fuel spills from penetrating adjacent units. <u>Includes</u> <u>fuel resistant sealant</u>. Anchors by others. Partition sheeting cannot attach to this base angle. Partition sheeting with attach to cee girt at 12" from FFE.

Salem Memorial Airport/ 19-526.00

- G. Storage Unit
  - One rectangular shaped storage unit fully partitioned off from the adjacent T-Hangar. Includes (one) <u>12'X10'</u> framed opening for an overhead door and (one) 3070 entry door. See specifications for overhead door and 3070 entry door.

#### PART 3 - EXECUTION

### 3.1 ERECTION

- A. Erection of metal building, accessories and insulation shall be by an experienced erector authorized by the manufacturer as trained and qualified to erect that manufacturer's product. The manufacturer shall inspect the Work and certify its correctness.
- B. The contractor shall provide factory assistance during the erection of the hangars, sufficient to ensure complete and proper erection of the hangar and doors. The contractor shall machine any sharp edges to a smooth finish as determined acceptable by the Engineer.
- C. Field painting, except for touch-up of scratches, will not be allowed. Any panel requiring extensive painting shall be replaced.
- D. Members that are warped or bent are unacceptable and shall be replaced, if, in the Engineer's opinion, they are unserviceable and cannot be corrected within fabrication tolerances.

END OF SECTION 150128: 2303082051

Salem Memorial Airport/ 19-526.00

## **SECTION 26 0500**

### GHN MODIFICATIONS

#### **ITEM CRE**

### COMMON WORK RESULTS FOR ELECTRICAL

Item **CRE** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. Section Includes: General administrative and procedural requirements for electrical installations. The following administrative and procedural requirements are included in this section to expand requirements specified in Division 1.
    - 1. Submittals
    - 2. Record documents.
    - 3. Operation and Maintenance manuals
    - 4. Rough-ins.
    - 5. Electrical equipment coordination and installations including access and working Clearances.
    - 6. Cutting and Patching
    - 7. Warranties

## 1.3 DEFINITIONS

- A. EPDM: Ethylene-propylene-diene terpolymer rubber.
- B. NBR: Acrylonitrile-butadiene rubber.

#### 1.4 SUBMITTALS

- A. General: Follow the procedures specified in Division 1. Division 26 sections define required Submittals.
- B. Within 30 days after Award of Contract, the Contractor shall submit five (5) complete brochures of shop drawings for approval of all proposed electrical equipment and materials.

C. A partial list shall include switchboards, panelboards, starters, disconnects, wiring devices, transfer switches, wire and cable, surge suppression, lightning protection, light fixtures, lamps, receptacles, light switches, dimmers, face plates, ballasts, etc.

## 1.5 RECORD DOCUMENTS

- A. Prepare record documents in accordance with the requirements in Division 1. In addition to the requirements specified in Division 1, indicate installed conditions for:
  - 1. Major raceway systems, size and location, for both exterior and interior; locations of control devices; distribution and branch electrical circuitry where differing from drawings or incorporating supplemental drawing information; and fuse and circuit breaker size and arrangements.
  - 2. Equipment locations (exposed and concealed), dimensioned from prominent building lines.
  - 3. Approved substitutions, Contract Modifications, and actual equipment and materials installed.

# 1.6 MAINTENANCE MANUALS

- A. Prepare maintenance manuals in accordance with Section 01 3300 "Submittals." In addition to the requirements specified in Division 1, include the following information for equipment items:
  - 1. Complete nomenclature and commercial numbers of replacement parts, i.e. lamp schedules, fuse sizes, breaker types, dimming systems.
  - The Contractor shall be responsible for the preparation, coordination, and execution of all operation and maintenance instructions furnished by his subcontractors and/or suppliers. The instructions shall be in sufficient detail to facilitate normal maintenance and troubleshooting by persons without previous experience with the installed equipment.
  - 3. Bound instruction manuals specified in this division of the Project Manual shall be submitted to the Architect before final payment. Instruction manuals shall be included with catalog data for Owner.
  - 4. Servicing instructions and lubrication charts and schedules.
- B. No person shall perform electrical work on the contract without possessing a State Master or Journeyman License from the State Electrical Examiners Board. All electrical work and apprentice electricians shall be supervised by a Master or Journeyman Electrician on a one-to-one ratio.
- C. All electricians shall have a copy of their license with them and shall be required to show it to an appropriate inspector upon request.

# 1.7 QUALITY ASSURANCE

A. Source limitation, to the fullest extent possible, provide products of the same kind, from a single source.

### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to the project properly identified with names, model numbers, types, grades, compliance labels, and other information needed for identification.
- B. Store products in protected spaces to prohibit physical damage.
- C. Follow manufacturer's instructions for handling including the lift limitations and dimensions necessary for egress.

## 1.9 SCOPE OF WORK

- A. This section of the work shall comprise the furnishing of materials, equipment, tools, labor and transportation necessary for the complete installation of the electrical systems shown and hereinafter specified. Work is to be complete in every respect whether specifically mentioned in contract documents or not. This work and material includes, but is not limited to, the following items:
  - 1. Panelboards, lighting fixtures, wiring devices and complete feeder and branch circuit wiring.
  - Power supply to all HVAC equipment, motors, plumbing equipment, including the installation and final connection of motor starters, compressors, pushbuttons, and other miscellaneous equipment furnished under other sections of work and/or by Owner.
  - 3. Telephone and data systems as described in specifications and on drawings.
  - Fees, permits, inspections, and provisions for metering. Verify all local requirements prior to bid and include proper method as part of base bid quotation.
  - 5. Connection of electric source.

## 1.10 UTILITIES

- A. The location, size and characteristics of the electric and telephone services and points of service entrance are shown in accordance with data given this office by various departments of cities and/or utility companies involved. The points of connection to the utility lines are, therefore, approximate only and shall be verified by the Contractor bidding each portion of the work. Hold the Owner harmless as to addition all costs or extra regarding the utility connections.
- B. This contractor shall contact the local power company prior to bidding the project to verify all requirements and, upon being awarded the contract, shall make all arrangements, pay all fees, and acquire all permits as required for the installation of the electrical service and systems as hereinafter specified and shown. The contractor shall hold the Owner harmless for any costs required for initial connections to utility lines.
- C. The electric service shall be from the local utility company, with voltage, phase, and wire, all as shown on plans. The Electrical Contractor shall properly coordinate all his work as required, shall install all conduit and conductors as necessary to complete

Salem Memorial Hospital 19-526.00

the electrical service. He shall make provisions for the metering equipment in accordance with the utility company standards.

## 1.11 FEES AND PERMITS

A. Each contractor shall obtain all permits, inspections and approvals applicable to his trade as required by regulatory authorities. All fees and costs of any nature whatsoever incidental to these permits, inspections and approvals shall be assumed and paid by the contractor.

## 1.12 RESPONSIBILITY OF THE CONTRACTOR

- A. Each contractor shall be responsible for all work of every description in connection with his contract. He shall specifically and distinctly assume, and does so assume, all risk for damage or injury from whatever cause to property or person used or employed on or in connection with his work and of all damage or injury to any persons or property wherever located, resulting from any action of operation under the contract or in connection with the work.
- B. Each contractor will be held responsible for the execution of a satisfactory and complete piece of work, in accordance with the true intent of the drawings and specifications and all bulletins and addenda which may be issued during the time of bidding. He shall provide, without extra charge, all incidental items required as part of his work, even though not particularly specified or indicated.
- C. Each contractor shall be responsible for compliance with all national, state, local and county codes, standards, ordinances and regulations.
- D. This contractor shall visit the site of the building before submitting a proposal on this work and thoroughly familiarize himself with existing conditions and operations. Removal or modification of part of existing or new work will not justify any additional payment of bidder because of failure to visit site.

## 1.13 DRAWINGS AND SPECIFICATIONS

- A. The interrelation of the specifications, drawings and schedules shall be as hereinbefore described in the architectural sections of the specifications.
- B. Should the drawings disagree in themselves, or with the specifications, the better quality or greater quantity of work or materials shall be estimated upon, and unless otherwise ordered by the Architect in writing, shall be performed or furnished. In case the specifications should not fully agree with the schedules, the latter shall govern.
- C. The "Scope of Work" as hereinbefore stated is intended to designate the general description of the work which shall be performed by each of the major contractors. It is not intended to include all items of work, either generally or specifically, nor is it intended to limit the scope of the work where plans, schedules, notes or standard practice requires the inclusion of other specific items.

D. When the drawings do not give exact details as to the elevations of pipe, conduit and ducts, the contractors shall physically arrange the systems to fit in the space available at the elevations intended with the proper grades for the functioning of the systems involved. Piping, exposed conduit and the duct systems are generally intended to be installed true and square to the building construction, and located as high as possible against the structure in a neat and workmanlike manner. Work shall be concealed in all finished areas except as shown.

## 1.14 COORDINATE WITH OTHER TRADES

- A. The Electrical Contractor shall check with the General Contractor and other contractors, either under his control or those responsible solely to the Owner for any work being performed under this specification to determine whether there will be any interference with the electrical work. If the Electrical Contractor fails to check with the other contractors and the electrical work is later found to interfere with their work, then he shall make necessary changes without additional cost or delay to the Owner to eliminate such interferences.
- B. Coordinate arrangement, mounting, and support of electrical equipment:
  - 1. To allow maximum possible headroom unless specific mounting heights that reduce headroom are indicated.
  - 2. To provide for ease of disconnecting the equipment with minimum interference to other installations.
  - 3. To allow right of way for piping and conduit installed at required slope.
  - 4. So connecting raceways, cables, wireways, cable trays, and busways will be clear of obstructions and of the working and access space of other equipment.
- C. Coordinate installation of required supporting devices and set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.
- D. Coordinate location of access panels and doors for electrical items that are behind finished surfaces or otherwise concealed. Access doors and panels are specified in Division 08 Section "Access Doors and Frames.
- E. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Firestopping." And as specified in sections of Division 26, 27 and 28.

## 1.15 TRENCHING, DIGGING, EXCAVATION, AND BACKFILLING

- A. The Contractor shall notify Arkansas One-Call for underground utility locations at least 48 hours prior to trenching, digging, or excavation.
- B. All necessary excavation and backfill for the installation of the electrical work shall be accomplished by each contractor under his phase of the work. All such work shall be included regardless of the type of materials encountered in the excavation. All excavation on this project shall be performed in accordance with applicable sections of Division 1 of the specifications or this article of the specification, whichever is the

most stringent.

- C. Trenches for all underground conduit shall be excavated to the required depths. The bottoms of the trenches shall be tamped hard and graded to secure maximum fall. Should rock be encountered, it shall be excavated to a depth of six inches below the bottom of the pipe and before laying the pipe, the space between the bottom of the pipe and rock surface shall be filled with gravel and thoroughly tamped. Pipe laid in trenches dug in fill shall be supported down to load bearing undistributed soil. After the conduit has been inspected and approved by the Construction Manager and by the local inspecting authorities, the trenches shall be backfilled with clean dirt and match type of backfill used in that area.
- D. Backfill shall be installed in layers 12 inches deep, adequately tamped and wetted down or flushed before the second layer of earth is laid in place. This process shall be continued until the trenches are filled. No roots, rocks or foreign material of any description shall be used for backfill by this contractor and any excess material and debris shall be removed from the site by this contractor. Any special backfill material shall be provided as hereinafter specified as shown on the drawings.
- E. All excavating and backfilling shall be done in a manner so as not to disturb adjacent structure and any shoring required shall be furnished.
- F. Electrical Contractor to refer to civil specification Division 31 for more specific requirements.

## 1.16 SCAFFOLDING, RIGGING, AND HOISTING

A. Each contractor shall furnish all scaffolding as required for the installation of his work. He shall either arrange with the General Contractor servicing in connection with any rigging and hoisting required, or provide his own equipment to hoist apparatus to be installed by him into place. Each contractor shall see that any equipment too large to permit passage through normal doorways and access way is brought to the job and set in place before the spaces are enclosed.

# 1.17 CODES AND STANDARDS

- A. All materials and workmanship shall comply with all applicable local, county, state and national codes, specifications, ordinances, utility company regulations and specified industry standards.
- B. In case of difference between building codes, specifications, regulations and the Contract Documents, the most stringent shall govern. The contractor shall promptly notify the Construction Manager in writing of any such difference. Should the Contractor perform any work that does not comply with the requirements of the applicable building codes, state laws, local ordinances, industry standards, utility company regulations, he shall bear all costs arising in correcting these deficiencies.
- C. In addition to the local, county, and state ordinances, and the utility company

regulations, the following industry standards and codes shall apply as applicable, except where the requirements of this specification are more stringent than the following standards, they shall take precedence:

- 1. ASTM American Society of Testing Materials
- 2. IEEE Institute of Electrical and Electronics Engineers
- 3. IES Illuminating Engineering Society
- 4. NEC National Electrical Code
- 5. NEMA National Electrical Manufacturers Association
- 6. NFPA National Fire Protection Association
- 7. UL Underwriters' Laboratories
- 8. ADA Americans With Disabilities Act

# 1.18 CLEANING

- A. This Contractor shall thoroughly clean all fixtures, switches, panelboards and other devices and equipment furnished and set in place under this contract. All surfaces shall be properly polished and shall be free of paint and other dirt and debris.
- B. This Contractor shall be required to touch up or refinish all equipment furnished with factory applied finishes which have been damaged during the construction of the work. He shall properly protect the front of all panelboards, switchboards and other similar equipment to prevent marring and other defacing.

### 1.19 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Firestopping."

## PART 2 - PRODUCTS

- 2.1 SLEEVES FOR RACEWAYS AND CABLES
  - A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
  - B. Cast-Iron Pipe Sleeves: Cast or fabricated "wall pipe," equivalent to ductile-iron pressure pipe, with plain ends and integral waterstop, unless otherwise indicated.
  - C. Sleeves for Rectangular Openings: Galvanized sheet steel.
    - 1. Minimum Metal Thickness:
      - a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.
      - For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

## PART 3 - EXECUTION

## 3.1 ROUGH-IN

- A. Verify final locations for rough-ins with field measurements and with the requirements of the actual equipment to be connected.
- B. Refer to drawings and equipment specifications for rough-in requirements.
- C. Owner reserves the right to approve final location of all outlet boxes prior to rough-in and may opt to move diagrammatic location indicated on Contract Drawings up to six feet horizontally, ten feet vertically.

## 3.2 ELECTRICAL INSTALLATIONS

- A. Comply with NECA 1.
- B. General: Sequence, coordinate, and integrate the various elements of electrical systems, materials, and equipment. Comply with the following requirements:
  - 1. Coordinate electrical systems, equipment, and materials installation with other building components.
  - 2. Verify all dimensions by field measurements.
  - 3. Arrange for chases, slots, and openings in other building components to allow for electrical installations.
  - Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
  - 5. Sequence, coordinate, and integrate installations of electrical materials and equipment for efficient flow of the work. Give particular attention to large equipment requiring positioning prior to closing in the building.
  - 6. Coordinate the cutting and patching of building components to accommodate the installation of electrical equipment and materials.
  - 7. Where mounting heights are not detailed or dimensioned, install electrical services and overhead equipment to provide the maximum headroom possible.
  - Coordinate the installation of electrical materials and equipment above ceilings with suspension system, mechanical equipment and systems, and structural components.
  - Coordinate connection of electrical systems with exterior underground and overhead utilities and services. Comply with requirements of governing regulations, franchised service companies, and controlling agencies. Provide required connection for each service.
  - 10. Install systems, materials, and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the work are shown only in diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Architect.

- 11. Install systems, materials, and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.
- 12. Install electrical equipment to facilitate servicing, code clearance, maintenance, and repair or replacement of equipment components of both electrical equipment and other nearby installations. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations.

# 3.3 CUTTING AND PATCHING

- A. General: Perform cutting and patching in accordance with General Conditions.
- B. Protection of Installed Work: During cutting and patching operations, protect adjacent installations.
- C. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.
- D. Do not endanger or damage installed work through procedures and processes of cutting and patching.
- E. Arrange for repairs required to restore other work because of damage caused as a result of electrical installations.
- F. No additional compensation will be authorized for cutting and patching work that is necessitated by ill-timed, defective, or non-conforming installations.
- G. Perform cutting, fitting, and patching of electrical equipment and materials required to:
  - 1. Uncover work to provide for installation of ill-timed work.
  - 2. Remove and replace defective work.
  - Remove and replace work not conforming to requirements of the Contract Documents.
  - 4. Remove samples of installed work as specified for testing.
  - 5. Upon written instructions from the Architect, uncover and restore work to provide for Architect observation of concealed work.
- H. Locate, identify, and protect electrical services passing through remodeling or demolition area and serving other areas required to be maintained operational. When transit services must be interrupted, provide temporary services for the affected areas and notify the Owner prior to changeover.
- I. Cut, remove, and legally dispose of selected electrical equipment, components, and materials as indicated, including but not limited to removal of electrical items indicated to be removed and items made obsolete by the new work.
- J. Protect the structure, furnishings, finishes, and adjacent materials not indicated or scheduled to be removed.

## 3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".
- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Install manufacturer fire-rated Cable Firestopping Systems for low voltage and communication wiring. Comply with requirements in Division 07 Section "Firestopping."
- K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel or cast-iron pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

## 3.5 SLEEVE-SEAL INSTALLATION

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

## 3.6 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Firestopping."

## 3.7 SYSTEM OPERATING TESTS

- A. After the successful completion of all equipment start-up and test requirements, the following formal tests shall be performed on the complete electrical systems:
  - First Operating Test by Contractor: The Contractor shall prove the operation of the electrical systems and of each individual item in the systems. At least 10 days notice shall be given the Architect of such tests. If any item of the systems fails to perform, corrections shall be made and this test shall be repeated until the operating test is successful.
  - Three-Day Operating Test: An operating test under occupied conditions shall then be performed by the Contractor for a period of three days. If any element of the systems does not perform properly, the Contractor shall make all necessary corrections, and the test shall be repeated until successfully performed.
  - 3. Heat Scan Tests: Heat scan tests shall be made once each day of the three-day tests on all of the following items:
    - a. Motors
    - b. Fixture ballasts
    - c. Feeder terminations
    - d. Circuit breakers
    - e. Disconnect Switches
    - f. Panelboards
- B. Instruments: The Contractor shall provide all instruments, materials and labor to perform the tests and to obtain and record the measurements specified herein, including the furnishing of all record forms as approved by the Architect.
- C. Report: Copies of a written report of the 3-day operating test, on the approved form of record, shall be submitted to the Architect for approval and subsequent transmittal to the Owner.

#### 3.8 CABLE TESTS

Salem Memorial Hospital 19-526.00

- A. Secondary Wires and Cables: Megger all 600-volt conductors for each phase with a 500-volt megger for 1 minute and record the readings. Minimum value shall be one (1) megohm. The values shall be determined with all switchboards, panelboards, fuse holders, switches, and overcurrent devices in place. Motors and transformers shall not be connected during meggering. Wire and cable test measurements for record shall not be taken with wire or cable on reels, but after installation. Megger insulation tests shall be made before energizing. A summary of insulation resistance shall be made of all circuits and equipment, listing date, weather, electrical characteristics, and measured insulation resistance, and this summary shall be submitted to the Architect prior to final acceptance.
- B. The Contractor shall furnish all instruments, test equipment, and personnel that are necessary for his tests. Testing equipment shall be as necessary for the particular test, and equipment shall be in good working order. Equipment subjected to damage during test shall be removed from line before test is started.

## 3.9 WARRANTIES

- A. Refer to Division 1 for procedures and submittal requirements for warranties. Refer to individual equipment specifications for warranty requirements.
- B. Compile and assemble the warranties specified in Divisions 26, 27 and 28 into a separated set of vinyl covered, three-ring binders, tabulated and indexed for easy reference.
- C. Provide complete warranty information for each item, product, or equipment to include date of beginning of warranty or bond; duration of warranty or bond; and names, addresses, and telephone numbers and procedures for filing a claim and obtaining warranty services.
- D. Before final payment, the Contractor shall submit three (3) copies of Catalog Data for Owner, O & M Instructions, and all Test Reports.
- E. Before final payment, the Contractor shall submit one (1) set of Record Drawings.
- F. The Contractor warrants that electrical work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.

## 3.10 CLEANING

A. Refer to General Conditions for general requirements for final cleaning.

END OF SECTION

Salem Memorial Hospital 19-526.00

COMMON WORK RESULTS FOR ELECTRICAL 26 0500 - 12

### **SECTION 26 0510**

#### GHN MODIFICATIONS

### **ITEM PSP**

#### **PRODUCT SUBSTITUTION PROCEDURES**

Item **PSP** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

#### PART 1 - GENERAL

#### 1.1 SCOPE

A. Provide all requests for substitutions and make product selections from specified product options, as required by the Bidding and Contract Documents and in strict accordance with the provisions of this section.

#### 1.2 RELATED DOCUMENTS

- A. Contractual Requirements for Submittals: General Conditions and Supplementary Conditions.
- B. Submission Requirements: Administrative Requirements, except submit only three copies.
- C. Substitution Request Requirements: Instructions to Bidders.

#### 1.3 PRE-BID SUBSTITUTION REQURESTS

- A. The naming of specified items on the drawings or in the specifications means that such named items are specifically desired by the Engineer and/or Owner. If the words "or acceptable equal" follows such named items, substitution requests may be submitted. Requests for substitution received by the Engineer later than 5 business days prior to bid opening may be rejected without review as "non-responsive".
- B. Substitution Request Form: Requests must be submitted on copies of the form included in the Project Manual, and must name the exact item proposed with complete information filled out and back-up data attached as specified on the form. Use separate Substitution Request Form for each item. Submit three copies of form and data for mechanical and electrical items. Requests showing only brand name or manufacturer, or otherwise incomplete, will not be honored. Submit samples if requested.
- C. It is not possible or practical to identify in the Contract Documents every factor and criteria that has bearing on the design and quality of materials and construction of which the Engineer is aware and must consider in evaluating a proposed substitution and that may be a valid cause for non-acceptance. The Engineer is the sole judge

as to the equality and acceptability of proposed substitutions. Only written acceptances will be held valid by the Engineer. Under no circumstances shall the Engineer's acceptance of any such substitution relieve the Contractor from timely, complete, full and proper performance of the work.

- D. A request constitutes a representation that Contractor:
  - 1. Has investigated proposed product and determined that it meets or exceeds quality and performance level of specified product. A complete photometric calculation is required to show performance equality of light fixtures.
  - 2. Will provide same warranty for Substitution as for specified product.
  - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
  - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
  - 5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities having jurisdiction.
- E. After the contract is awarded, if revision of wiring, piping, ductwork, etc., or arrangement of other equipment is required by any substituted item, drawings showing these revisions must be prepared and submitted as specified for Shop Drawings submittals.

## 1.4 AFTER-AWARD-OF-CONTRACT SUBSTITUITION REQUESTS

- A. Substitution requests will be considered only under the following conditions:
  - Unavailability of specified product due to a strike, lockout, bankruptcy, discontinuance of the manufacturer of a product, or natural disasters. Submit proof that orders were placed within 10 days after review by the Engineer of the item listed in the specifications. Failure to order materials in time for proper delivery is not an acceptable condition.
  - 2. When a guarantee of performance is required and, in the judgment of the Contractor, the specified product or process will not produce the desired result.
  - 3. Substantial advantage is offered Owner after deducting offsetting disadvantages including delays; additional compensation to Engineer for redesign, investigation, evaluation, and other necessary services; and similar considerations.
  - 4. Proposal includes all necessary coordination and modifications to design, required appurtenances, et cetera, for complete and proper functioning of proposed substitutions, and includes a waiver of all claims for additional costs, under Contractor's responsibility, which may subsequently become apparent.
- B. Submit request for such substitutions in writing to the Engineer within 10 days of the date of ascertaining unavailability of material or equipment specified, or that the performance cannot be guaranteed.
- C. If any substitution will affect a correlated function, adjacent construction, or the work of other trades or contractors, the necessary changes and modifications to the affected work shall be considered as part of the substitution, to be accomplished without additional cost to the Owner, if and when accepted.

- D. It is not possible or practical to identify in the Contract Documents every factor and criteria that has bearing on the design and quality of materials and construction of which the Engineer is aware and must consider in evaluating a proposed substitution and that may be a valid cause for non-acceptance. Approved substitutions will be effected by a Change Order. Under no circumstances shall the Engineer's acceptance of any such substitution relieve the Contractor from timely, full and proper performance of the work.
- E. Contractor's submittal of, and Engineer's acceptance of, shop drawings, product data, or samples which indicate Work not complying with requirements of Contract Documents, does not constitute an acceptable and valid request for, nor approval of, a substitution.

## 1.5 PRODUCT OPTIONS

- A. General Limitations: Where possible, provide entire required quantity of each generic product, material, or equipment from a single source; and, where not possible to do so, match separate procurements as closely as possible. To extent selection process is under Contractor's control, provide compatible products, materials and equipment. Where available and complying with requirements, provide standard products which have been used previously and successfully in similar applications, and which are recommended by the manufacturer for the application indicated.
- B. Product Selections: Comply with following for selection of products, materials, and equipment:
  - One or More Products Named (with or without "or acceptable equal" or "or equal"): Provide only one of the named products, unless determined to be unavailable, non-compatible with the work, or non-complying with Contract Documents or governing regulations. If "or acceptable equal" or "or equal" follows such named products comply with requirements for gaining approval on "substitution" to select and use an unnamed product.
  - 2. Single Product Named: Where "no substitute" is specified provide only that product, unless determined to be unavailable, non-compatible with the work, or non-complying with Contract Documents or governing regulations. If the product is determined to be unavailable, non-compatible with the work or non-complying with the contract documents, contact the architect and/or engineer.
  - Compliance with Standards: Selection of product that complies with Contract Documents, including applicable standards, is Contractor's option, subject to Engineer's approval.
  - Performance Requirements: Selection of product which has been tested to show compliance with Contract Documents, including indicated performances, is Contractor's option, subject to Engineer's approval.
  - 5. Prescriptive Requirements: Selection of product that has been certified by manufacturer to comply with Contract Documents, including prescriptive requirements, is Contractor's option, subject to Engineer's approval.
  - 6. Visual Requirements: Where indicated to be selected from manufacturer's standard options, selection is Engineer's, subsequent to determination or selection of manufacturer (Contractor's option). Where indicated to be selected

from among standard options available within industry, selection is Engineer's prior to determination or selection of manufacturer.

- 7. Fire Rated Assemblies: Design is based on UL rated assemblies to comply with governing regulations and are indicated on drawings. Provide materials which are identical to those used in assemblies which have been tested in compliance with UL 263 (ASTM E119, NFPA 251, or ANSI A2.1) and are labeled and listed by a testing and inspection organization acceptable to authorities having jurisdiction. Deviations and substitutions will be acceptable only if thoroughly coordinated with work of all affected trades and are acceptable to authorities having jurisdiction.
- Other Materials: All other materials, not specifically described, but required for a complete and proper installation the Work, shall be new, first quality of their respective kinds, and as selected by the Contractor subject to the approval of the Engineer.
- C. Refer to Section 26 0500 Product Requirements for general products, materials, equipment, and installation requirements that apply to all of the Work.

## 1.6 SUBMITTALS

- A. Requests for Substitutions: Submit requests for substitutions on copies of Substitution Request Form, fully identified for product, material or method being replaced by substitution, including related specification section(s) and drawing number(s), and fully documented to show compliance with requirements for substitutions. Include full documentation, including: Product data, samples where appropriate, detailed performance comparisons and evaluation, testing laboratory reports where applicable, coordination information for effect on other work and time schedule, cost information for proposed change order, Contractor's general certification of recommended substitution, and similar information relevant to circumstances.
- B. Certification: Submit with substitution request certification by Contractor to the effect that, in its opinion and after its thorough evaluation, proposed substitution will result in total work which is equal to or better than the work originally required by Contract Documents, in every respect of significance except as specifically stated in certification; and that it will perform adequately in application indicated, regardless of equality and exceptions thereto. Include in certification, Contractor's waiver of rights to additional payment and time which may subsequently be necessitated, by failure of substitution to perform adequately, and for required work to make corrections thereof in accordance with provisions of the Contract Documents.
- C. Change Order Procedure: Submit requests for substitutions which propose a change in either the Contract Sum or Contract Time, as required by this section and in form and by procedures required for change order proposals.
- D. Approval: Approval of substitution is possible only by written approval. Approval of substitution that affects a change in cost or time is possible only by Change Order procedure.

# SUBSTITUTION REQUEST FORM 260510

Transmit to: GHN Architects & Engineers 300 South Jefferson Suite 301 Springfield, MO 65806

SECTION PARAGRAPH SPECIFIED ITEM:

PROPOSED SUBSTITUTE:

Attach complete description, designation, catalog or model number, Spec Data sheet, and other technical data, including laboratory tests if applicable.

Fill in blanks below:

1. Will substitution affect dimensions indicated on drawings:

2. Will substitution affect wiring, piping, ductwork, etc., indicated on drawings?

3. What affect will substitution have on other trades?

4. Differences between proposed substitution and specified item?

5. If necessary, will the undersigned pay Owner for Architectural/Engineering costs, required to revise the working drawings, caused by the substitution?

6. Manufacturer's warranties of the specified items and proposed items are:

Same Different (explain):

Salem Memorial Airport 19-526.00

7. Submitted by:	REVIEW COMMENTS
Firm:	Accepted
Address:	Accepted as noted (see attached copy)
Signature:	Not Accepted
	Received too late
Date: Phone No.:	By: date:
	Remarks:
	Acceptance is given subject to compliance with drawings and specifications.

## SECTION 26 0519

#### **GHN MODIFICATIONS**

#### **ITEM EPC**

#### **ELECTRIC POWER CONDUCTORS & CABLES**

Item **EPC** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

#### PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. This Section includes the following:
    - 1. Building wires and cables rated 600 V and less.
    - 2. Connectors, splices, and terminations rated 600 V and less.
    - 3. Sleeves and sleeve seals for cables.

#### 1.3 DEFINITIONS

- A. EPDM: Ethylene-propylene-diene terpolymer rubber.
- B. NBR: Acrylonitrile-butadiene rubber.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Qualification Data: For testing agency.

#### 1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications : Firms regularly engaged in the manufacture of wire and cable of types, materials and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.
- B. Installer's Qualifications: Firm with at least 3 years of successful installation experience on projects with wire and cable systems work similar to that required for this project.

- C. Source Limitations: Obtain each type of wire or cable through one source from a single manufacturer.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- E. Comply with NFPA 70.
- F. UL Compliance: Provide components which are listed and labeled by UL under the following standards.
  - 1. UL Std. 4 Armored Cable.
  - 2. UL Std. 83 Thermoplastic-Insulated Wires and Cables.
  - UL Std. 486A Wire Connectors and Soldering Lugs for Use with Copper Conductors.
  - 4. UL Std. 486B Wire Connectors for Use with Aluminum Conductors.
  - 5. UL Std. 854 Service Entrance Cable.
- G. NEMA/ICEA Compliance: Provide components which comply with the following standards.
  - 1. WC-1 Thermoplastic-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy per UL 493 and UL 719.
  - 2. WC-1 Cross Linked Thermosetting Polyethylene-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy per UL 83.
  - 3. WC-1 Ethylene-Propylene-Rubber-Insulated Wire and Cable for the Transmission and Distribution of Electrical Energy per UL 1063.
  - WC-1 Metal Clad Cables 600V Type MC cables containing 4 conductors or less, in sizes 14-10 AWG per UL 1569.
- H. IEEE Compliance: Provide components which comply with the following standard.
  - 1. Std. 82 Test Procedures for Impulse Voltage Tests on Insulated Conductors.
- Testing Agency Qualifications: An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the International Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction.
  - Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing.

## 1.6 COORDINATION

A. Set sleeves in cast-in-place concrete, masonry walls, and other structural components as they are constructed.

## PART 2 - PRODUCTS

## 2.1 CONDUCTORS AND CABLES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Alcan Products Corporation; Alcan Cable Division.
  - 2. American Insulated Wire Corp.; a Leviton Company.
  - 3. General Cable Corporation.
  - 4. Senator Wire & Cable Company.
  - 5. Southwire Company.
  - 6. Engineer Approved Equal.
- B. Conductors: Comply with NEMA WC 70.
- C. Conductor Insulation:
  - 1. Comply with NEMA WC 70 for Types THW, THHN-THWN, XHHW, UF, USE, and SO.
  - 2. All cabling to be plenum-rated.
  - Multiconductor Cable: Comply with NEMA WC 70 for metal-clad cable, Type MC with ground wire.
- 2.2 CONNECTORS AND SPLICES
  - A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - 1. AFC Cable Systems, Inc.
    - 2. Hubbell Power Systems, Inc.
    - 3. O-Z/Gedney; EGS Electrical Group LLC.
    - 4. 3M; Electrical Products Division.
    - 5. Tyco Electronics Corp.
    - 6. Engineer Approved Equal.
      - a. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.

## 2.3 SLEEVES FOR RACEWAYS AND CABLES

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Sleeves for Rectangular Openings: Galvanized sheet steel.
  - 1. Minimum Metal Thickness:
    - a. For sleeve cross-section rectangle perimeter less than 50 inches and no side more than 16 inches, thickness shall be 0.052 inch.

 For sleeve cross-section rectangle perimeter equal to, or more than, 50 inches and 1 or more sides equal to, or more than, 16 inches, thickness shall be 0.138 inch.

## PART 3 - EXECUTION

- 3.1 CONDUCTOR MATERIAL: Use the following material for sizes indicated.
  - A. Copper Only: Soft-drawn, annealed copper with a conductivity of 98% pure copper for all wires and cables.
- 3.2 CONDUCTOR MATERIAL APPLICATIONS
  - A. Feeders: Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
  - B. Branch Circuits: Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
- 3.3 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS
  - A. Service Entrance: Type THHN-THWN, single conductors in raceway.
  - B. Exposed Feeders: Type THHN-THWN, single conductors in raceway.
  - C. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-THWN, single conductors in raceway.
  - D. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN, single conductors in raceway.
  - E. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN, single conductors in raceway or Metal-clad cable, Type MC, as specifically allowed in Section 26 0533.
  - F. Class 1 Control Circuits: Type THHN-THWN, in raceway.
  - G. Class 2 Control Circuits: Type THHN-THWN, in raceway.
- 3.4 INSTALLATION OF CONDUCTORS AND CABLES
  - A. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
  - B. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
  - C. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

- D. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
- E. Support cables according to Division 26 Section "Hangers and Supports for Electrical Systems."
- F. Identify and color-code conductors and cables according to Division 26 Section "Identification for Electrical Systems."
- G. Minimum wire size on branch circuits shall be #12 gauge. Homeruns of greater than 75 feet of actual wire length shall be a minimum of #10 gauge for 120/208 volt systems.

## 3.5 CONNECTIONS

- A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
- B. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
- C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

### 3.6 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Electrical penetrations occur when raceways, cables, wireways, cable trays, or busways penetrate concrete slabs, concrete or masonry walls, or fire-rated floor and wall assemblies.
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- E. Cut sleeves to length for mounting flush with both surfaces of walls.
- F. Extend sleeves installed in floors 2 inches above finished floor level.
- G. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway or cable, unless indicated otherwise.
- H. Seal space outside of sleeves with grout for penetrations of concrete and masonry

- 1. Promptly pack grout solidly between sleeve and wall so no voids remain. Tool exposed surfaces smooth; protect grout while curing.
- Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway or cable, using joint sealant appropriate for size, depth, and location of joint. Comply with requirements in Division 07 Section "Joint Sealants.".
- J. Fire-Rated-Assembly Penetrations: Maintain indicated fire rating of walls, partitions, ceilings, and floors at raceway and cable penetrations. Install sleeves and seal raceway and cable penetration sleeves with firestop materials. Comply with requirements in Division 07 Section "Firestopping."
- K. Roof-Penetration Sleeves: Seal penetration of individual raceways and cables with flexible boot-type flashing units applied in coordination with roofing work.
- L. Aboveground, Exterior-Wall Penetrations: Seal penetrations using steel or cast-iron pipe sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- M. Underground, Exterior-Wall Penetrations: Install cast-iron pipe sleeves. Size sleeves to allow for 1-inch annular clear space between raceway or cable and sleeve for installing mechanical sleeve seals.

## 3.7 SLEEVE-SEAL INSTALLATION

- A. Install to seal exterior wall penetrations.
- B. Use type and number of sealing elements recommended by manufacturer for raceway or cable material and size. Position raceway or cable in center of sleeve. Assemble mechanical sleeve seals and install in annular space between raceway or cable and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make watertight seal.

## 3.8 FIRESTOPPING

A. Apply firestopping to penetrations of fire-rated floor and wall assemblies for electrical installations to restore original fire-resistance rating of assembly. Firestopping materials and installation requirements are specified in Division 07 Section "Penetration Firestopping."

## 3.9 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
- B. Tests and Inspections:

- After installing conductors and cables and before electrical circuitry has been energized, test service entrance and feeder conductors for compliance with requirements.
- 2. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
- C. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION

**BLANK PAGE** 

.

Salem Memorial Airport 19-526.00 ELECTRICAL POWER CONDUCTORS AND CABLES 26 0519 - 8

## **SECTION 26 0526**

### GHN MODIFICATIONS

### **ITEM G&B**

### **GROUNDING AND BONDING**

Item **G&B** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

### PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. This Section includes methods and materials for grounding systems and equipment.

### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Other Informational Submittals: Plans showing dimensioned as-built locations of grounding features including the following:
  - 1. Ground rods.
  - 2. Ufer Ground
- C. Operation and Maintenance Data: For grounding to include the following in emergency, operation, and maintenance manuals:
  - Instructions for periodic testing and inspection of grounding features at ground rings and grounding connections for separately derived systems based on NFPA 70B.
    - a. Tests shall be to determine if ground resistance or impedance values remain within specified maximums, and instructions shall recommend corrective action if they do not.
    - b. Include recommended testing intervals.

#### 1.4 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

Salem Memorial Airport 19-526.00 GROUNDING AND BONDING 26 0526 - 1 B. Comply with UL 467 for grounding and bonding materials and equipment.

# PART 2 - PRODUCTS

# 2.1 CONDUCTORS

- A. General: Except as otherwise indicated, provide electrical grounding and bonding systems indicated; with assembly of materials, including, but not limited to, cables/wires, connectors, solderless lug terminals, grounding electrodes and plate electrodes, bonding jumper braid, surge arresters, and additional accessories needed for complete installation. Where materials or components are not indicated, provide products complying with NFPA 70, UL, IEEE requirements and with established industry standards for those applications indicated.
- B. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
- C. Bare Copper Conductors:
  - 1. Solid Conductors: ASTM B 3.
  - 2. Stranded Conductors: ASTM B 8.
  - Flexible Bonding Cable Strap: Flexible flat conductor, 480 strands of 30-gauge bare copper wire; 3/4 inch wide, 9-1/2 inch long; 48,250 CM. Select braid with holes sized for 3/8 inch diameter bolts, and protect braid with copper bolt hole ends.
  - 4. Bonding Conductor: Sized per NEC.
  - 5. Bonding Jumper Braid: Copper braided tape, constructed of 30-gauge bare copper wires and properly sized for indicated applications..
- D. Grounding Bus: Rectangular bars of annealed copper, 1/4 by 2 inches in cross section, unless otherwise indicated; with insulators.

# 2.2 CONNECTORS

- A. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
- B. Unless otherwise indicated, provide electrical grounding conductors for grounding system connections that match power supply wiring materials and are sized according to NEC.
- C. Bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.
  - 1. Pipe Connectors: Clamp type, sized for pipe.
- D. Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions. Comply with AWS Code for procedures, appearance, and quality of welds; and methods used in

correcting welding work. Provide welded connections where grounding conductors connect to underground grounding and plate electrode. Use of exothermic or "Cadweld" system is acceptable.

E. Electrical Grounding Connection Accessories: Provide electrical insulating tape, heatshrinkable insulating tubing, welding materials, bonding straps, as recommended by accessories manufacturers for type services indicated.

## 2.3 GROUNDING ELECTRODES

A. Ground Rods: Copper-clad; 5/8 inch by10 feet.

# PART 3 - EXECUTION

## 3.1 APPLICATIONS

- A. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.
- B. Underground Grounding Conductors: Install bare copper conductor, sized per NFPA 70.
  - 1. Bury at least 24 inches below grade.
- C. Isolated Grounding Conductors: Green-colored insulation with continuous yellow stripe. On feeders with isolated ground, identify grounding conductor where visible to normal inspection, with alternating bands of green and yellow tape, with at least three bands of green and two bands of yellow.
- D. Conductor Terminations and Connections:
  - 1. Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
  - 2. Underground Connections: Welded connectors.
  - 3. Connections to Structural Steel: Welded connectors.
  - 4. Connections to Rebar: Welded connectors.

## 3.2 GROUNDING OVERHEAD LINES

- A. Comply with IEEE C2 grounding requirements.
- B. Install 2 parallel ground rods if resistance to ground by a single, ground-rod electrode exceeds 25 ohms.
- C. Drive ground rods until tops are 12 inches below finished grade in undisturbed earth.
- D. Ground-Rod Connections: Install bolted connectors for underground connections and connections to rods.
- E. Lightning Arrester Grounding Conductors: Separate from other grounding conductors.

- F. Secondary Neutral and Transformer Enclosure: Interconnect and connect to grounding conductor.
- G. Protect grounding conductors running on surface of wood poles with molding extended from grade level up to and through communication service and transformer spaces.

## 3.3 EQUIPMENT GROUNDING

- A. Terminate feeder and branch circuit insulated equipment grounding conductors with grounding lug, bus, or bushing. Install a separate grounding conductor in all raceways, appropriately sized per NEC.
- B. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
  - 1. Feeders and branch circuits.
  - 2. Lighting circuits.
  - 3. Receptacle circuits.
  - 4. Single-phase motor and appliance branch circuits.
  - 5. Flexible raceway runs.
  - 6. Armored and metal-clad cable runs.
- C. Air-Duct Equipment Circuits: Install insulated equipment grounding conductor to duct-mounted electrical devices operating at 120 V and more, including air cleaners, heaters, dampers, humidifiers, and other duct electrical equipment. Bond conductor to each unit and to air duct and connected metallic piping.
- D. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heattracing cable. Bond conductor to heater units, piping, connected equipment, and components.
- E. Isolated Equipment Enclosure Circuits: For designated equipment supplied by a branch circuit or feeder, isolate equipment enclosure from supply circuit raceway with a nonmetallic raceway fitting listed for the purpose. Install fitting where raceway enters enclosure, and install a separate insulated equipment grounding conductor. Isolate conductor from raceway and from panelboard grounding terminals. Terminate at equipment grounding conductor terminal of the applicable derived system or service, unless otherwise indicated.

## 3.4 INSTALLATION

- A. Grounding Conductors:
  - 1. Route along shortest and straightest paths possible, unless otherwise indicated or required by Code.
  - 2. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.

Salem Memorial Airport 19-526.00

- Coordinate with other electrical work as necessary to interface installation of electrical grounding and bonding system work with other work.
- Connect together system neutral, service equipment enclosures, exposed noncurrent carrying metal parts of electrical equipment, metal raceway systems, grounding conductor in raceways and cables, receptacle ground connectors, and plumbing systems.
- B. Ground Rods: Drive rods until tops are 2 inches below finished floor or final grade, unless otherwise indicated. Install clamp-on connectors on clean metal contact surfaces, to ensure electrical conductivity and circuit integrity.
  - Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
  - 2. For grounding electrode system, install at least three rods spaced at least onerod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.
- C. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
  - 1. Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
  - 2. Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
  - 3. Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.
- D. Grounding and Bonding for Piping:
  - Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes, using a bolted clamp connector or by bolting a lugtype connector to a pipe flange, using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
  - Water Meter Piping: Use braided-type bonding jumpers with code-sized ground clamps to electrically bypass water meters. Connect to pipe with a bolted connector.
  - 3. Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.
- E. Grounding for Steel Building Structure: Metal frame of building or structure for all new buildings must be bonding to building grounding electrode system and shall be bonded to Ufer ground.

Salem Memorial Airport 19-526.00

- F. Ufer Ground (Concrete-Encased Grounding Electrode): Fabricate according to NFPA 70, using a minimum of 20 feet of 1/2 inch diameter rebar encased by at least 2 inches of concrete. Extend rebar outside footing and connect to building grounding electrode system per NFPA 70.
  - 1. If concrete foundation is less than 20 feet long, connect rebar together to obtain a minimum of 20 feet of continuous conductor.
  - Bond grounding conductor to reinforcing steel in at least four locations and to anchor bolts.
- G. Apply corrosion-resistant finish to field-connections, buried metallic grounding and bonding products, and places where factory applied protective coatings have been destroyed, which are subjected to corrosive action.
- H. Tighten grounding and binding connectors and terminals, including screws and bolds, in accordance with manufacturer's published torque tightening values for connectors and bolts. Where manufacturer's torquing requirements are not indicated, tighten connections to comply with tightening torque values specified in UL 486A to assure permanent and effective grounding.

# 3.5 FIELD QUALITY CONTROL

- A. Perform the following tests and inspections:
  - 1. After installing grounding system but before permanent electrical circuits have been energized, test for compliance with requirements.
  - Test completed grounding system at each location where a maximum groundresistance level is specified, at service disconnect enclosure grounding terminal, and at individual ground rods. Make tests at ground rods before any conductors are connected.
    - a. Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
    - b. Perform tests by fall-of-potential method according to IEEE 81.
    - c. Where tests show resistance to ground is over 25 ohms, take appropriate action to reduce resistance to 25 ohms, or less, by driving additional ground rods; then retest to demonstrate compliance.

END OF SECTION

## **SECTION 26 0529**

## GHN MODIFICATIONS

## ITEM HSE

## HANGERS & SUPPORTS FOR ELECTRICAL SYSTEMS

Item **HSE** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. This Section includes the following:
    - 1. Hangers and supports for electrical equipment and systems.
    - 2. Construction requirements for concrete bases.

## 1.3 DEFINITIONS

- A. EMT: Electrical metallic tubing.
- B. IMC: Intermediate metal conduit.
- C. RMC: Rigid metal conduit.

## 1.4 PERFORMANCE REQUIREMENTS

- A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.
- B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.
- C. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.
- 1.5 SUBMITTALS
  - A. Product Data for hangers and supports.
- 1.6 QUALITY ASSURANCE

Salem Memorial Airport 19-526.00 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS 26 0529 - 1
- A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Comply with NFPA 70.

## PART 2 - PRODUCTS

- 2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS
  - A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.
    - 1. Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
      - a. Allied Tube & Conduit.
      - b. Cooper B-Line, Inc.; a division of Cooper Industries.
      - c. ERICO International Corporation.
      - d. GS Metals Corp.
      - e. Thomas & Betts Corporation.
      - f. Unistrut; Tyco International, Ltd.
      - g. Wesanco, Inc.
      - h. Engineer approved equal.
    - Metallic Coatings: Hot-dip galvanized after fabrication and applied according to MFMA-4.
    - Nonmetallic Coatings: Manufacturer's standard PVC, polyurethane, or polyester coating applied according to MFMA-4.
    - 4. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
    - 5. Channel Dimensions: Selected for applicable load criteria.
  - B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.
  - C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.
  - D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.
  - E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.
  - F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:
    - 1. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated or stainless steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which

used.

- a. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
  - (1) Cooper B-Line, Inc.; a division of Cooper Industries.
  - (2) Empire Tool and Manufacturing Co., Inc.
  - (3) Hilti Inc.
  - (4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.
  - (5) MKT Fastening, LLC.
  - (6) Engineer approved equal.
- 2. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
- Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
- 4. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
- 5. Toggle Bolts: All-steel springhead type.
- 6. Hanger Rods: Threaded steel.

## 2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

- A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.
- B. Materials: Comply with requirements in Division 05 Section "Metal Fabrications" for steel shapes and plates.

## PART 3 - EXECUTION

## 3.1 APPLICATION

- A. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.
- B. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted or other support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.
  - 1. Secure raceways and cables to these supports with single-bolt conduit clamps using spring friction action for retention in support channel.
- C. Spring-steel clamps designed for supporting single conduits with bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

## 3.2 SUPPORT INSTALLATION

A. Raceway Support Methods: In addition to methods described in NECA 1, EMT may

Salem Memorial Airport 19-526.00 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS 26 0529 - 3 be supported by openings through structure members, as permitted in NFPA 70.

- B. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.
- C. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:
  - 1. To Wood: Fasten with lag screws or through bolts.
  - 2. To New Concrete: Bolt to concrete inserts.
  - 3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.
  - To Steel: Welded threaded studs complying with AWS D1.1/D1.1M, with lock washers and nuts or Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
  - 5. To Light Steel: Sheet metal screws.
  - Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.
- D. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

# 3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

- A. Comply with installation requirements in Division 05 Section "Metal Fabrications" for site-fabricated metal supports.
- B. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.
- C. Field Welding: Comply with AWS D1.1/D1.1M.

# 3.4 PAINTING

- A. Touchup: Comply with requirements in Division 09 painting Sections for cleaning and touchup painting of field welds, bolted connections, and abraded areas of shop paint on miscellaneous metal.
- B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

## **SECTION 26 0533**

#### **GHN MODIFICATIONS**

#### **ITEM RW&B**

#### RACEWAYS, WIREWAYS AND BOXES

Item **RW&B** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. This Section includes raceways, fittings, boxes, enclosures, and cabinets for electrical wiring.
- 1.3 DEFINITIONS
  - A. EMT: Electrical metallic tubing.
  - B. ENT: Electrical nonmetallic tubing.
  - C. EPDM: Ethylene-propylene-diene terpolymer rubber.
  - D. FMC: Flexible metal conduit.
  - E. IMC: Intermediate metal conduit.
  - F. LFMC: Liquidtight flexible metal conduit.
  - G. LFNC: Liquidtight flexible nonmetallic conduit.
  - H. NBR: Acrylonitrile-butadiene rubber.
  - I. RNC: Rigid nonmetallic conduit.
  - J. MC: Metal Clad Cables
  - K. Wireways
- 1.4 SUBMITTALS

Salem Memorial Airport 19-526.00

- A. Product Data: For surface raceways, wireways and fittings, floor boxes, hinged-cover enclosures, and cabinets.
- B. Maintenance Data: Submit maintenance data and parts lists for each type of raceway system installed, including furnished specialties and accessories. Include this data, product data, and shop drawings in maintenance manual.

## 1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. Comply with NFPA 70.

## PART 2 - PRODUCTS

- 2.1 METAL CONDUIT AND TUBING
  - A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
    - 1. AFC Cable Systems, Inc.
    - 2. Alflex Inc.
    - 3. Allied Tube & Conduit; a Tyco International Ltd. Co.
    - 4. Anamet Electrical, Inc.; Anaconda Metal Hose.
    - 5. Electri-Flex Co.
    - 6. Manhattan/CDT/Cole-Flex.
    - 7. Southwire.
    - 8. O-Z Gedney; a unit of General Signal.
    - 9. Wheatland Tube Company.
    - 10. Engineer Approved equal.
  - B. Rigid Steel Conduit: ANSI C80.1 and UL6. All conduits over 2" diameter shall be rigid steel.
  - C. IMC: ANSI C80.6 and UL1242.
  - D. PVC-Coated Steel Conduit: PVC-coated rigid steel or conduit IMC.
    - 1. Comply with NEMA RN 1.
    - 2. Coating Thickness: 0.040 inch, minimum.
  - E. EMT: ANSI C80.3 and UL797.
  - F. FMC: Zinc-coated steel.
  - G. LFMC: Flexible steel conduit with PVC jacket.
  - H. MC: UL1569 and Standards of NEC Article 330 (AC cable is not approved).

Salem Memorial Airport 19-526.00

- I. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
  - 1. Fittings for EMT: Steel compression type.
  - Coating for Fittings for PVC-Coated Conduit: Minimum thickness, 0.040 inch, with overlapping sleeves protecting threaded joints.
- J. Joint Compound for Rigid Steel Conduit or IMC: Listed for use in cable connector assemblies, and compounded for use to lubricate and protect threaded raceway joints from corrosion and enhance their conductivity.
- 2.2 NONMETALLIC CONDUIT AND TUBING
  - A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
    - 1. AFC Cable Systems, Inc.
    - 2. Anamet Electrical, Inc.; Anaconda Metal Hose.
    - 3. Arnco Corporation.
    - 4. CANTEX Inc.
    - 5. CertainTeed Corp.; Pipe & Plastics Group.
    - 6. Condux International, Inc.
    - 7. ElecSYS, Inc.
    - 8. Electri-Flex Co.
    - 9. Lamson & Sessions; Carlon Electrical Products.
    - 10. Manhattan/CDT/Cole-Flex.
    - 11. RACO; a Hubbell Company.
    - 12. Thomas & Betts Corporation.
    - 13. Engineer Approved Equal.
  - B. Electrical Plastic Conduit: NEMA TC-2 and UL651.
    - 1. Heavy Wall Conduit: Schedule 40, 90 C, UL rated, construct of polyvinyl chloride for direct burial, or normal aboveground use and in conformity with NEC Article 347.
    - Extra Heavy Wall Conduit: Schedule 80, UL rated, construct of polyvinyl chloride compound C-200 PVC, and UL listed in accordance with NEC Article 347 for direct burial.
    - Thin Wall Conduit: Type A, UL rated for concrete encasement underground, construct of polyvinyl chloride, compound C-2000, and UL listed in accordance with NEC Article 347.
  - C. Provide all-weather quick-set clear cement and conduit bender designed specifically for PVC.
  - D. Fittings for ENT and RNC: NEMA TC 3 and UL514B; match to conduit or tubing type and material.
  - E. Fittings for LFNC: UL 514B.

Salem Memorial Airport 19-526.00 RACEWAYS, WIREWAYS, AND BOXES 26 0533 - 3 F. Conduit and Tubing Accessories: Provide conduit, tubing and duct accessories of types, sizes, and materials, complying with manufacturer's published product information which mate and match conduit and tubing.

# 2.3 BOXES, ENCLOSURES, AND CABINETS

- A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
  - 1. Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
  - 2. EGS/Appleton Electric.
  - 3. Erickson Electrical Equipment Company.
  - 4. Hoffman.
  - 5. Hubbell.
  - 6. O-Z/Gedney; a unit of General Signal.
  - 7. Thomas & Betts Corporation.
  - 8. Walker Systems, Inc.; Wiremold Company (The).
  - 9. Engineer Approved Equal.
- B. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
- C. Cast-Metal Outlet and Device Boxes: NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.
- D. Nonmetallic Outlet and Device Boxes: NEMA OS 2.
- E. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
- F. Cast-Metal Access, Pull, and Junction Boxes: NEMA FB 1, galvanized, or cast iron with gasketed cover.
- G. Cabinets:
  - 1. Galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel per NEMA 250.
    - a. NEMA Type 1 Enclosure For Interior Installations.
    - b. NEMA Type 3R Enclosure For Exterior and Damp Location Installations.
  - 2. Hinged door in front cover with flush latch and concealed hinge.
  - 3. Key latch to match panelboards.
  - 4. Metal barriers to separate wiring of different systems and voltage.
  - 5. Accessory feet where required for freestanding equipment.

# 2.4 SLEEVES FOR RACEWAYS

- A. Steel Pipe Sleeves: ASTM A 53/A 53M, Type E, Grade B, Schedule 40, galvanized steel, plain ends.
- B. Sleeves for Rectangular Openings: Galvanized sheet steel with minimum 0.052- or 0.138-inch thickness as indicated and of length to suit application.

C. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Firestopping."

# PART 3 - EXECUTION

# 3.1 RACEWAY APPLICATION

- A. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
  - 1. Exposed Conduit: Rigid steel conduit, RNC, Type EPC-40-PVC, or RNC, Type EPC-80-PVC.
  - 2. Concealed Conduit, Aboveground: Rigid steel conduit, IMC, or EMT.
- B. Comply with the following indoor applications, unless otherwise indicated:
  - 1. Exposed, Not Subject to Physical Damage: EMT.
  - 2. Exposed, Not Subject to Severe Physical Damage: EMT.
  - 3. Exposed and Subject to Severe Physical Damage: Rigid steel conduit or IMC. Includes raceways in the following locations:
    - a. Loading dock.
    - b. Corridors used for traffic of mechanized carts, forklifts, and pallet-handling units.
    - c. Mechanical rooms.
    - d. Areas specified on Drawings.
  - 4. Concealed in Ceilings and Interior Walls and Partitions: EMT or MC Cable. (Above a lay-in type ceiling is not considered concealed.)
  - Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
  - 6. Damp or Wet Locations: Rigid steel conduit or IMC.
  - 7. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4, stainless steel or nonmetallic in damp or wet locations.
- C. Minimum Homerun Raceway Size: 3/4-inch trade size. 1/2-inch allowed between outlets located within the same room.
- D. Raceway Fittings: Compatible with raceways and suitable for use and location.
  - 1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.
  - PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with that material. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer.

# 3.2 INSTALLATION

A. General Requirements

- Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.
- Cut conduits straight, properly ream, and cut threads for heavy wall conduit deep and clean.
- 3. Field-bend conduit with benders designed for purpose so as not to distort nor vary internal diameter.
- 4. Size conduits to meet NEC, except no conduit smaller than 3/4 inch shall be embedded in concrete or masonry.
- 5. Fasten conduit terminations in sheet metal enclosures by two locknuts, and terminate with bushing. Install locknuts inside and outside enclosure.
- 6. Conduits are not to cross pipe shafts or ventilating duct openings.
- 7. Use of running threads at conduit joints and terminations is prohibited. Where required, use three-piece union or split coupling.
- B. Keep raceways at least 6 inches away from parallel runs of flues and steam or hotwater pipes. Install horizontal raceway runs above water and steam piping.
- C. Complete raceway installation before starting conductor installation.
- D. Support raceways as specified in Division 26 Section "Hangers and Supports for Electrical Systems."
- E. Arrange stub-ups so curved portions of bends are not visible above the finished slab.
- F. Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.
- G. General: Install concealed conduits in new construction work, either in walls, slabs, or above hung ceilings.
  - 1. Mechanically fasten together metal conduits, enclosures, and raceways to form continuous electrical conductor. Connect to electrical boxes, fittings, and cabinets to provide electrical continuity and firm mechanical assembly.
  - 2. Avoid use of dissimilar metals throughout system to eliminate possibility of electrolysis. Where dissimilar metals are in contact, coat surfaces with corrosion inhibiting compound before assembling.
  - Install miscellaneous fittings such as reducers, chase nipples, 3-piece unions, split couplings, and plugs that have been specifically designed and manufactured for their particular application. Install expansion fittings in raceways every 200' linear run or wherever structural expansion joints are crossed.
  - 4. Use roughing-in dimensions of electrically operated unit furnished by supplier. Set conduit and boxes for connection to units only after receiving review of dimensions and after checking location with other trades.
  - 5. Conduits 2" and larger shall be rigid.
  - 6. Metal Clad (MC) Cable may be used only where listed below. The use of Armored Cable (AC) is strictly prohibited.

- 7. For Floors-on-grade, install feeder conduits under concrete slabs, minimum of 24" below finished grade unless shown otherwise on partial riser diagram.
- H. Metal Clad (MC) Cable:
  - The use of Metal Clad Cable may be used in the following conditions if approved for use by the local electrical inspector, Authority Having Jurisdiction and approving engineer:

As a final connection to light fixture or equipment, not to exceed six feet of cable length.

- a. Fire alarm circuitry.
- b. Modular furniture connection.
- c. Control circuitry.
- d. Only if the Cable has a bare or green insulated grounding conductor suitable for use as an equipment ground.
- e. Branch circuitry for lighting or receptacle circuits.
- 2. Metal Clad Cable Shall Not be used where:
  - a. It must span perpendicular to steel members because support cannot be guaranteed as required by the NEC.
  - b. Passing through firewalls with any other cable or raceway or chase.
  - c. A panelboard entry is required.
  - d. A conduit/circuit homerun to panelboard is indicated on Drawings.
  - e. Where prohibited by its Listings or NEC.
- I. Raceways Embedded in Slabs:
  - 1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
  - 2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.
  - 3. Where PVC is used below or in the slab, rigid steel ells shall be utilized in long radius form to extend vertically toward or through slab, and rigid steel entries into cabinets or terminal chambers, only shall be allowed. Do not extend any PVC into building spaces.
  - 4. Place conduits between bottom reinforcing steel and top reinforcing steel.
  - 5. Separate conduits by not less than diameter of largest conduit to ensure proper concrete band.
  - 6. Embedded conduit diameter is not to exceed 1/3 of slab thickness.
- J. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.
- K. Raceway Terminations: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.
- L. Provide nylon pull cord, minimum 200 lb tensile strength, in all empty conduits. Test conduits required to be installed, but left empty; test with ball mandrel. Clear any

conduit which rejects ball mandrel. Pay costs involved for restoration of conduit and surrounding surfaces to original condition.

- M. Raceways for Optical Fiber and Communications Cable: Install raceways, metallic and nonmetallic, rigid and flexible, as follows:
  - 1. 3/4-Inch Trade Size and Smaller: Install raceways in maximum lengths of 50 feet.
  - 2. 1-Inch Trade Size and Larger: Install raceways in maximum lengths of 75 feet.
  - Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.

# 3.3 INSTALLATION OF UNDERGROUND CONDUIT

- A. Direct-Buried Conduit:
  - 1. Excavate trench bottom to provide firm and uniform support for conduit. Prepare trench bottom as specified in Division 31 for pipe less than 6 inches in nominal diameter.
  - 2. Install backfill as specified in Division 31.
  - 3. Where PVC is used below grade, rigid steel ells shall be utilized in long radius form to extend vertically, only shall be allowed.
  - 4. After installing conduit, backfill and compact. Start at tie-in point, and work toward end of conduit run, leaving conduit at end of run free to move with expansion and contraction as temperature changes during this process. Firmly hand pack backfill around conduit to provide maximum supporting strength. After placing controlled backfill to within 12 inches of finished grade, make final conduit connection at end of run and complete backfilling with normal compaction as specified in Division 31.
  - 5. Warning Planks: Bury warning planks approximately 12 inches above directburied conduits, placing them 24 inches o.c. Align planks along the width and along the centerline of conduit.

# 3.4 SLEEVE INSTALLATION FOR ELECTRICAL PENETRATIONS

- A. Coordinate sleeve selection and application with selection and application of firestopping specified in Division 07 Section "Firestopping."
- B. Concrete Slabs and Walls: Install sleeves for penetrations unless core-drilled holes or formed openings are used. Install sleeves during erection of slabs and walls.
- C. Use pipe sleeves unless penetration arrangement requires rectangular sleeved opening.
- D. Rectangular Sleeve Minimum Metal Thickness:
  - 1. For sleeve cross-section rectangle perimeter less than 50 inches and no side greater than 16 inches, thickness shall be 0.052 inch.

- 2. For sleeve cross-section rectangle perimeter equal to, or greater than, 50 inches and 1 or more sides equal to, or greater than, 16 inches, thickness shall be 0.138 inch.
- E. Fire-Rated Assemblies: Install sleeves for penetrations of fire-rated floor and wall assemblies unless openings compatible with firestop system used are fabricated during construction of floor or wall.
- F. Cut sleeves to length for mounting flush with both surfaces of walls.
- G. Extend sleeves installed in floors 2 inches above finished floor level.
- H. Size pipe sleeves to provide 1/4-inch annular clear space between sleeve and raceway unless sleeve seal is to be installed.
- I. Seal space outside of sleeves with grout for penetrations of concrete and masonry and with approved joint compound for gypsum board assemblies.
- J. Interior Penetrations of Non-Fire-Rated Walls and Floors: Seal annular space between sleeve and raceway, using joint sealant appropriate for size, depth, and location of joint. Refer to Division 07 Section "Joint Sealants" for materials and installation.
- K. Aboveground, Exterior-Wall Penetrations: Seal penetrations using sleeves and mechanical sleeve seals. Select sleeve size to allow for 1-inch annular clear space between pipe and sleeve for installing mechanical sleeve seals.
- 3.5 PROTECTION
  - A. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
    - 1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
    - 2. Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION

BLANK PAGE

...

# SECTION 26 0553

#### GHN MODIFICATIONS

#### **ITEM IES**

#### **IDENTIFICATIONS FOR ELECTRICAL SYSTEMS**

Item **IES** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

### PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. Section Includes:
    - 1. Identification for raceways.
    - 2. Identification of power and control cables.
    - 3. Identification for conductors.
    - 4. Underground-line warning tape.
    - 5. Warning labels and signs.
    - 6. Instruction signs.
    - 7. Equipment identification labels.
    - 8. Miscellaneous identification products.

## 1.3 DOCUMENTATION

A. Identification Schedule: An index of nomenclature of electrical equipment and system components used in identification signs and labels.

#### 1.4 QUALITY ASSURANCE

- A. Comply with ANSI A13.1 and IEEE C2.
- B. Comply with NFPA 70.
- C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.
- D. Comply with ANSI Z535.4 for safety signs and labels.
- E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

# 1.5 COORDINATION

- A. Coordinate identification names, abbreviations, colors, and other features with requirements in other Sections requiring identification applications, Drawings, Shop Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual; and with those required by codes, standards, and 29 CFR 1910.145. Use consistent designations throughout Project.
- B. Coordinate installation of identifying devices with completion of covering and painting of surfaces where devices are to be applied.
- C. Coordinate installation of identifying devices with location of access panels and doors.
- D. Install identifying devices before installing acoustical ceilings and similar concealment.

# PART 2 - PRODUCTS

# 2.1 POWER RACEWAY IDENTIFICATION MATERIALS

- A. Colors for Raceways Carrying Circuits at 600 V or Less:
  - 1. Conduits
    - a. Color-coded Plastic Tape: Provide manufacturer's standard self-adhesive vinyl tape not less than 3 mils thick by 1-1/2" wide.
    - b. Colors: Unless otherwise indicated or required by governing regulations. Provide color tape corresponding to color-coding of phase conductors.
  - 2. Wireways
    - a. White letters on a black field.
    - b. Legend: Indicate voltage and system.
- B. Self-Adhesive Vinyl Labels for Raceways Carrying Circuits at 600 V or Less: Preprinted, flexible label laminated with a clear, weather- and chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

# 2.2 ARMORED AND METAL-CLAD CABLE IDENTIFICATION MATERIALS

- A. Colors for Raceways Carrying Circuits at 600 V and Less:
  - 1. Color-Coded Plastic Tape:
    - a. General: Provide manufacturer's standard self-adhesive vinyl tape not less than 3 mils thick by 1-1/2" wide.
    - b. Colors: Unless otherwise indicated or required by governing regulations. Provide color tape corresponding to color-coding of phase conductors.
- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weatherand chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.
- 2.3 POWER AND CONTROL CABLE IDENTIFICATION MATERIALS

Salem Memorial Airport 19-526.00

- A. Comply with ANSI A13.1 for minimum size of letters for legend and for minimum length of color field for each raceway and cable size.
- B. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weatherand chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

## 2.4 CONDUCTOR IDENTIFICATION MATERIALS

- A. Color coded conductor insulation for #8 AWG or smaller shall be with a factory applied continuous color. Identify circuit numbers at the end of the wire.
- B. Provide 3" long bands of 1" wide colored tape at the end of wire at panelboards, cabinets and boxes for larger than #8 AWG conductors. Identify both phase and circuit numbers at these locations
- C. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.
- D. Self-Adhesive Vinyl Labels: Preprinted, flexible label laminated with a clear, weatherand chemical-resistant coating and matching wraparound adhesive tape for securing ends of legend label.

## 2.5 FLOOR MARKING TAPE

- A. 2-inch- wide, 5-mil pressure-sensitive vinyl tape, with black and white stripes and clear vinyl overlay.
- 2.6 WARNING LABELS AND SIGNS
  - A. Comply with NFPA 70 and 29 CFR 1910.145.
  - B. Self-Adhesive Warning Labels: Factory-printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment unless otherwise indicated.
  - C. Warning label and sign shall include, but are not limited to, the following legends:
    - 1. Multiple Power Source Warning: "DANGER ELECTRICAL SHOCK HAZARD -EQUIPMENT HAS MULTIPLE POWER SOURCES."

# 2.7 INSTRUCTION SIGNS

- A. Engraved, laminated acrylic or melamine plastic, minimum 1/16 inch thick for signs up to 20 sq. inches and 1/8 inch thick for larger sizes.
  - 1. Engraved legend with black letters on white face.
  - 2. Punched or drilled for mechanical fasteners.
  - 3. Framed with mitered acrylic molding and arranged for attachment at applicable equipment.

- B. Adhesive Film Label: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch.
- C. Adhesive Film Label with Clear Protective Overlay: Machine printed, in black, by thermal transfer or equivalent process. Minimum letter height shall be 3/8 inch. Overlay shall provide a weatherproof and UV-resistant seal for label.

## 2.8 EQUIPMENT IDENTIFICATION LABELS

- A. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.
- B. Self-Adhesive, Engraved, Laminated Acrylic or Melamine Label: Adhesive backed, with white letters on a dark-gray background. Minimum letter height shall be 3/8 inch.
- C. Thickness: 1/16 inch, for units up to 20 sq. in. or 8 inch length; 1/8 inch for larger units.
- D. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate substrate.

## 2.9 CABLE TIES

- A. General-Purpose Cable Ties: Fungus inert, self extinguishing, one piece, self locking, Type 6/6 nylon.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
  - 3. Temperature Range: Minus 40 to plus 185 deg F.
  - 4. Color: Black except where used for color-coding.
- B. UV-Stabilized Cable Ties: Fungus inert, designed for continuous exposure to exterior sunlight, self extinguishing, one piece, self locking, Type 6/6 nylon.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 12,000 psi.
  - 3. Temperature Range: Minus 40 to plus 185 deg F.
  - 4. Color: Black.
- C. Plenum-Rated Cable Ties: Self extinguishing, UV stabilized, one piece, self locking.
  - 1. Minimum Width: 3/16 inch.
  - 2. Tensile Strength at 73 deg F, According to ASTM D 638: 7000 psi.
  - 3. UL 94 Flame Rating: 94V-0.
  - 4. Temperature Range: Minus 50 to plus 284 deg F.
  - 5. Color: Black.

#### 2.10 MISCELLANEOUS IDENTIFICATION PRODUCTS

- A. Paint: Comply with requirements in Division 09 painting Sections for paint materials and application requirements. Select paint system applicable for surface material and location (exterior or interior).
- B. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainlesssteel machine screws with nuts and flat and lock washers.

## PART 3 - EXECUTION

## 3.1 INSTALLATION

- A. Verify identity of each item before installing identification products.
- B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.
- C. Apply identification devices to surfaces that require finish after completing finish work.
- D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
- E. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.
- F. System Identification Color-Coding Bands for Raceways and Cables: Each colorcoding band shall completely encircle cable or conduit. Place adjacent bands of twocolor markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.
- G. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.
- H. Cable Ties: For attaching tags. Use general-purpose type, except as listed below:
  - 1. Outdoors: UV-stabilized nylon.
  - 2. In Spaces Handling Environmental Air: Plenum rated.
- I. Painted Identification: Comply with requirements in Division 09 painting Sections for surface preparation and paint application.

## 3.2 IDENTIFICATION SCHEDULE

- A. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits: Identify with self-adhesive vinyl label self-adhesive vinyl tape applied in bands. Install labels at 50 foot maximum intervals in straight runs and at 25 foot maximum intervals in congested areas.
- B. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels or

permanent black ink written with neat/readable handwriting with the wiring system legend and system voltage. System legends shall be as follows:

- 1. Power.
- C. Power-Circuit Conductor Identification, 600 V or Less: For conductors in vaults, pull and junction boxes, manholes, and handholes, use color-coding conductor tape to identify the phase.
  - Color-Coding for Phase and Voltage Level Identification, 600 V or Less: Use colors listed below for secondary service, feeder, and branch circuit conductors with factory applied color as follows:

Phase	240/208/120 Volts
A	Black
В	Red
С	Blue
Neutral	White
Ground	Green
Isolated Ground	Green/Orange Stripe

- b. Other common colors may be used for switch legs and control
- c. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
- D. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.
- E. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.
- F. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.
  - 1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
  - 2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
  - 3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.
- G. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.
  - Install underground-line warning tape for both direct-buried cables and cables in raceway.

- H. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.
- I. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Baked-enamel warning signs or Metal-backed, butyrate warning signs.
  - 1. Comply with 29 CFR 1910.145.
  - 2. Identify system voltage with black letters on an orange background.
  - 3. Apply to exterior of door, cover, or other access.
  - 4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:
    - a. Power transfer switches.
    - b. Controls with external control power connections.
- J. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
- K. Emergency Operating Instruction Signs: Install instruction signs with white legend on a red background with minimum 3/8-inch- high letters for emergency instructions at equipment used for power transfer and load shedding.
- L. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.
  - 1. Labeling Instructions:
    - a. Indoor Equipment: Self-adhesive, engraved, laminated acrylic or melamine label or Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch- high letters on 1-1/2inch- high label; where two lines of text are required, use labels 2 inches high.
    - b. Outdoor Equipment: Engraved, laminated acrylic or melamine label.
    - c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
    - d. Fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure where screws cannot or should not penetrate substrate, provide with self-adhesive means of attachment.
  - 2. Equipment to Be Labeled:
    - a. Panelboards: Typewritten directory of circuits in the location provided by panelboard manufacturer. Panelboard identification shall be self-adhesive, engraved or engraved, laminated acrylic or melamine label.

- Enclosures and electrical cabinets.
- c. Access doors and panels for concealed electrical items.

#### END OF SECTION

### **SECTION 26 0923**

#### **GHN MODIFICATIONS**

#### **ITEM LCD**

## LIGHTING CONTROL DEVICES

Item **LCD** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following lighting control devices:
  - 1. Outdoor and indoor photoelectric switches.
- B. Related Sections include the following:
  - 1. Division 26 Section "Wiring Devices" for wall-box dimmers, wall-switch occupancy sensors, and manual light switches.

## 1.3 DEFINITIONS

- A. LED: Light-emitting diode.
- B. PIR: Passive infrared.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show installation details for occupancy and light-level sensors.

#### 1.5 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- 1.6 COORDINATION

Salem Memorial Airport 19-526.00 LIGHTING CONTROL DEVICES 26 0923 - 1 A. Coordinate layout and installation of ceiling-mounted devices with other construction that penetrates ceilings or is supported by them, including light fixtures, HVAC equipment, smoke detectors, fire-suppression system, and partition assemblies.

# PART 2 - PRODUCTS

# 2.1 OUTDOOR PHOTOELECTRIC SWITCHES

- A. Available Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
  - 1. TORK.
  - 2. GE Industrial Systems Company.
  - 3. Intermatic.
- B. Description: Solid state, with SPST or DPST dry contacts rated for 1800 VA to operate connected load, relay, or contactor coils; complying with UL 773.
  - 1. Light-Level Monitoring Range: 1 to 15, with an adjustment for turn-on and turnoff levels within that range.
  - 2. Time Delay: 30-second minimum, to prevent false operation.
  - 3. Lightning Arrester: Air-gap type.
  - Mounting: Twist lock complying with IEEE C136.10, with base-and-stem mounting or stem-and-swivel mounting accessories as required to direct sensor to the north sky exposure.

## 2.2 CONDUCTORS AND CABLES

- A. Power Wiring to Supply Side of Remote-Control Power Sources: Not smaller than No. 12 AWG. Comply with requirements in Division 26 Section "Electrical Power Conductors and Cables."
- B. Classes 2 and 3 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 18 AWG. Comply with requirements in Division 26 Section "Electrical Power Conductors and Cables."
- C. Class 1 Control Cable: Multiconductor cable with stranded-copper conductors not smaller than No. 16 AWG. Comply with requirements in Division 26 Section "Electrical Power Conductors and Cables."

## PART 3 - EXECUTION

- 3.1 SENSOR INSTALLATION
  - A. Install and aim sensors in locations to achieve not less than 100 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.
- 3.2 WIRING INSTALLATION

- A. Wiring Method: Comply with Division 26 Section "Electrical Power Conductors and Cables." Minimum conduit size shall be 1/2 inch.
- B. Wiring within Enclosures: Comply with NECA 1. Separate power-limited and nonpower-limited conductors according to conductor manufacturer's written instructions.
- C. Size conductors according to lighting control device manufacturer's written instructions, unless otherwise indicated.
- D. Splices, Taps, and Terminations: Make connections only on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

# 3.3 IDENTIFICATION

- A. Identify components and power and control wiring according to Division 26 Section "Identification for Electrical Systems."
  - 1. Identify controlled circuits in lighting contactors.
  - 2. Identify circuits or luminaries controlled by photoelectric and occupancy sensors at each sensor.
- B. Label time switches and contactors with a unique designation.

# 3.4 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections:
  - 1. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
  - 2. Operational Test: Verify operation of each lighting control device, and adjust time delays.
- B. Lighting control devices that fail tests and inspections are defective work.

# 3.5 ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting sensors to suit occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

# END OF SECTION

(en des in 1998) en l'import personale afféric de la construction — copies entres processer conservant ou O a senate transmission de Berner anno a transmission de la securit de la construction de la construction.

#### **BLANK PAGE**

Salem Memorial Airport 19-526.00 LIGHTING CONTROL DEVICES 26 0923 - 4

### **SECTION 26 2416**

#### **GHN MODIFICATIONS**

#### **ITEM PAN**

#### PANELBOARDS

Item **PAN** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

### PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. Section Includes:
    - 1. Lighting and appliance branch-circuit panelboards.

#### 1.3 DEFINITIONS

- A. SVR: Suppressed voltage rating.
- B. SPD: Surge Protective Device.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of panelboard, switching and overcurrent protective device, surge protective device, accessory, and component indicated. Include dimensions and manufacturers' technical data on features, performance, electrical characteristics, ratings, and finishes.
- B. Shop Drawings: For each panelboard and related equipment.
  - 1. Include dimensioned plans, elevations, sections, and details. Show tabulations of installed devices, equipment features, and ratings.
  - 2. Detail enclosure types and details for types other than NEMA 250, Type 1.
  - 3. Detail bus configuration, current, and voltage ratings.
  - 4. Short-circuit current rating of panelboards and overcurrent protective devices.
  - 5. Surge Protective Device test and documentation as listed in section 2.6.

Salem Memorial Airport 19-526.00 PANELBOARDS 26 2416 - 1

- C. Operation and Maintenance Data: For panelboards and components to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
  - 1. Manufacturer's written instructions for testing and adjusting overcurrent protective devices.

## 1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Member company of NETA or an NRTL.
  - Testing Agency's Field Supervisor: Currently certified by NETA to supervise onsite testing.
- B. Source Limitations: Obtain panelboards, overcurrent protective devices, components, and accessories from single source from single manufacturer.
- C. Product Selection for Restricted Space: Drawings indicate maximum dimensions for panelboards including clearances between panelboards and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- E. Comply with NEMA PB 1.
- F. Comply with NFPA 70.
- 1.6 DELIVERY, STORAGE, AND HANDLING
  - A. Remove loose packing and flammable materials from inside panelboards.
  - B. Handle and prepare panelboards for installation according to NECA 407 and NEMA PB 1.

## 1.7 PROJECT CONDITIONS

- A. Environmental Limitations:
  - Do not deliver or install panelboards until spaces are enclosed and weathertight, wet work in spaces is complete and dry and work above panelboards is complete.

# 1.8 COORDINATION

A. Coordinate layout and installation of panelboards and components with other construction that penetrates walls or is supported by them, including electrical and other types of equipment, raceways, piping, encumbrances to workspace clearance requirements, and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

Salem Memorial Airport 19-526.00 PANELBOARDS 26 2416 - 2

## PART 2 - PRODUCTS

## 2.1 GENERAL REQUIREMENTS FOR PANELBOARDS

- A. Provide panelboards in accordance to panelboard schedules on drawings.
- B. Enclosures: Flush- and surface-mounted cabinets.
  - 1. Rated for environmental conditions at installed location.
    - a. Indoor Dry and Clean Locations: NEMA 250, Type 1.
    - b. Outdoor Locations: NEMA 250, Type 3R.

#### Retain one of first two subparagraphs below.

- 2. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
- 3. Directory Card: Inside panelboard door, mounted in transparent heat resisting card holder.
- 4. Panelboard schedule must be typewritten and list location and equipment served or other description necessary to identify each circuit.
- C. Arrange panelboard bussing so as to maintain sequence phasing throughout, i.e., adjacent poles of unlike polarity, rotated in sequence. Mount neutral bar on opposite end of the panelboard from the main breaker and number terminals for connection to neutral wires. Provide main lugs or main breaker at the same end as the feeder entrance. Bus panels according to the requirements shown on the drawings and equip lugs with approved connectors for the size of conductor feeding the panel.
- D. Incoming Mains Location: Top and bottom.
- E. Phase, Neutral, and Ground Buses:
  - 1. Material: Plated aluminum, 98 percent conductivity.
  - 2. Equipment Ground Bus: Adequate for feeder and branch-circuit equipment grounding conductors; bonded to box.
- F. Conductor Connectors: Suitable for use with conductor material and sizes.
  - 1. Material: Rated for Aluminum and Copper.
  - 2. Main and Neutral Lugs: Mechanical type.
  - 3. Ground Lugs and Bus-Configured Terminators: Mechanical type.
- G. Future Devices: Mounting brackets, bus connections, filler plates, and necessary appurtenances required for future installation of devices.
- H. Panelboard Short-Circuit Current Rating: Fully rated to interrupt symmetrical shortcircuit current available at terminals.
- 2.2 LIGHTING AND APPLIANCE BRANCH-CIRCUIT PANELBOARDS

- A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or comparable product by one of the following:
  - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
  - 2. Square D; a brand of Schneider Electric.
  - 3. Siemens Energy & Automation, Inc.
- B. Panelboards: NEMA PB 1, lighting and appliance branch-circuit type.
- C. Mains: Circuit breaker or lugs only.
- D. Branch Overcurrent Protective Devices: Bolt-on circuit breakers, replaceable without disturbing adjacent units.
- E. Doors: Concealed hinges; secured with flush latch with tumbler lock; keyed alike.
- F. Column-Type Panelboards: Narrow gutter extension with minimum 4 inches on all sides, with cover, to overhead junction box equipped with ground and neutral terminal buses.

## 2.3 DISCONNECTING AND OVERCURRENT PROTECTIVE DEVICES

- A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or comparable product by one of the following:
  - 1. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
  - 2. Square D; a brand of Schneider Electric.
  - 3. Siemens Energy & Automation, Inc.
- B. Fused Switch: NEMA KS 1, Type HD; clips to accommodate specified fuses; lockable handle.
  - 1. Fuses and Spare-Fuse Cabinet: Comply with requirements specified in Division 26 Section "Fuses."
  - Fused Switch Features and Accessories: Standard ampere ratings and number of poles.
  - 3. Auxiliary Contacts: One normally open and normally closed contact(s) that operate with switch handle operation.

PART 3 -PART 3 -

## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Receive, inspect, handle, and store panelboards according to NEMA PB 1.1.
- B. Examine panelboards before installation. Reject panelboards that are damaged or rusted or have been subjected to water saturation.

Salem Memorial Airport 19-526.00

- C. Examine elements and surfaces to receive panelboards for compliance with installation tolerances and other conditions affecting performance of the Work.
- D. Proceed with installation only after unsatisfactory conditions have been corrected.

# 3.2 INSTALLATION

- A. Install panelboards and accessories according to NEMA PB 1.1.
- B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from panelboards.
- C. Mount top of trim 78 inches above finished floor unless otherwise indicated.
- D. Mount panelboard cabinet plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish and mating with back box.
- E. Install overcurrent protective devices and controllers not already factory installed.
  - 1. Set field-adjustable, circuit-breaker trip ranges.
- F. Install filler plates in unused spaces.
- G. Arrange conductors in gutters into groups and bundle and wrap with wire ties.
- H. Comply with NECA 1.

#### 3.3 IDENTIFICATION

- A. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs complying with Division 26 Section "Identification for Electrical Systems."
- B. Create a directory to indicate installed circuit loads; incorporate Owner's final room designations. Obtain approval before installing. Use a computer or typewriter to create directory; handwritten directories are not acceptable.
- C. Panelboard Nameplates: Label each panelboard with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."
- D. Device Nameplates: Label each branch circuit device in distribution panelboards with a nameplate complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems."

## 3.4 FIELD QUALITY CONTROL

- A. Acceptance Testing Preparation:
  - 1. Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.

Salem Memorial Airport 19-526.00 PANELBOARDS 26 2416 - 5

- 2. Test continuity of each circuit.
- B. Tests and Inspections:
  - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
  - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
  - 3. Perform the following infrared scan tests and inspections:
    - Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each panelboard. Remove front panels so joints and connections are accessible to portable scanner.
    - b. Instruments and Equipment:
      - (1) Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values.
- C. Panelboards will be considered defective if they do not pass tests and inspections.

# 3.5 ADJUSTING

- A. Adjust moving parts and operable component to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable circuit-breaker trip ranges as indicated.

# END OF SECTION

## **SECTION 26 2726**

### GHN MODIFICATIONS

#### **ITEM WDS**

#### WIRING DEVICES

Item **WDS** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. This Section includes the following:
    - 1. Receptacles, receptacles with integral GFCI, and associated device plates.

#### 1.3 DEFINITIONS

- A. EMI: Electromagnetic interference.
- B. GFCI: Ground-fault circuit interrupter.
- C. Pigtail: Short lead used to connect a device to a branch-circuit conductor.
- D. RFI: Radio-frequency interference.
- E. SPD: Surge protective device.
- F. UTP: Unshielded twisted pair.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: List of legends and description of materials and process used for premarking wall plates.
- C. Operation and Maintenance Data: For wiring devices to include in all manufacturers' packing label warnings and instruction manuals that include labeling conditions.

## 1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain all wiring devices and associated wall plates from a single manufacturer and one source (availability permitting).
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- C. Comply with NFPA 70.
- D. All devices shall be specification grade.

## 1.6 COORDINATION

A. Coordinate outlet and cover colors with architectural plans and specifications.

## PART 2 - PRODUCTS

- 2.1 MANUFACTURERS
  - A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
    - 1. Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
    - 2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
    - 3. Leviton Mfg. Company Inc. (Leviton).
    - 4. Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).
    - 5. Engineer Approved Equal.

# 2.2 STRAIGHT BLADE RECEPTACLES

- A. Convenience Receptacles, Heavy Duty, 2 pole, 3 wire, grounding 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cooper; 5351 (single), 5352 (duplex).
    - b. Hubbell; HBL5351 (single), HBL5352 (duplex).
    - c. Leviton; 5361 (single), 5352 (duplex).
    - d. Pass & Seymour; 5361 (single), 5362 (duplex) or PT5362.
    - e. Engineer Approved Equal.
- B. Convenience Receptacles with USB Charging Ports, Heavy duty, 2 pole, 3 wire grounding 125 V, 20 A:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cooper; TR7756 (duplex).
    - b. Hubbell; USB20X2 (duplex).

Salem Memorial Airport 19-526.00

- c. Leviton; T5832 (duplex).
- d. Pass & Seymour; TR5362USB.
- e. Engineer Approved Equal.

# 2.3 GFCI RECEPTACLES

- A. General Description: Straight blade, feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device or power is available.
- B. Duplex GFCI Convenience Receptacles, 125 V, 20 A:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cooper; VGF20.
    - b. Hubble; GF20L.
    - c. Leviton; GFNT2-000.
    - d. Pass & Seymour; 2084.
    - e. Engineer Approved Equal.

## 2.4 SWITCHES

- A. Switch: Heavy duty, AC quiet type, toggle handle, 120-277V, 20A: Comply with UL20.
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Cooper; 2221V.
    - b. Hubbell; HBL1221.
    - c. Leviton; 1221-2.
    - d. Pass & Seymour; PS20AC1.
    - e. Engineer Approved Equal.
- 2.5 WALL PLATES
  - A. Single and combination types to match corresponding wiring devices.
    - 1. Plate-Securing Screws: Metal with head color to match plate finish.
    - 2. Material for Finished Spaces:
      - a. 0.04 inch thick, type 302, satin finished stainless steel.
    - 3. Material for Unfinished Spaces: Galvanized steel.
    - 4. Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."
  - B. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum with lockable cover.
  - C. Exterior Cover Plates: NEMA 250, complying with type 3R weather resistant, die-cast aluminum while-in-use cover with Gasket.

## 2.6 FINISHES

Salem Memorial Airport 19-526.00 WIRING DEVICES 26 2726 - 3

- A. Color: Wiring device catalog numbers in Section Text do not designate device color. Verify device color with architect.
  - 1. Wiring Devices Connected to Normal Power System: White or As selected by Architect, unless otherwise indicated or required by NFPA 70 or device listing.
  - 2. Faceplates:
    - a. Wall mounted device plates shall be stainless steel.
    - b. Ceiling mounted device plates shall be white thermoplastic.

# PART 3 - EXECUTION

- 3.1 INSTALLATION
  - A. Comply with NECA 1, including the mounting heights listed in that standard, and as noted with heights A.F.F. measured to center of box.
    - 1. Dimensions:
      - a. Duplex and single receptacles: 18" Above Finish Floor (A.F.F.).
      - b. Receptacles above counters: 6" Above backsplash.
      - c. Telephone Outlets: 18" A.F.F. or 6" Above backsplash.
      - d. Data outlets (computer-printer): 18" A.F.F. or 6" Above backsplash.
      - e. Wall switches-dimmers: 48" A.F.F.
      - f. GFI receptacle in toilet room: 48" A.F.F.
      - g. Audio/visual fire alarm: 80" A.F.F.
      - h. Hand Dryers: 46" A.F.F.
    - 2. Comply with American Disabilities Act for applicable controls.
  - B. Coordination with Other Trades:
    - Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
    - Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
    - 3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
    - 4. Install wiring devices after all wall preparation, including painting, is complete.
  - C. Conductors:
    - Do not strip insulation from conductors until just before they are spliced or terminated on devices.
    - Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
    - The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
    - 4. Existing Conductors:
      - a. Cut back and pigtail, or replace all damaged conductors.

- b. Straighten conductors that remain and remove corrosion and foreign matter.
- Pigtailing existing conductors is permitted provided the outlet box is large enough.
- D. Device Installation:
  - Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
  - 2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
  - Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
  - 4. Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
  - 5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.
  - 6. Use a torque screwdriver when a torque is recommended or required by the manufacturer.
  - 7. When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
  - 8. Tighten unused terminal screws on the device.
  - 9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.
- E. Receptacle Orientation:
  - 1. Install ground pin of vertically mounted receptacles down, and on horizontally mounted receptacles to the left.
- F. Device Plates:
  - 1. Do not use oversized or extra-deep plates.
  - Install plates with all four edges in continuous contact with finished wall surfaces without the use of mats or similar devices.
  - 3. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.
  - 4. Do not over torque the faceplate screws and indent the plate. Properly support the device and ensure flat face plates. Replace any cracked or deformed plates with new to the satisfaction of the engineer or owner.
- G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on bottom. Group adjacent switches under single, multigang wall plates.
- H. Arrangement of exterior devices: Unless otherwise indicated, mount recessed in wall with front flush with wall, with long dimension vertical. Install weather sealant around outlet box.
#### 3.2 IDENTIFICATION

- A. Comply with Division 26 Section "Identification for Electrical Systems."
  - 1. Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on back of plate, and durable wire markers or tags inside outlet boxes.

#### 3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
  - 1. Test Instruments: Use instruments that comply with UL 1436.
  - 2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.
- B. Tests for Convenience Receptacles:
  - 1. Line Voltage: Acceptable range is 105 to 132 V.
  - 2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
  - 3. Ground Impedance: Values of up to 2 ohms are acceptable.
  - 4. GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
  - 5. Using the test plug, verify that the device and its outlet box are securely mounted.
  - 6. The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.
- C. Test straight blade convenience outlets in patient-care areas for the retention force of the grounding blade according to NFPA 99. Retention force shall be not less than 4 oz.

END OF SECTION

#### **SECTION 26 2813**

#### **GHN MODIFICATIONS**

#### **ITEM FUS**

#### FUSES

Item **FUS** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

#### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:
  - 1. Cartridge fuses rated 600-V ac and less for use in control circuits, enclosed switches, switchboards, enclosed controllers, and motor-control centers.
  - 2. Spare-fuse cabinets.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material, dimensions, descriptions of individual components, and finishes for spare-fuse cabinets. Include the following for each fuse type indicated:
  - Ambient Temperature Adjustment Information: If ratings of fuses have been adjusted to accommodate ambient temperatures, provide list of fuses with adjusted ratings.
    - a. For each fuse having adjusted ratings, include location of fuse, original fuse rating, local ambient temperature, and adjusted fuse rating.
    - b. Provide manufacturer's technical data on which ambient temperature adjustment calculations are based.
  - 2. Dimensions and manufacturer's technical data on features, performance, electrical characteristics, and ratings.
  - 3. Current-limitation curves for fuses with current-limiting characteristics.
  - 4. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse.
  - 5. Coordination charts and tables and related data.
  - 6. Fuse sizes for elevator feeders and elevator disconnect switches.

Salem Memorial Airport 19-526.00 FUSES 26 2813 - 1

- B. Operation and Maintenance Data: For fuses to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section
   "Operation and Maintenance Data," include the following:
  - 1. Ambient temperature adjustment information.
  - 2. Current-limitation curves for fuses with current-limiting characteristics.
  - 3. Time-current coordination curves (average melt) and current-limitation curves (instantaneous peak let-through current) for each type and rating of fuse.
  - 4. Coordination charts and tables and related data.

#### 1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain fuses, for use within a specific product or circuit, from single source from single manufacturer.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NEMA FU 1 for cartridge fuses.
- D. Comply with NFPA 70.

#### 1.5 PROJECT CONDITIONS

A. Where ambient temperature to which fuses are directly exposed is less than 40 deg F or more than 100 deg F, apply manufacturer's ambient temperature adjustment factors to fuse ratings.

#### 1.6 COORDINATION

A. Coordinate fuse ratings with utilization equipment nameplate limitations of maximum fuse size and with system short-circuit current levels.

#### 1.7 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
  - 1. Fuses: Equal to 10 percent of quantity installed for each size and type, but no fewer than two of each size and type.

#### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or a comparable product by one of the following:
  - 1. Cooper Bussmann, Inc.
  - 2. Edison Fuse, Inc.

Salem Memorial Airport 19-526.00 FUSES 26 2813 - 2

- 3. Ferraz Shawmut, Inc.
- 4. Littelfuse, Inc.
- 5. Engineer Approved Equal.

#### 2.2 CARTRIDGE FUSES

A. Characteristics: NEMA FU 1, nonrenewable cartridge fuses with voltage ratings consistent with circuit voltages.

#### 2.3 SPARE-FUSE CABINET

- A. Characteristics: Wall-mounted steel unit with full-length, recessed piano-hinged door and key-coded cam lock and pull.
  - 1. Size: Adequate for storage of spare fuses specified with 5 percent spare capacity minimum.
  - 2. Finish: Gray, baked enamel.
  - 3. Identification: "SPARE FUSES" in 1-1/2-inch- high letters on exterior of door.
  - 4. Fuse Pullers: For each size of fuse, where applicable and available, from fuse manufacturer.

#### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine fuses before installation. Reject fuses that are moisture damaged or physically damaged.
- B. Examine holders to receive fuses for compliance with installation tolerances and other conditions affecting performance, such as rejection features.
- C. Examine utilization equipment nameplates and installation instructions. Install fuses of sizes and with characteristics appropriate for each piece of equipment.
- D. Evaluate ambient temperatures to determine if fuse rating adjustment factors must be applied to fuse ratings.
- E. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 FUSE APPLICATIONS

- A. Cartridge Fuses:
  - 1. Service Entrance: Class RK1, time delay.
  - 2. Feeders: Class RK1, time delay.
  - 3. Motor Branch Circuits: Class RK5, time delay.
  - 4. Other Branch Circuits: Class RK5, time delay.
  - 5. Control Circuits: Class CC, fast acting or time delay.

#### 3.3 INSTALLATION

Salem Memorial Airport 19-526.00

- A. Install fuses in fusible devices. Arrange fuses so rating information is readable without removing fuse.
- B. Install spare-fuse cabinet(s).

#### 3.4 IDENTIFICATION

A. Install labels complying with requirements for identification specified in Division 26 Section "Identification for Electrical Systems" and indicating fuse replacement information on inside door of each fused switch and adjacent to each fuse block, socket, and holder.

END OF SECTION

#### **SECTION 26 2816**

#### **GHN MODIFICATIONS**

#### **ITEM SCB**

#### **ENCLOSED SWITCHES & CIRCUIT BREAKERS**

Item **SCB** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

#### PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. Section Includes:
    - 1. Fusible switches.

#### 1.3 DEFINITIONS

- A. NC: Normally closed.
- B. NO: Normally open.
- C. SPDT: Single pole, double throw.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated. Include dimensioned elevations, sections, weights, and manufacturers' technical data on features, performance, electrical characteristics, ratings, accessories, and finishes.
  - 1. Enclosure types and details for types other than NEMA 250, Type 1.
  - 2. Current and voltage ratings.
  - 3. Short-circuit current ratings (interrupting and withstand, as appropriate).
  - 4. Include evidence of NRTL listing for series rating of installed devices.
  - 5. Detail features, characteristics, ratings, and factory settings of individual overcurrent protective devices, accessories, and auxiliary components.
- B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

Salem Memorial Airport 19-526.00

- 1. Wiring Diagrams: For power, signal, and control wiring.
- C. Operation and Maintenance Data: For enclosed switches and circuit breakers to include in emergency, operation, and maintenance manuals. In addition to items specified in Division 01 Section "Operation and Maintenance Data," include the following:
  - 1. Manufacturer's written instructions for testing and adjusting enclosed switches and circuit breakers.

#### 1.5 QUALITY ASSURANCE

- A. Source Limitations: Obtain enclosed switches and circuit breakers, overcurrent protective devices, components, and accessories, within same product category, from single source from single manufacturer.
- B. Product Selection for Restricted Space: Drawings indicate maximum dimensions for enclosed switches and circuit breakers, including clearances between enclosures, and adjacent surfaces and other items. Comply with indicated maximum dimensions.
- C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- D. Comply with NFPA 70.

#### 1.6 COORDINATION

A. Coordinate layout and installation of switches, circuit breakers, and components with equipment served and adjacent surfaces. Maintain required workspace clearances and required clearances for equipment access doors and panels.

#### PART 2 - PRODUCTS

#### 2.1 FUSIBLE SWITCHES

- A. Manufacturers: Subject to compliance with requirements, provide the product indicated on Drawings or comparable product by one of the following:
  - 1. Square D; a brand of Schneider Electric.
  - 2. Eaton Electrical Inc.; Cutler-Hammer Business Unit.
  - 3. Siemens Energy & Automation, Inc.
  - 4. General Electric Company; GE Consumer & Industrial Electrical Distribution.
- B. Type GD, General Duty, Single Throw, 240-V ac, 800 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with cartridge fuse interiors to accommodate indicated fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.
- C. Accessories:

- 1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
- 2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
- 3. Isolated Ground Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
- 4. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
- 5. Auxiliary Contact Kit: One NO/NC (Form "C") auxiliary contact(s), arranged to activate before switch blades open.
- 6. Hookstick Handle: Allows use of a hookstick to operate the handle.
- 7. Lugs: Mechanical type, suitable for number, size, and conductor material.
- 8. Service-Rated Switches: Labeled for use as service equipment.

#### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance of the Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 INSTALLATION

- A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.
- B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.
- C. Install fuses in fusible devices.
- D. Comply with NECA 1.

#### 3.3 IDENTIFICATION

- A. Comply with requirements in Division 26 Section "Identification for Electrical Systems."
  - 1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
  - 2. Label each enclosure with engraved metal or laminated-plastic nameplate.

#### 3.4 FIELD QUALITY CONTROL

A. Acceptance Testing Preparation:

- 1. Test insulation resistance for each enclosed switch and circuit breaker, component, connecting supply, feeder, and control circuit.
- 2. Test continuity of each circuit.
- B. Tests and Inspections:
  - 1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
  - 2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.
  - 3. Perform the following infrared scan tests and inspections and prepare reports:
    - a. Initial Infrared Scanning: After Substantial Completion, but not more than 60 days after Final Acceptance, perform an infrared scan of each enclosed switch and circuit breaker. Remove front panels so joints and connections are accessible to portable scanner.
    - b. Instruments and Equipment: Use an infrared scanning device designed to measure temperature or to detect significant deviations from normal values.
  - 4. Test and adjust controls, remote monitoring, and safeties. Replace damaged and malfunctioning controls and equipment.
- C. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.
- 3.5 ADJUSTING
  - A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.

END OF SECTION

#### **SECTION 26 5100**

#### GHN MODIFICATIONS

#### **ITEM INL**

#### INTERIOR LIGHTING

Item **INL** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

#### PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. Section Includes:
    - 1. Interior lighting fixtures, lamps, and ballasts.
    - 2. Emergency lighting units.
    - 3. Exit signs.
    - 4. Lighting fixture supports.
    - 5. Retrofit kits for fluorescent lighting fixtures.
  - B. Related Sections:
    - Section 26 0923 "Lighting Control Devices" for automatic control of lighting, including time switches, photoelectric relays, occupancy sensors, and multipole lighting relays and contactors.
    - 2. Section 26 2726 "Wiring Devices" for manual wall-box dimmers for incandescent lamps.

#### 1.3 DEFINITIONS

- A. BF: Ballast factor.
- B. CCT: Correlated color temperature.
- C. CRI: Color-rendering index.
- D. HID: High-intensity discharge.
- E. LER: Luminaire efficacy rating.
- F. Lumen: Measured output of lamp and luminaire, or both.

Salem Memorial Airport 19-526.00 INTERIOR LIGHTING 26 5100 - 1 G. Luminaire: Complete lighting fixture, including ballast housing if provided.

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, finishes, and the following:
  - 1. Physical description of lighting fixture including dimensions.
  - 2. Emergency lighting units including battery and charger.
  - 3. Ballast, including BF.
  - 4. Energy-efficiency data.
  - 5. Sound Performance Data: For air-handling lighting fixtures. Indicate sound power level and sound transmission class in test reports certified according to standards specified in Section 233713 "Diffusers, Registers, and Grilles."
  - 6. Life, output (lumens, CCT, and CRI), and energy-efficiency data for lamps.
  - 7. Photometric data and adjustment factors based on laboratory tests, complying with IESNA Lighting Measurements Testing & Calculation Guides, of each lighting fixture type. The adjustment factors shall be for lamps, ballasts, and accessories identical to those indicated for the lighting fixture as applied in this Project.
    - Manufacturer Certified Data: Photometric data shall be certified by a manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.

#### 1.5 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified agencies providing photometric data for lighting fixtures.
- B. Product Certificates: For each type of ballast or driver for bi-level and dimmercontrolled fixtures, from manufacturer.
- C. Field quality-control reports.
- D. Warranty: Sample of special warranty.

#### 1.6 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For lighting equipment and fixtures to include in emergency, operation, and maintenance manuals.
  - Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.
- 1.7 MAINTENANCE MATERIAL SUBMITTALS
  - A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Globes and Guards: One for every 20 of each type and rating installed. Furnish at least one of each type.

#### 1.8 QUALITY ASSURANCE

- A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- C. Comply with NFPA 70.
- D. FM Global Compliance: Lighting fixtures for hazardous locations shall be listed and labeled for indicated class and division of hazard by FM Global.
- E. Mockup lighting fixtures are often part of a typical room or module mockup used to evaluate and demonstrate an overall interior concept, not just lighting.

#### 1.9 COORDINATION

A. Coordinate layout and installation of lighting fixtures and suspension system with other construction that penetrates ceilings or is supported by them, including HVAC equipment, fire-suppression system, and partition assemblies.

#### 1.10 WARRANTY

- A. Special Warranty for Emergency Lighting Batteries: Manufacturer's standard form in which manufacturer of battery-powered emergency lighting unit agrees to repair or replace components of rechargeable batteries that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period for Emergency Lighting Unit Batteries: <u>10</u> years from date of Substantial Completion. Full warranty shall apply for first year, and prorated warranty for the remaining nine years.

#### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Manufacturers, subject to compliance with requirements, shall be the following or an Engineer approved equivalent(s):
  - 1. Fixtures.
    - a. Williams
    - b. Cooper
    - c. Hubbell
    - d. LBL

Salem Memorial Airport 19-526.00

- e. Philips
- f. LSI
- g. Holophane
- h. Advent
- i. Lithonia Lighting
- j. Teron Lighting
- 2. Emergency Fixtures.
  - a. Dual-Lite
  - b. Williams
  - c. Cooper
  - d. Chloride
- 3. Lamps.
  - a. GE
  - b. Osram-Sylvania
  - c. Philips
  - d. Venture
- 4. Ballasts & Drivers
  - a. Advance
  - b. Osram-Sylvania
  - c. Venture
  - d. Cree
- 2.2 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS
  - A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.
  - B. Metal Parts: Free of burrs and sharp corners and edges.
  - C. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.
  - D. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position.
  - E. Diffusers and Globes:
    - 1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
      - a. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
      - b. UV stabilized.
    - 2. Glass: Annealed crystal glass unless otherwise indicated.
  - F. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps and ballasts. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.

- 1. Label shall include the following lamp and ballast characteristics:
  - a. "USE ONLY" and include specific lamp type.
  - b. Lamp diameter code (T-4, T-5, T-8, T-12, etc.), tube configuration (twin, quad, triple, etc.), base type, and nominal wattage for fluorescent and compact fluorescent luminaires.
  - c. Lamp type, wattage, bulb type (ED17, BD56, etc.) and coating (clear or coated) for HID luminaires.
  - d. Start type (preheat, rapid start, instant start, etc.) for fluorescent and compact fluorescent luminaires.
  - e. ANSI ballast type (M98, M57, etc.) for HID luminaires.

#### 2.3 EXIT SIGNS

- A. General Requirements for Exit Signs: Comply with UL 924; for sign colors, visibility, luminance, and lettering size, comply with authorities having jurisdiction.
- B. Internally Lighted Signs:
  - 1. Lamps for AC Operation: LEDs, 50,000 hours minimum rated lamp life.
  - 2. Self-Powered Exit Signs (Battery Type): Integral automatic charger in a selfcontained power pack.
    - a. Battery: Sealed, maintenance-free, nickel-cadmium type.
    - b. Charger: Fully automatic, solid-state type with sealed transfer relay.
    - c. Operation: Relay automatically energizes lamp from battery when circuit voltage drops to 80 percent of nominal voltage or below. When normal voltage is restored, relay disconnects lamps from battery, and battery is automatically recharged and floated on charger.
    - d. Test Push Button: Push-to-test type, in unit housing, simulates loss of normal power and demonstrates unit operability.
    - e. LED Indicator Light: Indicates normal power on. Normal glow indicates trickle charge; bright glow indicates charging at end of discharge cycle.
    - f. Integral Self-Test: Factory-installed electronic device automatically initiates code-required test of unit emergency operation at required intervals. Test failure is annunciated by an integral audible alarm and a flashing red LED.

#### 2.4 LIGHTING FIXTURE SUPPORT COMPONENTS

- A. Comply with Section 26 0529 "Hangers and Supports for Electrical Systems" for channel- and angle-iron supports and nonmetallic channel and angle supports.
- B. Single-Stem Hangers: 1/2-inch steel tubing with swivel ball fittings and ceiling canopy. Finish same as fixture.
- C. Twin-Stem Hangers: Two, 1/2-inch steel tubes with single canopy designed to mount a single fixture. Finish same as fixture.
- D. Wires: ASTM A 641/A 641M, Class 3, soft temper, zinc-coated steel, 12 gage.

- E. Wires for Humid Spaces: ASTM A 580/A 580M, Composition 302 or 304, annealed stainless steel, **12 gage**.
- F. Rod Hangers: 3/16-inch minimum diameter, cadmium-plated, threaded steel rod.
- G. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

#### 2.5 LED LIGHT FIXTURES

- A. General:
  - 1. LED light fixtures shall be in accordance with IES, NFPA, UL, as shown on the drawings, and as specified.
  - LED light fixtures shall be Reduction of Hazardous Substances (RoHS)compliant.
  - 3. LED drivers shall include the following features unless otherwise indicated:
    - a. Minimum efficiency: 85% at full load.
    - b. Minimum Operating Ambient Temperature: -20° C. (-4° F.)
    - c. Input Voltage: 120 277V (±10%) at 60 Hz.
    - d. Integral short circuit, open circuit, and overload protection.
    - e. Power Factor: ≥ 0.95.
    - f. Total Harmonic Distortion:  $\leq 20\%$ .
    - g. Comply with FCC 47 CFR Part 15.
  - 4. LED modules shall include the following features unless otherwise indicated:
    - a. Comply with IES LM-79 and LM-80 requirements.
    - Minimum CRI 80 and color temperature 4000° K unless otherwise specified in LIGHTING FIXTURE SCHEDULE.
    - c. Minimum Rated Life: 50,000 hours per IES L70.
    - d. Light output lumens as indicated in the LIGHTING FIXTURE SCHEDULE.
- B. LED Downlights:
  - 1. Housing, LED driver, and LED module shall be products of the same manufacturer.
- C. LED Troffers:
  - 1. LED drivers, modules, and reflector shall be accessible, serviceable, and replaceable from below the ceiling.
  - 2. Housing, LED driver, and LED module shall be products of the same manufacturer.

#### PART 3 - EXECUTION

- 3.1 INSTALLATION
  - A. Lighting fixtures:
    - 1. Set level, plumb, and square with ceilings and walls unless otherwise indicated.
    - 2. Install lamps in each luminaire.

Salem Memorial Airport 19-526.00 INTERIOR LIGHTING 26 5100 - 6

- B. Temporary Lighting: If it is necessary, and approved by Architect, to use permanent luminaires for temporary lighting, install and energize the minimum number of luminaires necessary. When construction is sufficiently complete, remove the temporary luminaires, disassemble, clean thoroughly, install new lamps, and reinstall.
- C. Suspended Lighting Fixture Support:
  - 1. Pendants and Rods: Where longer than 48 inches, brace to limit swinging.
  - 2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
  - 3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.
  - 4. Do not use grid as support for pendant luminaires. Connect support wires or rods to building structure.
- D. Connect wiring according to Section 26 0519 "Low-Voltage Electrical Power Conductors and Cables."

#### 3.2 IDENTIFICATION

A. Install labels with panel and circuit numbers on concealed junction and outlet boxes. Comply with requirements for identification specified in Section 26 0553 "Identification for Electrical Systems."

#### 3.3 FIELD QUALITY CONTROL

- A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.
- B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

#### 3.4 STARTUP SERVICE

A. Burn-in all lamps that require specific aging period to operate properly, prior to occupancy by Owner. Burn-in fluorescent and compact fluorescent lamps intended to be dimmed, for at least 100 hours at full voltage.

#### 3.5 ADJUSTING

- A. Occupancy Adjustments: When requested within [12] months of date of Substantial Completion, provide on-site assistance in adjusting aimable luminaires to suit actual occupied conditions. Provide up to [two] visits to Project during other-than-normal occupancy hours for this purpose. Some of this work may be required after dark.
  - 1. Adjust aimable luminaires in the presence of Architect or Engineer.

END OF SECTION

Salem Memorial Airport 19-526.00 가 가 나라는 것은 것은 가지가 가지 않는 것은 가지가 가지 않는 것이 가지 않는 것이 가지가 가지 않는 것이 가지 않는 것이 가지 않는 것이 같이 있다. 또 같은 가 약약과 가지 않는 것이 있었다. 것이 가지 않는 것이 같이 있다. 또 하는 것으로 가지 않는 것이 있었다. 것이 가 가지 않는 것이 있는 것이 있는 것이 있는 것이 있다. 것이 같이 있다. 것이 같이 있다. 한 약약 것이 같이 있다. 같은 것이 있었다. 것이 같이 있다. 것이 같이 있다. 것이 있는 것이 있다. 것이 있다. 것이 같이 있다. 같이 같이 있다.

영상 같은 것 같은 다음

BLANK PAGE

Salem Memorial Airport 19-526.00 INTERIOR LIGHTING 26 5100 - 8

#### **SECTION 26 5600**

#### **GHN MODIFICATIONS**

#### ITEM EXL

#### EXTERIOR LIGHTING

Item **EXL** is hereby added to the technical specifications with respect to the paragraphs and sections cited below.

#### PART 1 - GENERAL

- 1.1 RELATED DOCUMENTS
  - A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- 1.2 SUMMARY
  - A. Section Includes:
    - 1. Exterior luminaires with lamps and ballasts.
    - 2. Luminaire-mounted photoelectric relays.
    - 3. Poles and accessories.
    - 4. Luminaire lowering devices.
  - B. Related Sections:
    - 1. Retain Section in subparagraph below that contains requirements Contractor might expect to find in this Section but are specified in other Sections.
    - 2. Section 265100 "Interior Lighting" for exterior luminaires normally mounted on exterior surfaces of buildings.

#### 1.3 DEFINITIONS

- A. CCT: Correlated color temperature.
- B. CRI: Color-rendering index.
- C. HID: High-intensity discharge.
- D. LER: Luminaire efficacy rating.
- E. Luminaire: Complete lighting fixture, including ballast housing if provided.
- F. Pole: Luminaire support structure, including tower used for large area illumination.
- G. Standard: Same definition as "Pole" above.

Salem Memorial Airport 19-526.00 EXTERIOR LIGHTING 26 5600 - 1

#### 1.4 ACTION SUBMITTALS

- A. Product Data: For each luminaire, pole, and support component, arranged in order of lighting unit designation. Include data on features, accessories, finishes, and the following:
  - 1. Physical description of luminaire, including materials, dimensions, effective projected area, and verification of indicated parameters.
  - 2. Details of attaching luminaires and accessories.
  - 3. Details of installation and construction.
  - 4. Luminaire materials.
  - 5. Photometric data based on laboratory tests of each luminaire type, complete with indicated lamps, ballasts, and accessories.
    - a. Testing Agency Certified Data: For indicated luminaires, photometric data shall be certified by a qualified independent testing agency. Photometric data for remaining luminaires shall be certified by manufacturer.
    - Manufacturer Certified Data: Photometric data shall be certified by manufacturer's laboratory with a current accreditation under the National Voluntary Laboratory Accreditation Program for Energy Efficient Lighting Products.
  - 6. Photoelectric relays.
  - 7. Ballasts, including energy-efficiency data.
  - 8. Lamps, including life, output, CCT, CRI, lumens, and energy-efficiency data.
  - 9. Materials, dimensions, and finishes of poles.
  - 10. Means of attaching luminaires to supports, and indication that attachment is suitable for components involved.
  - 11. Anchor bolts for poles.
  - 12. Retain subparagraph below if manufactured pole foundations, including screw foundations, are indicated.
  - 13. Manufactured pole foundations.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
  - Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 2. Anchor-bolt templates keyed to specific poles and certified by manufacturer.
  - 3. Design calculations, certified by a qualified professional engineer, indicating strength of screw foundations and soil conditions on which they are based.
  - 4. Wiring Diagrams: For power, signal, and control wiring.
- C. Samples: For products designated for sample submission in the Exterior Lighting Device Schedule. Each Sample shall include lamps and ballasts.

#### 1.5 INFORMATIONAL SUBMITTALS

A. Pole and Support Component Certificates: Signed by manufacturers of poles, certifying that products are designed for indicated load requirements in

AASHTO LTS-4-M and that load imposed by luminaire and attachments has been included in design. The certification shall be based on design calculations by a professional engineer.

- B. Qualification Data: For qualified agencies providing photometric data for lighting fixtures.
- C. Field quality-control reports.
- D. Warranty: Sample of special warranty.
- 1.6 CLOSEOUT SUBMITTALS
  - A. Operation and Maintenance Data: For [luminaires][ and poles] [luminaire lowering devices] to include in emergency, operation, and maintenance manuals.
- 1.7 MAINTENANCE MATERIAL SUBMITTALS
  - A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
    - 1. Globes and Guards: One for every 20of each type and rating installed. Furnish at least one of each type.
- 1.8 QUALITY ASSURANCE
  - A. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by manufacturers' laboratories that are accredited under the National Volunteer Laboratory Accreditation Program for Energy Efficient Lighting Products.
  - B. Luminaire Photometric Data Testing Laboratory Qualifications: Provided by an independent agency, with the experience and capability to conduct the testing indicated, that is an NRTL as defined by OSHA in 29 CFR 1910.
  - C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
  - D. Comply with IEEE C2, "National Electrical Safety Code."
  - E. Comply with NFPA 70.

#### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Package aluminum poles for shipping according to ASTM B 660.
- B. Store poles on decay-resistant-treated skids at least 12 inches above grade and vegetation. Support poles to prevent distortion and arrange to provide free air circulation.

- C. Handle wood poles so they will not be damaged. Do not use pointed tools that can indent pole surface more than 1/4 inch deep. Do not apply tools to section of pole to be installed below ground line.
- D. Retain factory-applied pole wrappings on fiberglass and laminated wood poles until right before pole installation. Handle poles with web fabric straps.
- E. Retain factory-applied pole wrappings on metal poles until right before pole installation. For poles with nonmetallic finishes, handle with web fabric straps.

#### 1.10 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace products that fail in materials or workmanship; that corrode; or that fade, stain, perforate, erode, or chalk due to effects of weather or solar radiation within specified warranty period. Manufacturer may exclude lightning damage, hail damage, vandalism, abuse, or unauthorized repairs or alterations from special warranty coverage.
  - 1. Warranty Period for Luminaires: Five years from date of Substantial Completion.
  - 2. Warranty Period for Metal Corrosion: **Five** years from date of Substantial Completion.
  - Warranty Period for Color Retention: Five years from date of Substantial Completion.

#### PART 2 - PRODUCTS

- 2.1 MANUFACTURERS
  - A. Products: Subject to compliance with requirements, available products that may be incorporated into the Work include, but are not limited to, product(s) indicated on Drawings.

#### 2.2 GENERAL REQUIREMENTS FOR LUMINAIRES

- A. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
  - LER Tests Incandescent Fixtures: Where LER is specified, test according to NEMA LE 5A.
  - 2. LER Tests Fluorescent Fixtures: Where LER is specified, test according to NEMA LE 5 and NEMA LE 5A as applicable.
  - LER Tests HID Fixtures: Where LER is specified, test according to NEMA LE 5B.
- B. Lateral Light Distribution Patterns: Comply with IESNA RP-8 for parameters of lateral light distribution patterns indicated for luminaires.
- C. Metal Parts: Free of burrs and sharp corners and edges.

- D. Sheet Metal Components: Corrosion-resistant aluminum unless otherwise indicated. Form and support to prevent warping and sagging.
- E. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
- F. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.
- G. Exposed Hardware Material: Stainless steel.
- H. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
- I. Light Shields: Metal baffles, factory installed and field adjustable, arranged to block light distribution to indicated portion of normally illuminated area or field.
- J. Reflecting surfaces shall have minimum reflectance as follows unless otherwise indicated:
  - 1. White Surfaces: 85 percent.
  - 2. Specular Surfaces: 83 percent.
  - 3. Diffusing Specular Surfaces: 75 percent.
- K. Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
- L. Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and tested luminaire before shipping. Where indicated, match finish process and color of pole or support materials.
- M. Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
  - Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
  - 2. Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of primer and two finish coats of high-gloss, high-build polyurethane enamel.
    - a. Color: As selected from manufacturer's standard catalog of colors.
    - b. Color: Match Architect's sample of [manufacturer's standard] [custom] color.

Salem Memorial Airport 19-526.00 EXTERIOR LIGHTING 26 5600 - 5

- c. Color: As selected by Architect from manufacturer's full range.
- N. Factory-Applied Finish for Aluminum Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
  - 1. Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
  - Natural Satin Finish: Provide fine, directional, medium satin polish (AA-M32); buff complying with AA-M20; and seal aluminum surfaces with clear, hard-coat wax.
  - Class I, Clear Anodic Finish: AA-M32C22A41 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, clear coating 0.018 mm or thicker) complying with AAMA 611.
  - Class I, Color Anodic Finish: AA-M32C22A42/A44 (Mechanical Finish: medium satin; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 611.
    - a. Color: Black.
- O. Factory-Applied Labels: Comply with UL 1598. Include recommended lamps and ballasts. Labels shall be located where they will be readily visible to service personnel, but not seen from normal viewing angles when lamps are in place.
  - 1. Label shall include the following lamp and ballast characteristics:
    - a. "USES ONLY" and include specific lamp type.
    - Lamp diameter code (T-4, T-5, T-8, T-12), tube configuration (twin, quad, triple), base type, and nominal wattage for fluorescent and compact fluorescent luminaires.
    - c. Lamp type, wattage, bulb type (ED17, BD56, etc.) and coating (clear or coated) for HID luminaires.
    - d. Start type (preheat, rapid start, instant start) for fluorescent and compact fluorescent luminaires.
    - e. ANSI ballast type (M98, M57, etc.) for HID luminaires.
    - f. CCT and CRI for all luminaires.

#### 2.3 LED drivers

- A. LED drivers shall meet the following requirements:
  - 1. Drivers shall have a minimum efficiency of 85%.
  - 2. Starting Temperature: -40 degrees C (-40 degrees F).
  - 3. Input Voltage: 120 to 480 (±10%) volt.
  - 4. Power Supplies: Class I or II output.
  - Surge Protection: The system must survive 250 repetitive strikes of "C Low" (C Low: 6kV/1.2 x 50 μs, 10kA/8 x 20 μs) waveforms at 1-minute intervals with less than 10% degradation in clamping voltage. "C Low" waveforms are as defined in IEEE/ASNI C62.41.2-2002, Scenario 1 Location Category C.
  - 6. Power Factor (PF):  $\geq 0.90$ .

- 7. Total Harmonic Distortion (THD):  $\leq$  20%.
- 8. Comply with FCC Title 47 CFR Part 18 Non-consumer RFI/EMI Standards.
- 9. Drivers shall be reduction of hazardous substances (ROHS)-compliant.//

#### 2.4 LUMINAIRE-MOUNTED PHOTOELECTRIC RELAYS

- A. Comply with UL 773 or UL 773A.
- B. Contact Relays: Single throw, designed to fail in the on position, and set to turn light unit on at 1 to 5 fc and off at 3 to 15 fc with 15-second minimum time delay.
- C. Relay with locking-type receptacle shall comply with ANSI C136.10.
- D. Adjustable window slide for adjusting on-off set points.
- 2.5 GENERAL REQUIREMENTS FOR POLES AND SUPPORT COMPONENTS
  - A. Structural Characteristics: Comply with AASHTO LTS-4-M.
  - B. Luminaire Attachment Provisions: Comply with luminaire manufacturers' mounting requirements. Use stainless-steel fasteners and mounting bolts unless otherwise indicated.
  - C. Mountings, Fasteners, and Appurtenances: Corrosion-resistant items compatible with support components.
    - 1. Materials: Shall not cause galvanic action at contact points.
    - 2. Anchor Bolts, Leveling Nuts, Bolt Caps, and Washers: Hot-dip galvanized after fabrication unless otherwise indicated.
    - 3. Anchor-Bolt Template: Plywood or steel.

#### PART 3 - EXECUTION

- 3.1 LUMINAIRE INSTALLATION
  - A. Install lamps in each luminaire.
  - B. Fasten luminaire to indicated structural supports.
    - 1. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
  - C. Adjust luminaires that require field adjustment or aiming.
    - 1. Install grounding conductor and conductor protector.

#### 3.2 FIELD QUALITY CONTROL

A. Inspect each installed fixture for damage. Replace damaged fixtures and components.

- B. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
  - 1. Verify operation of photoelectric controls.
- C. Illumination Tests:
  - 1. Measure light intensities at night. Use photometers with calibration referenced to NIST standards. Comply with the following IESNA testing guide(s):
    - a. IESNA LM-5, "Photometric Measurements of Area and Sports Lighting Installations."
    - b. IESNA LM-50, "Photometric Measurements of Roadway Lighting Installations."
    - c. IESNA LM-52, "Photometric Measurements of Roadway Sign Installations."
    - d. IESNA LM-64, "Photometric Measurements of Parking Areas."
    - e. IESNA LM-72, "Directional Positioning of Photometric Data."
- D. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

END OF SECTION



# GEOTECHNICAL ENGINEERING REPORT FOR H.W. LOCHNER, INC.

# T-HANGAR AND TAXIWAY SALEM MEMORIAL AIRPORT SALEM, MISSOURI

JUNE 13, 2019

Crockett GTL Project Number: G19420

1000 W Nifong Blvd. - Bldg 1 • Columbia, MO 65203 Phone: 573-447-0292



June 13, 2019

H.W. Lochner, Inc. 16105 W. 113<sup>th</sup> Street, Suite 107 Lenexa, KS 66219

Attn: Mr. Matt Jacobs, P.E.

Re: Geotechnical Engineering Report T-Hangar and Taxiway – Salem Memorial Airport Salem, Missouri Crockett GTL Project Number: G19420

Dear Mr. Jacobs:

Crockett Geotechnical – Testing Lab (CGTL) has completed the geotechnical engineering services for the referenced project. This report should be read in its entirety. This report presents the results of our field explorations, laboratory testing, and recommendations for design and construction of the referenced project.

We appreciate the opportunity to be of service and look forward to working with you during the construction phase of this project. If you have any questions concerning this report, or if we may be of further service, please contact us.

Sincerely,

Aaron Grimm, E.I.T. Project Manager

Enclosures cc: 1 - Client (.PDF) 1 - File

Eric H. Lidholm, P.E. Principal Engineer Missouri: E-23265



#### TABLE OF CONTENTS

1	INTRODUCTION1				
2	SIT	E AND PROJECT INFORMATION	1		
	2.1	Site Location and Description			
	2.2	Project Description			
3	SU	BSURFACE CONDITIONS	2		
	3.1	Field Exploration and Laboratory Testing			
	3.2	Encountered Subsurface Conditions			
	3.3	Groundwater			
4	GE	OTECHNICAL RECOMMEDATIONS	4		
	4.1	Soft Soil Subgrade	4		
	4.2	Standard Proctors, CBR Values, Atterberg Limits	5		
	4.3	Earthwork			
	4.3.1	Site Preparation			
	4.3.2	2 Structural Fill Requirements			
	4.3.3	3 Structural Fill Compaction Requirements	6		
	4.3.4	Grading and Drainage	6		
	4.3.5	5 Earthwork Construction	7		
	4.3.6	soil Stabilization			
	4.3.7	Temporary Excavations	8		
	4.4	Foundations			
	4.4.1	Shallow Foundation Design Recommendations	9		
	4.4.2	Shallow Foundation Construction Considerations			
	4.5	Seismic Considerations			
	4.6	Lateral Earth Pressures			
	4.7	Special Inspection Requirements			
5	GEN	VERAL COMMENTS			

## APPENDIX

Site Location Map Boring Location Plan Boring Logs Boring Log Legend and Nomenclature Standard Proctor, CBR and Hydrometer Test Data Geotechnical Engineering Report T-Hangar and Taxiway – Salem Memorial Airport Salem, Missouri Crockett GTL Project Number: G19420 June 13, 2019

# 1 INTRODUCTION

Crockett Geotechnical - Testing Lab (CGTL) has conducted a geotechnical exploration for the proposed development. The purpose of our exploration was to:

- characterize and evaluate the subsurface conditions,
- provide design and construction recommendations for:
  - subsurface soil conditions
  - o groundwater
  - soft soil subgrade
  - o standard proctor, CBR and Atterberg limit data
  - o earthwork
  - o foundations
  - seismic considerations
  - o lateral earth pressures
  - o special inspection requirements

# 2 SITE AND PROJECT INFORMATION

# 2.1 SITE LOCATION AND DESCRIPTION

Item	Description				
Location	This project site is located at the Salem Memorial Airport. Specifically this project is located approximately 700 feet east of the intersection of Missouri Highway 32 and Route F in Salem, Missouri				
	A Site Location Map showing the approximate location of this site is included in the Appendix of this report				
Approximate GPS Coordinates	Latitude: 37.618530° Longitude: -91.607105°				

#### www.CrockettGTL.com

Item	Description		
Existing improvements	The subject tract is an undeveloped lawn area		
Current ground cover	Grasses and weeds		
Existing topography	Sloping with approximately 6 feet of relief on the site		

# 2.2 PROJECT DESCRIPTION

Item	Description		
Proposed structure	A new airplane hangar and associated taxiway is planned		
Building construction	Airplane hangar is assumed to be steel framed		
Finished floor elevation (FFE)	1,214 feet (assumed)		
Maximum loads (assumed)	Column Loads:40 kipsStrip Loads:2.0 klfFloor Loads:250 psf		
Grading	For this project we have assumed site grading to consist of less than approximately 2 feet of cut or 5 feet of fill		
Cut and fill slopes	Final slopes are assumed to be no steeper than 3H:1V (Horizontal to Vertical)		
Free-standing retaining walls	None		
Below grade areas	Possible stem walls		

# **3 SUBSURFACE CONDITIONS**

# 3.1 FIELD EXPLORATION AND LABORATORY TESTING

Three (3) borings were drilled and two (2) test-pits were excavated for this project at the approximate locations indicated on the Boring Location Plan included in the Appendix of this report. Additional information follows:

Field Exploration		
Boring Locations <sup>1</sup>	Designated by the client and staked by the drill crew	
Boring Elevations <sup>1</sup>	Boring elevations are approximate and were obtained using the terrain feature on Google Earth The elevations were rounded to the nearest foot	
Drill Rig	GEOPROBE-7822DT track-mounted drill rig equipped with 4- inch solid stem augers	
Sampling Methods <sup>2</sup>	Representative samples were obtained using thin-walled tube sampling and split-barrel tube sampling procedures	

1. The location and elevation of the borings should be considered accurate only to the degree implied by the means and methods used to define them.

2. A CME automatic SPT hammer was used to advance the split-barrel sampler in the borings performed on this site. A significantly greater efficiency is achieved with the automatic hammer compared to the conventional safety hammer operated with a cathead and rope. This higher efficiency has an appreciable effect on the standard penetration resistance blow count (N) value. The effect of the automatic hammer's efficiency has been considered in the interpretation and analysis of the subsurface information for this report.

The samples were tagged for identification, sealed to reduce moisture loss, and taken to our laboratory for further examination, testing, and classification. Information provided on the boring logs attached to this report includes soil descriptions, consistency evaluations, boring depths, sampling intervals, and groundwater conditions. The borings were backfilled with auger cuttings prior to the drill crew leaving the site.

The field logs were prepared by the drill crew. Final logs included with this report represent the engineer's interpretation of the field logs and include modifications based upon laboratory tests and observation made of the samples. Detailed information regarding the material encountered and the results of field sampling and laboratory testing are shown on the Boring Logs included in the Appendix of this report. The descriptions of the soil on the final boring logs are in general accordance with the Unified Soil Classification System which is included in the Appendix of this report.

## 3.2 ENCOUNTERED SUBSURFACE CONDITIONS

From the ground surface all of the borings encountered approximately 2 to 4 inches of topsoil. Topsoil thickness should be expected to vary elsewhere on the site.

Underlying the topsoil in the borings was lean clay. The lean clay extended to depths ranging from 8 feet to the planned termination depth of 20 feet. Boring B-2 was terminated in the lean clay at a depth of approximately 20 feet.

#### www.CrockettGTL.com

Underlying the lean clay in borings B-1 and B-3 was clayey sand. The clayey sand extended to the planned termination depth of about 20 feet. Bedrock was not encountered.

Detailed descriptions of the encountered materials are listed on the individual boring logs included in the Appendix of this report. Strata lines indicate the approximate location of changes in material types. The transition between material types may be gradual.

# 3.3 GROUNDWATER

Groundwater was not encountered in the borings while drilling, at completion of drilling, or for the short duration the borings remained open after the completion of drilling. However, this does not necessarily mean the borings terminated above groundwater or that the water levels summarized above are stable groundwater levels. Due to the low permeability of the soils encountered in the borings, a relatively long period of time may be necessary for a groundwater level to develop and stabilize in a borehole in these materials.

Perched groundwater can develop over low permeability soil or rock strata following periods of heavy or prolonged precipitation. This possibility should be considered when developing design and construction plans and specifications for the project. Groundwater levels depend on seasonal and climatic variations and may be present at different levels in the future.

The boreholes were backfilled prior to departing the project site. Groundwater records are indicated on the boring logs included in the Appendix of this report.

# **4 GEOTECHNICAL RECOMMEDATIONS**

# 4.1 SOFT SOIL SUBGRADE

High moisture content soil was encountered in the test pits and in some of the structure borings near the ground surface. Soil with moisture levels significantly above their measured plastic limit and/or optimum moisture content are usually unstable and will pump under construction traffic. These soils are suitable for use as structural fill if moisture conditioned and satisfactorily compacted. The contractor should be prepared for these conditions should they be encountered. Soil stabilization recommendations are provided in the Earthwork section of this report.

# 4.2 STANDARD PROCTORS, CBR VALUES, ATTERBERG LIMITS

As part of this investigation two standard proctor tests, two CBR tests and two Atterberg limit tests were performed on bulk samples collected test pits TP-1 and TP-2. The results of these tests are summarized below and are included in the Appendix of this report.

Additional Testing Summary							
	Standard Proctor		CBR		Atterberg Limits		
Soil Sample	Maximum dry density (pcf)	Optimum moisture (%)	0.1-inch penetration	0.2 inch penetration	LL (%)	PL (%)	PI (%)
TP-1	101.0	18.6	8.0	6.2	41	19	22
TP-2	103.3	19.5	3.9	3.7	43	19	24

# 4.3 EARTHWORK

At the completion of stripping and grubbing, we recommend the exposed subgrade be thoroughly evaluated before the start of any fill operations. We recommend the geotechnical engineer be retained to evaluate the bearing material for the foundations and subgrade soils. Subsurface conditions, as identified by the field and laboratory testing programs have been reviewed and evaluated with respect to the proposed project plans known to us at this time.

## 4.3.1 Site Preparation

All unsuitable material should be removed from the construction areas prior to placing structural fill. After stripping and grubbing, the site should be proofrolled to aid in locating loose or soft areas. Proofrolling can be performed with a loaded tandem axle dump truck. Soft, wet, dry and low-density soil should be removed or be moisture conditioned and recompacted in place as structural fill prior to placing new structural fill.

Where fill is placed on existing slopes steeper than 5H:1V, benches should be cut into the existing slopes prior to fill placement. The benches should have a vertical face height of 1 to 3 feet and should be cut wide enough to accommodate the compaction equipment. We recommend structural fill slopes be overfilled and then cut back to develop an adequately compacted slope face.

## 4.3.2 Structural Fill Requirements

Compacted structural fill should consist of approved materials free of organic matter and debris. Frozen material should not be used and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted for evaluation prior to use.

Struc	ctural Fill Material Requireme	ents
Material Type	USCS Classification	Acceptable Uses
Lean Clay and Clayey Sand	CL & SC	All locations
Fat Clay	СН	>18-inches below on-grade slabs

### 4.3.3 Structural Fill Compaction Requirements

Struc	tural Fill Compaction Requirements			
Soil Fill Lift Thickness	<ul> <li>9 inches or less when using heavy self-propelled compaction equipment</li> <li>6-inches or less when using hand guided or light self-propelled equipment</li> </ul>			
Compaction Requirements <sup>1,2</sup>	<ol> <li>95% of standard Proctor dry density (ASTM D-698)</li> <li>We recommend engineered fill be tested for moisture content and compaction during placement. Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.</li> <li>As stated within ASTM D698, this procedure is intended for soils with 30% or less material larger than 34". Accordingly, we recommend full time proof-roll observation be performed instead of moisture density testing for materials containing more than 30%</li> </ol>			
Compaction Moisture Content Requirements • Cohesive • Granular	<ul> <li>2% below to 3% above standard Proctor OMC</li> <li>Workable moisture content. Shall not pump when proofrolled</li> </ul>			

## 4.3.4 Grading and Drainage

Final surrounding grades should be sloped away from the structure on all sides to prevent ponding of water. Gutters and downspouts that drain water a minimum of 10 feet beyond the footprint of the proposed structures are recommended. This can be accomplished through the use of splash-blocks, downspout extensions, and flexible pipes designed to attach to the end of the downspout. Flexible pipe should only be used if it is daylighted in such a manner that it gravity-drains collected water.

#### 4.3.5 Earthwork Construction

In periods of dry weather, the surficial soils may be of sufficient strength to allow fill construction on the stripped and grubbed ground surface. However, unstable subgrade conditions could develop if the soils are wet or subjected to repetitive construction traffic. Should unstable subgrade conditions be encountered, stabilization measures will need to be employed.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become frozen, desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior construction.

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork/fill placement and to perform necessary tests and observations during subgrade preparation; proofrolling; placement and compaction of structural fills; backfilling of excavations into the completed subgrade, and just prior to construction.

#### 4.3.6 Soil Stabilization

High moisture content soil was encountered in some of the near-surface samples obtained for this investigation. The subgrade soils in these areas could become unstable and pump under construction traffic. Unstable subgrade conditions could worsen during general construction operations, particularly if the soils are wetted or subjected to repetitive construction traffic. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance.

Should unstable subgrade conditions be encountered, stabilization measures will need to be employed, and could consist of one of the methods outlined below. These methods should not be utilized below foundations.

#### 4.3.6.1 Scarification and Recompaction

It may be feasible to scarify, dry and recompact the exposed soils. The success of this procedure would depend primarily upon favorable weather and sufficient time to dry the soils. Stable subgrades likely would not be achievable if the thickness of the unstable soil is greater than about 1 foot, or if construction is performed during a period of wet weather when drying is difficult.

#### 4.3.6.2 Crushed Stone

The use of crushed stone or crushed gravel is the most common procedure to improve subgrade stability. Typical undercut depths in general fill areas would be expected to range from about 12 to 30 inches below finished subgrade elevation.

#### 4.3.6.3 Geogrid

Geogrid could also be considered. Prior to placing the geogrid, all below grade construction, such as utility line installation, should be completed to avoid damaging the geogrid. Equipment should not be operated above the geogrid until one full lift of crushed stone fill is placed above it. The aggregate gradation requirements, as specified by the geogrid manufacturer, should be verified prior to material purchase and placement.

#### 4.3.6.4 Clean Aggregate Stabilization

Subgrades can also be stabilized by placing a thin lift of 3-inch clean aggregate on top of the unsuitable soil and working it into the subgrade with appropriately sized equipment. This process should be repeated until the subgrade is stable enough to pass a proofroll. It should be recognized if multiple lifts are required, the initial elevation of the unsuitable subgrade will likely rise or swell due to the placement of the aggregate. This volume-change should be accounted for when planning for final grades.

#### 4.3.6.5 Chemical Stabilization

Improvement of subgrades with Portland cement, lime kiln dust, Code L, or class C fly ash could be considered for improving unstable soils. Chemical modification should be performed by a pre-qualified contractor having experience with successfully stabilizing subgrades in the project area on similar sized projects with similar soil conditions. Results of chemical analysis of the additive materials should be provided to the geotechnical engineer prior to use. The hazards of chemicals blowing across the site or onto adjacent property should also be considered. Additional testing would be needed to develop specific recommendations to improve subgrade stability by blending chemicals with the site soils.

Further evaluation of the need and recommendations for subgrade stabilization can be provided during construction as the geotechnical conditions are exposed on a broad scale; however we recommend the owner budget for, and the contractor be prepared for subgrade stabilization.

#### 4.3.7 Temporary Excavations

The Occupational Safety and Health Administration (OSHA) has developed regulations to provide for the safety of workers entering excavations. Temporary excavations will probably be required during grading operations. All operations should be performed under the supervision of qualified site personnel in accordance with OSHA Excavation and Trench Safety Standards.
# 4.4 FOUNDATIONS

We recommend that the proposed hangar be supported on spread footings bearing on suitable native soil or new structural fill. Design recommendations and construction considerations for shallow foundations follow:

# 4.4.1 Shallow Foundation Design Recommendations

Design recommendations for shallow foundations are as follows:

Shallow Foundation Design Recommendations	- STALENIEST
<ul> <li>Allowable bearing pressure</li> <li>Isolated foundations</li> <li>Continuous foundations</li> <li>Allowable overstress for transient loads (i.e. snow, wind, seismic)</li> <li>1. Assumes all foundations will bear directly upon native soil or new structural fill.</li> </ul>	2,500 psf 2,100 psf 33%
Minimum foundation dimensions <ul> <li>Isolated foundations</li> <li>Continuous foundations</li> </ul>	30 inches 18 inches
<ol> <li>Ultimate passive pressure (equivalent fluid pressure)</li> <li>The sides of the spread footing foundation excavations must be nearly vertical and the concrete should be placed neat against the vertical faces for the passive earth pressure values to be valid.</li> <li>Passive resistance in the frost zone should be neglected.</li> <li>Some movement of the footing will be required to mobilize resistance from passive pressure and sliding friction.</li> </ol>	270 pcf
Ultimate coefficient of sliding friction	0.32
Minimum embedment below finished grade for frost protection	30 inches
<ul> <li>Uplift Resistance</li> <li>Soil Total Unit Weight</li> <li>Concrete Total Unit Weight</li> <li>Only the soil directly overlying the foundation should be used for uplift resistance</li> <li>Unit weight values do not include factors of safety</li> <li>Assumes foundations are drained and are constructed above the highest groundwater level</li> </ul>	120 pcf 150 pcf
<ul> <li>Approximate Foundation Settlement <ul> <li>Total</li> <li>Differential</li> </ul> </li> <li>Assumes maximum footing size of 4.0 feet for isolated foundations and 1.5 feet for continuous foundations. Assumes footings bear on native soil or new structural fill</li> </ul>	<1 inch < 3⁄4 inch

# 4.4.2 Shallow Foundation Construction Considerations

The base of all foundation excavations should be free of water and loose soil and rock prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Should the soil at the foundation bearing level become excessively dry, disturbed, saturated, or frozen the affected soil should be removed prior to placing concrete. Place a lean concrete mud-mat over the bearing soils if the excavations must remain open over night or for an extended period of time. It is recommended the geotechnical engineer be retained to observe and test the soil foundation bearing materials.

Although groundwater was not encountered in the borings, conditions may develop such that it may be encountered during foundation excavation. In addition, some surface and/or perched groundwater may enter foundation excavations during construction. It is anticipated any water entering foundation excavations from these sources can be removed using sump pumps or gravity drainage.

If unsuitable bearing soils are encountered in footing excavations, the excavations should be extended deeper to suitable soils and the footings should bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. The footings could also bear on properly compacted backfill extending down to the suitable soils. Overexcavation for compacted backfill placement below footings should extend laterally beyond all edges of the footings at least 8 inches per foot of overexcavation depth below footing base elevation. The overexcavation should then be backfilled up to the footing base elevation with well graded granular material placed in lifts of 9 inches or less in loose thickness and compacted to at least 98 percent of the material's maximum standard effort maximum dry density (ASTM D 698). The lean concrete backfill and overexcavation-and-backfill procedures are described in the diagram below.



EXCAVATIONS IN SKETCHES SHOWN VERTICAL FOR CONVENENCE EXCAVATIONS SHOULD BE SLOPED AS NECESSARY FOR SAFETY

# 4.5 SEISMIC CONSIDERATIONS

The International Building Code and ASCE 7 requires the average properties in the upper 100 feet of the subsurface profile be determined for seismic site classification. The drilling scope performed for this project had borings that extended to a maximum depth of approximately 15.0 feet. As such, we provide the following seismic site classification:

Seismic Site Classification							
Code Used	International Building Code (IBC) and ASCE 7						
Site Classification	D						

Additional exploration to greater depths could be considered to confirm the conditions below the current depth of exploration. Alternatively, a geophysical exploration could be utilized in order to attempt to justify a more favorable seismic site class.

# 4.6 LATERAL EARTH PRESSURES

The lateral earth pressure recommendations given in the following paragraphs are applicable to the design of rigid retaining walls subject to slight rotation, such as cantilever, or gravity type concrete walls. These recommendations are not applicable to the design of modular block - geogrid reinforced backfill walls. Recommendations covering these types of wall systems are beyond the scope of services for this assignment.

Reinforced concrete walls with unbalanced backfill levels may be utilized on this site. Walls should be designed using the earth pressures indicated on the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown. Active earth pressure is commonly used for design of free-standing cantilever retaining walls and assumes wall movement. The "at-rest" condition assumes no wall movement. The recommended design lateral earth pressures do not include a factor of safety and do not provide for possible hydrostatic pressure on the walls.



Earth Pressure Coefficients								
Backfill Type	Active (Ka)	At Rest (K <sub>o</sub> )	Passive (K <sub>p</sub> )					
Cohesive Equivalent Fluid Unit Weights	50 pcf	70 pcf	280 pcf					
Granular Equivalent Fluid Unit Weights	40 pcf	60 pcf	360 pcf					
Surcharge Pressure, P1 (psf) Cohesive Granular	(0.42)S (0.33)S	(0.58)S (0.46)S						
Earth Pressure, P2 (psf) Cohesive Granular	(50)H (40)H	(70)H (55)H						
Sliding Resistance	0.32 (coefficient of fr	iction)						

The values are applicable when the surface of the backfill behind the wall is horizontal. Increased values will
result with steeper than horizontal slopes.

No safety factor included in soil parameters

Does not include loading from heavy compaction equipment

No hydrostatic pressures acting on wall

 Backfill compacted to 95% standard Proctor dry density, or 80% relative density, as appropriate for material type.

Soil backfill unit weight a maximum of 120 pcf

No dynamic loading.

	Earth Pressure Coefficients							
•	For active earth pressure, wall must rotate about base, with top lateral movements of about 0.002 H to 0.004 H, where H is wall height							
•	For passive earth pressures to develop, the wall must move horizontally.							
•	Ignore passive pressure in the frost zone							
•	For the granular values to be valid, the granular backfill must extend out from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively.							
•	Exterior granular backfill should be capped with approximately 2 feet of cohesive soil to reduce the potential for surface water infiltration into the granular backfill.							
•	Uniform surcharge, where S is surcharge pressure.							

We recommend all below-grade walls be provided with a drainage system. A minimum 4-inch diameter, perforated drainpipe should be placed at the foundation level. Granular drainage material, consisting of 1-inch clean crushed rock, classified as GP by ASTM D 2487, with less than 5 percent passing the No. 200 sieve, should be placed a minimum of 6 inches in all directions around the drainage pipe. Synthetic filter fabric, such as Mirafi 140N or equivalent, should encapsulate the drainpipe and granular drainage material.

The pipe should be sloped to drain by gravity or through weep holes located on approximately 10-foot centers for above-grade retaining walls, or to a sump with a pump for below-grade walls where positive drainage by gravity cannot be achieved. Any interior sumps must be isolated "watertight" from the interior subgrade to prevent the movement of moisture from the sump into the underlying soils.

# 4.7 SPECIAL INSPECTION REQUIREMENTS

The following items require special inspections in accordance with Chapter 17 of the International Building Code:

5	Schedule of Special Insp	pection Service	es '	in Sectional				
		0	Applicable to this Proje					
	Material/Activity	Service	Y/N	Extent				
17	05.6 Soil		Y					
•	Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Field Inspection	Y	Periodic				
•	Verify excavations are extended to proper depth and have reached proper material	Field Inspection	Y	Periodic				
•	Perform classification and testing of controlled fill materials.	Field Inspection	Y	Periodic				

Service		
A design of the second s	Y/N	Extent
Field Inspection	Y	Continuous
Field Inspection	Y	Periodic
	N	
	N	
	N	
	Field Inspection Field Inspection oved agency in ger	Field Inspection     Y       Field Inspection     Y       N     N       N     N       Oved agency in general accordance

The contractor shall request special inspection of the items listed above prior to those items becoming inaccessible and unobservable due to the progression of work.

# 5 GENERAL COMMENTS

The recommendations provided herein are for the exclusive use of our client. Our recommendations are specific only to the project described herein and are not meant to supersede more stringent requirements of local ordinances or codes. The recommendations are based on subsurface information obtained at our boring locations, sample locations, our understanding of the project as described in this report, and geotechnical engineering practice consistent with the current standard of care. No warranty is expressed or implied. CGTL should be contacted if conditions encountered are not consistent with those described.

CGTL should be provided with a set of final plans and specifications once they are available to review whether our recommendations have been understood and applied correctly and to assess the need for additional exploration or analysis. Failure to provide these documents to CGTL may nullify some or all of the recommendations provide herein. In addition, any changes in the planned project or changes in site conditions may require revised or additional recommendations on our part.

The final part of our geotechnical service should consist of direct observation during construction to observe that conditions actually encountered are consistent with those

described in this report and to assess the appropriateness of the analyses and recommendations contained herein. CGTL cannot assume liability or responsibility for the adequacy of recommendations without being retained to observe construction.

# APPENDIX





ATE S' RILLIN RILLIN DGGEI	NG C	COMPLETED         5/28/19           ONTRACTOR         IPES	GROUND	EI EVA									
RILLIN RILLIN DGGEI	NG C	ONTRACTOR IPES	the second second second second	LLLIA	TION _	1214 ft MS	L	HOLE	SIZE	4"		-	
DGGE	NG M		GROUND	WATER	LEVE	LS:							
JGGEI	-	ETHOD 4" SSA	AT				Not Enc	ounter	ed				
DTES	Bo	rehole backfilled upon completion	0.25	ihrs AF	TER DE	RILLING -	Not l	Encour	ntered	2			-
-			1								AT	TERBE	RG
(ft) RAPHIC	LOG	MATERIAL DESCRIPTION		PLE TYPE JMBER	COVERY ENGTH	SLOW SUNTS VALUE)	KET PEN. (psf)	(psf)	UNIT WT. (pcf)	ISTURE TENT (%)			ICITY
5	5			SAMI	REC	"oz	POC	NNO	DRY	CON	LA	PLA	LAST
0	4: 1	0.3 TOPSOIL (4-inches)	,1213.7				-	-			-		4
-		LEAN CLAY: Brown and gray, trace rust stains, trace to with sand, stiff to very stiff			-								
		: trace root hairs		ST 1	17		4500		102	26			
				ST 2	20		5000	4060	110	19			
0		: trace gravel		ST 3	17		5000	2140	109	18			
		11.0 CLAYEY SAND: Reddish brown, trace gravel, occasional clayey zones	1203.0 										
				ST 4	24		7000		110	8			
5 1/3	1.1.	No Refusal.	1199.0				-			-			
		Bottom of borehole at 15.0 feet.											

ROJE	ECT N	UMBER	PROJECT	LOCAT		Salem, Mis	souri			-	_	_	_
DATE	STAR	TED <u>5/28/19</u> COMPLETED <u>5/28/19</u>	GROUND	ELEVA	TION _	1211 ft MS	iL	HOLE	SIZE	4"			-
	ING C		GROUND	WATER		LS:							
DRILL		CHECKED BY Lidholm	AT						ed		-	_	_
OGG	S Bo	rehole backfilled upon completion	0.2	5hrs AF	TER DE	RILLING	Not	Encoul	ntered				_
							1				AT	TERBE	RG
(ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		SAMPLE TYPE NUMBER	RECOVERY LENGTH	BLOW COUNTS (N VALUE)	POCKET PEN. (psf)	UNC. COMP. (psf)	DRY UNIT WT. (pcf)	MOISTURE	LIMIT		ASTICITY
0	1.4.4. 14		1210 7	05			-		-	-	-	-	Б
		LEAN CLAY: Light brown and gray, trace rust stains, tra	ce	1					111	. 1			
		to with sand, very stiff		ST 1	24		6000		107	20			
-		: trace gravel		ST 2	24		6500	4215	109	20			
10		: brown and dark gray, trace sand and gravel, occasion clayey zones	al	ST 3	24		7000		106	20			
		11.0	1000.0				1						
1 11		LEAN TO FAT CLAY: Dark gray and gray, trace brown, with sand, trace gravel, with occasional silty zones, hard	1200.0										
15		15.0	1196.0	ST 4	23		9000		110	18			
		No Refusal.											
		No Refusal. Bottom of borehole at 15.0 feet.											

PROJ	ECT N	UMBER <u>G19420</u>	PROJECT	LOCAT		Salem, Miss	souri	104.52					
DATE	STAR	TED <u>5/28/19</u> COMPLETED <u>5/28/19</u>	GROUND ELEVATION 1209 ft MSL HOLE SIZE 4"										
DRILL	ING C	ONTRACTOR IPES	GROUND	WATER	LEVE	LS:							
DRILL		ETHOD 4" SSA	_ AI	TIME OF			tot Enc	ounter	red				_
LOGG	ED B		_ AI				Not I		BO		_		_
NOTE	S _ BO	enoie backnilled upon completion	0.2	onrs AF	TERD	alling		Encour	T		AT	TEDDE	DC
				Щ	×	-	z	ď	5	ш%	2 LIMITS		S
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION		SAMPLE TY NUMBER	RECOVER	BLOW COUNTS (N VALUE	POCKET PE (psf)	UNC. COM (psf)	DRY UNIT V (pcf)	MOISTURI CONTENT (	LIQUID	PLASTIC	PLASTICITY
0	AL.A	0.2 TOPSOIL (2-inches)	/1208.8/					-	-		-		-
6.4		LEAN CLAY: Light brown and gray, trace rust stains, t to with sand, very stiff	race	1									
				ST 1	19		6500		103	24			
5		: reddish brown, trace gray, trace gravel		ST 2	22		6000	5425	110	19			
-		8.0	1201.0										
10		CLAYEY SAND: Reddish brown, trace gravel, occasio clayey zones	nai	ST 3	14		8500		102	13			
		: more sand, medium dense 15.0	1194.0/	SPT 4	18	10-13-16 (29)	1500			7			
		Bottom of borehole at 15.0 feet.											

# BORING LOG LEGEND AND NOMENCLATURE

Sample Type	Description		Grain Size Terminology
AU	Auger sample, disturbed, obtained from auger cuttings	Boulders	Larger than 12-inches
NR	No recovery or lost sample	Cobbles	3-inches to 12-inches
RC	Rock core, diamond core bit, nominal 2-inch diameter rock sample (ASTM D 2113)	Gravel	Retained on #4 sieve to 3-inches
ST	Thin walled (Shelby) tube sample, relatively undisturbed (ASTM D 1587)	Sand	Retained on #200 sieve but passes #4 sieve
SPT	Split spoon sample, disturbed (ASTM D 1586)	Silt or Clay	Passes #200 sieve
VA	Shear vane (ASTM D 2753)		

Descriptor	Relative Proportion of Sand and Gravel	Relative Proportion of Fines
Trace	Less than 15% by dry weight	Less than 5% by dry weight
With	15% to 30% by dry weight	5% to 12% by dry weight
Modifier	More than 30% by dry weight	More than 12% by dry weight

Relative Density	y of Coarse grained Soils	Consistency of Fine Grained Soils						
Descriptive Term	SPT N-Value, Blows/Foot	Descriptive Term	SPT N-Value, Blows/Foot	Unconfined Compressive Strength.psf				
Very Loose	0-3	Very Soft	0-1	0 - 500				
Loose	4-9	Soft	2-3	501 - 1,000				
Medium Dense	10 - 29	Medium	4-9	1,001 - 2,000				
Dense	30 - 49	Stiff	10 - 29	2,001 - 4,000				
Very Dense	50+	Very Stiff	30 - 49	4,001 - 8,000				
		Hard	50+	+8.000				

	VALCE UNITED IN	USCS Soil Classi	fication System		
TA BUTT	Major Divisions		Group Symbol	Group Name	
		clean gravel	GW	well-graded gravel, fine to coarse gravel	
	so% of coarse fraction	<5% small than #200 sieve	GP	poorly graded gravel	
and a stand and and	retained on *4 (4.75 mm)	gravel with	GM	silty gravel	
coarse grained soils more than	dieve	>12% fines	GC	clayey gravel	
50% retained on		4.000.04	SW	well-graded sand, fine to coarse sand	
200 3676	sand *50% of coarse fraction passes #4 (4.75 mm) sieve	clean sand	SP	poorly graded sand	
		passes #4 (4.75 mm)	sand with	SM	silty sand
	aicve	>12% fines	SC	clayey sand	
	silt and clay liquid limit < 50 silt and clay liquid limit > 50	10-10-10-10-10-10-10-10-10-10-10-10-10-1	ML	silt	
		silt and clay liquid limit < 50	inorganic	CL	clay
fine grained soils more than		organic	OL	organic silt, organic clay	
50% passes		passes	1. A.	МН	silt of high plasticity, elastic silt
200 Sieve		inorganic	СН	clay of high plasticity, fat clay	
		organic	ОН	organic clay, organic silt	
	highly organic soils		PT	peat	

Weathering	Description of Rock Properties
Fresh	No discoloration. Not oxidized.
Slightly weathered	Discoloration or oxidation of most surfaces but or short distance from fractures
Moderately weathered	Discoloration or oxidation extends from fractures, usually throughout. All fractured surfaces are oxidized or discolored.
Severely weathered	Discoloration or oxidation throughout. All fractured surfaces are oxidized or discolored. Surfaces are friable.
Decomposed	Resembles a soil. Partial or complete remnant rock structure may be present.

Rock Quality	Designator (RQD)	JL	oint, Bedding, and Foliation Spacing in R	ock
RQD, %	Rock Quality	Spacing	Joints	Bedding/Foliation
90 - 100	Excellent	< 2-inches	Very close	Very thin
75 - 90	Good	2-inches - 1-foot	Close	Thin
50 - 75	Fair	1-foot - 3-feet	Moderately Close	Medium
25 - 50	Poor	3-feet - 10-feet	Wide	Thick
0-25	Very poor	>10-feet	Very Wide	Very thick



Tested By: Gerhart

Checked By: Lidholm



Tested By: Gerhart

Checked By: Lidholm

# BEARING RATIO OF LABORATORY-COMPACTED SOILS ASTM D 1883

	T-Trangar and Taxiway			DATE.	0/12/2013
	Salem Memorial Airpo	rt		JOB NO.	G19420
SAMPLE NO.		<u>TP-1</u>			
OCATION O	F SAMPLE:	TP-1			
DESCRIPTIO	N OF SOIL:	LEAN CLAY: Dark and	l light brown, trace sa	and, trace root	hairs, mottled
METHOD OF	PREPARATION:	METHOD: A	ASTM D 698		
SURCHARGE		51	PSF	10	POUNDS
ENGTH OF	SOAKING:	96	HOURS	6	
DRY DENSIT	Y BEFORE SOAKING:	99.2	PCF		
MAX. LAB DE	NSITY:	101.0	PCF		
	DISTURE:	18.6	%		
PERCENT CO	OMPACTION:	98.2	% A	AT + 3.0	_% OPT. MOISTUI
MOISTURE C	ONTENT OF SAMPLE:				
BEFORE	SOAKING:	21.6	%		
TOP 1 INC	CH AFTER SOAKING:	24.2	%		
AVERAGE	EAFTER SOAKING:	23.2	%		
SWELL (% OF	F INITIAL HEIGHT):	0.4	%		
BEARING RA	TIO:				
0.1 INCH	PENETRATION:				
	PENETRATION:	6.2			

AB

#### BEARING RATIO OF LABORATORY-COMPACTED SOILS ASTM D 1883

	Salem Memorial Airoo	rt			JOB NO	G19420
	Galerr Merional Allpo				500 NO.	
SAMPLE NO.		TP-2				
LOCATION O	F SAMPLE:	TP-2				
DESCRIPTIO	N OF SOIL:	LEAN CLAY: Brown	, trace sand, trace	root hai	rs	
METHOD OF	PREPARATION:	METHOD: A	ASTM D 698			
SURCHARGE		51	PSF	F	10	POUNDS
LENGTH OF S	SOAKING:	96	НО	URS		
DRY DENSIT	Y BEFORE SOAKING:	100.4	PC	F		
MAX. LAB DE	NSITY:	103.3	PCF	F		
	DISTURE:	19.5	%			
PERCENT CO	MPACTION:	97.2	%	AT	+ 2.5	_% OPT. MOISTURE
MOISTURE C	ONTENT OF SAMPLE:					
BEFORE	SOAKING:	22.0	%			
TOP 1 INC	CH AFTER SOAKING:	22.8	%			
AVERAGE	AFTER SOAKING:	22.7	%			
SWELL (% OF	INITIAL HEIGHT):	0.4	%			
BEARING RAT	ΓΙΟ:					
0.1 INCH F	PENETRATION:	3.9				
0.2 INCH F	PENETRATION:	3.7				

PARTICLE DIAMETER, mm	In the second hairs, mottled	In the second hairs, motiled to the second hairs, motiled hairs, motiled to the second hairs, motiled hairs, motil	In the second hairs, motiled to the second hairs, motiled hairs,	Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sign of the system     Image: Sign of the system       Image: Sign of the system     Image: Sig
<b>T</b>	airs, mottled	airs, mottled	In the state of th	Image: Single state

					2					-	N	ω	PER	CEN	UT UT	5R, %	7	a	<b>b</b>	9	10
PROJE	ſ			в					100	•	8	8			8	8				•	
CT T-Ha Saler		TP-2	NO.	BORING		Π										_					
ngar & Tax n Memoria	+			SA		Coarse			1							-					•
iiway I Airport		Bulk	NO.	MPLE			GRAVE									-					-
		1.0' - 2.0'	feet	DEPTH,		Fine			10												•
						Coars															•
		LEAN			GRA	e Mediu															1
5		CLAY: Bro			IN SIZE	um	S	PA	1												Ī
BNO		wn, trace sa	DESCRIPTI	ASTM	DISTRIB	H	and	RTICLE D												1	
G19420		ind, trace ro	ON		UTION C			IAMETER											/		
		oot hairs			URVE	Fine		, mm	0.1										1		
DATE																_		1	_		
RIAID																	/				
10		çĻ	SYMBOL	UNIFIED								-		-					_		
62		27	WC, %	NAT.		Silt			0.01						1						
		43	F	ATT										1							
		19	PL	ERBERG LI									1	*							
		24	PI	IMITS		Q			-				Í								-

This Page Intentionally Left Blank

# CONSTRUCTION SAFETY AND PHASING PLAN (CSPP) REPORT SALEM MEMORIAL AIRPORT (K33)

#### **CONSTRUCT 6-UNIT T-HANGAR**

MoDOT Project No. 23-066A-1

April 2023

Submitted to: City of Salem, Missouri

# LOCHNER

# SALEM MEMORIAL AIRPORT (K33) CITY OF SALEM, MISSOURI

# **Construct 6-Unit T-Hangar**

# LOCHNER

**Prepared By:** 

LOCHNER 16105 W. 113<sup>th</sup> Street Suite 107 Lenexa, KS 66219 816.945.5840



# TABLE OF CONTENTS

1. INT	TRODUCTION	1
2. PR	ROJECT DESCRIPTION	1
3. CC	DORDINATION (SECTION 2.5)	1
Α.	CONTRACTOR PROGRESS MEETINGS	1
В.	SCOPE OR SCHEDULE CHANGES	1
C.	FAA ATO COORDINATION	2
4. PH	ASING (SECTION 2.6)	2
Α.	PHASE ELEMENTS	2
I.	AREAS CLOSED TO AIRCRAFT OPERATION	2
II.	DURATION OF CLOSURES	2
III.	TAXI ROUTES	2
IV.	ARFF ACCESS ROUTES	2
V.	CONSTRUCTION STAGING AREAS	2
VI.	CONSTRUCTION ACCESS AND HAUL ROUTES	2
VII	IMPACT TO NAVAIDS	3
VII	I. LIGHTING AND MARKING CHANGES	3
IX.	AVAILABLE RUNWAY LENGTH	3
Х.	REQUIRED HAZARD MARKING AND LIGHTING	3
XI.	LEAD TIMES FOR REQUIRED NOTIFICATIONS	3
В.	CONSTRUCTION SAFETY DRAWINGS	3
5. AR	REA AND OPERATIONS AFFECTED BY CONSTRUCTION ACTIVITY (SECTION 2.7)	). 3
Α.	OPERATIONAL AFFECT TABLE	3
В.	RUNWAY SAFETY AREAS	4
C.	RUNWAY APPROACH PROTECTION AREA	4
D.	IDENTIFICATION OF AFFECTED AREAS	4
E. N	MITIGATION OF EFFECTS	4
6. NA	VIGATION AID (NAVAID) PROTECTION (SECTION 2.8)	5
Α.	EFFECTS OF CONSTRUCTION TO NAVAIDS	5
В.	COORDINATION OF NAVAID IMPACTS	5
7. CO	ONTRACTOR ACCESS (SECTION 2.9)	6
Α.	LOCATION OF STOCKPILED CONSTRUCTION MATERIALS	6
1.	HEIGHT RESTRICTIONS	6

# SALEM MEMORIAL AIRPORT (K33)

# SALEM, MISSOURI

п.	WILDLIFE ATTRACTANT	6
111.	FOREIGN OBJECT DEBRIS (FOD)	6
IV.	MARKING AND LIGHTING OF STOCKPILES	6
В.	VEHICLE AND PEDESTRIAN OPERATIONS	6
C.	ACCESS TO AIRPORT OPERATIONS AREA (AOA)	6
1.	CONSTRUCTION SITE PARKING	7
Ш.	CONSTRUCTION EQUIPMENT	7
III.	ACCESS AND HAUL ROADS	7
IV.	MARKING AND LIGHTING OF VEHICLE	8
V.	DESCRIPTION OF PROPER VEHICLE OPERATIONS	8
VI.	REQUIRED ESCORTS	8
VII	. TRAINING REQUIREMENTS FOR VEHICLE DRIVERS	8
VII	I. SITUATIONAL AWARENESS	9
IX.	TWO-WAY RADIO COMMUNICATION PROCEDURES	9
Х.	MAINTENANCE OF THE SECURED AREA OF THE AIRPORT	9
XI.	USE OF A FLAG PERSON	9
8. WI	LDLIFE MANAGEMENT (SECTION 2.10)	9
Α.	TRASH	9
В.	STANDING WATER	.10
C.	TALL GRASS AND SEEDS	.10
D.	POORLY MAINTAINED FENCING AND GATES	.10
Ε. [	DISRUPTION OF EXISTING WILDLIFE HABITAT	.10
9. FO	REION OD ISOT DERDIG (SOD) MANAGEMENT (DEOTION 2.44)	
	REIGN OBJECT DEBRIS (FOD) MANAGEMENT (SECTION 2.11)	.10
10. H	HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.11)	.10 .10
10. H 11. N	HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.11) NOTIFICATION OF CONSTRUCTION ACTIVITIES (SECTION 2.13)	.10 .10 .10
10. H 11. M A.	HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.11) NOTIFICATION OF CONSTRUCTION ACTIVITIES (SECTION 2.13) LIST OF RESPONSIBLE REPRESENTATIVES	.10 .10 .10 .10
10. H 11. N A. B.	HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.11) NOTIFICATION OF CONSTRUCTION ACTIVITIES (SECTION 2.13) LIST OF RESPONSIBLE REPRESENTATIVES NOTAMS	.10 .10 .10 .10 .10
10. H 11. M A. B. C.	HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.11) NOTIFICATION OF CONSTRUCTION ACTIVITIES (SECTION 2.13) LIST OF RESPONSIBLE REPRESENTATIVES NOTAMS EMERGENCY NOTIFICATION PROCEDURES	.10 .10 .10 .10 .11
10. H 11. M A. B. C. D.	HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.11) HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.12) NOTIFICATION OF CONSTRUCTION ACTIVITIES (SECTION 2.13) LIST OF RESPONSIBLE REPRESENTATIVES NOTAMS EMERGENCY NOTIFICATION PROCEDURES COORDINATION WITH ARFF	.10 .10 .10 .10 .11 .11 .11
10. H 11. M A. B. C. D. E. M	HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.11) HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.12) NOTIFICATION OF CONSTRUCTION ACTIVITIES (SECTION 2.13) LIST OF RESPONSIBLE REPRESENTATIVES NOTAMS EMERGENCY NOTIFICATION PROCEDURES COORDINATION WITH ARFF	.10 .10 .10 .10 .11 .11 .11
10. H 11. M A. B. C. D. E. M 12. H	HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.11) HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.12) NOTIFICATION OF CONSTRUCTION ACTIVITIES (SECTION 2.13) LIST OF RESPONSIBLE REPRESENTATIVES NOTAMS EMERGENCY NOTIFICATION PROCEDURES COORDINATION WITH ARFF NOTIFICATION TO THE FAA NSPECTION REQUIREMENTS (SECTION 2.14)	.10 .10 .10 .10 .11 .11 .11 .11 .12
10. H 11. M A. B. C. D. E. M 12. H	AZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.11) HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.12) NOTIFICATION OF CONSTRUCTION ACTIVITIES (SECTION 2.13) LIST OF RESPONSIBLE REPRESENTATIVES NOTAMS EMERGENCY NOTIFICATION PROCEDURES COORDINATION WITH ARFF NOTIFICATION TO THE FAA NSPECTION TO THE FAA NSPECTION REQUIREMENTS (SECTION 2.14)	.10 .10 .10 .10 .11 .11 .11 .12 .12
10. H 11. M A. B. C. D. E. M 12. H A. B.	AZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.11) HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (SECTION 2.12) NOTIFICATION OF CONSTRUCTION ACTIVITIES (SECTION 2.13) LIST OF RESPONSIBLE REPRESENTATIVES NOTAMS EMERGENCY NOTIFICATION PROCEDURES. COORDINATION WITH ARFF. NOTIFICATION TO THE FAA NSPECTION REQUIREMENTS (SECTION 2.14). DAILY INSPECTIONS FINAL INSPECTIONS	.10 .10 .10 .11 .11 .11 .11 .12 .12

# SALEM MEMORIAL AIRPORT (K33)

# SALEM, MISSOURI

14.	PENALTIES (SECTION 2.16)	12
15.	SPECIAL CONDITIONS (SECTION 2.17)	12
16.	RUNWAY AND TAXIWAY VISUAL AIDS (SECTION 2.18)	13
Α.	GENERAL	13
В.	MARKINGS	13
C.	LIGHTING AND VISUAL NAVAIDS	13
D.	SIGNS	13
17.	MARKINGS AND SIGNS FOR ACCESS ROUTES (SECTION 2.19)	13
18.	HAZARD MARKING, LIGHTING, AND SIGNING (SECTION 2.20)	13
Α.	PURPOSE	13
В.	EQUIPMENT	14
19.	WORK ZONE LIGHTING FOR NIGHTTIME CONSTRUCTION (SECTION 2.21)	14
20.	PROTECTION OF RUNWAY AND TAXIWAY SAFETY AREAS (SECTION 2.22)	14
21.	OTHER LIMITATIONS ON CONSTRUCTION (SECTION 2.23)	15
Α.	PROHIBITIONS	15
В.	RESTRICTIONS	15

# TABLES

TABLE 1: AIRPORT OPERATIONS AFFECTED BY CONSTRUCTION	4
TABLE 2: RUNWAY SAFETY DIMENSIONS	4
TABLE 3: NAVAID FACILITY IMPACTS	5

# APPENDIX

I. SAFETY PLAN AND DETAILS



# 1. INTRODUCTION

FAA Advisory Circular 150/5370-2G has established criteria for the development and implementation of a Construction Safety and Phasing Plan (CSPP) at the Salem Memorial Airport (K33). This CSPP was prepared by Lochner, in coordination with the Sponsor, and was submitted to MoDOT for review and any comments are included in this document. The CSPP will be included in the contract documents. The Contractor is required to prepare a Safety Plan Compliance Document (SPCD) that details how the Contractor will comply with the CSPP. The SPCD shall be submitted to the Sponsor and the Engineer to review and approve prior to issuance of a Notice-To-Proceed.

# 2. PROJECT DESCRIPTION

The work to be completed consists of the following:

Base Bid

Construct 6 Unit T-Hangar

The construction time for this project is one hundred eighty (180) calendar days for submittals, concrete mix design, material procurement and delivery from the date of the Notice-to-Proceed for <u>PROCUREMENT</u> and ninety (90) calendar days for all construction activities from the date of the Notice-to-Proceed for <u>CONSTRUCTION</u>.

# 3. COORDINATION (Section 2.5)

The Sponsor will notify tenants and local users of the planned construction activities including phasing and safety at the airport. The CSPP Report, Safety Plans and Details, and airport operational safety will be reviewed in detail at the pre-construction meeting.

# A. CONTRACTOR PROGRESS MEETNGS

Periodic progress meetings shall be held with the Sponsor, Resident Project Representative (RPR) and/or Engineer, and the Contractor. The CSPP Report, Safety Plan and Details, and SPCD shall be standing agenda items. Airport tenants and users shall be invited to attend these meetings.

# B. SCOPE OR SCHEDULE CHANGES

If changes to the scope of work or construction schedule are proposed, portions of this document shall be revised and submitted for approval by the Sponsor and MoDOT.

# C. FAA ATO COORDINATION

The existing NAVAIDs are owned and maintained by the Sponsor and are not FAAowned equipment, therefore it will not be necessary to contact the Missouri FAA Sector Office.

# 4. PHASING (Section 2.6)

The construction sequence for this project shall consist of one (1) phase. All construction work listed on the Safety Plan and Details, and all bid items, shall be completed in the allotted ninety (90) calendar days for construction. During construction, Runway 17-35 will remain operational.

# A. PHASE ELEMENTS

# I. AREAS CLOSED TO AIRCRAFT OPERATION

Refer to Table 1: Airport Operations Affected by Construction in Section 5 and the Safety Plan and Details, included in Appendix I: Safety Plan and Details.

# II. DURATION OF CLOSURES

- Runway 17-35: OPEN for the duration of the project.
- Connecting Taxiways: OPEN for the duration of the project.
- · Hangar Taxilanes: OPEN for the duration of the project.
- Apron: OPEN for the duration of the project.
- T-Hangar Taxilanes: CLOSED for the duration of the project.

# III. TAXI ROUTES

Refer to Table 1 in Section 5 and the Safety Plan and Details.

# IV. ARFF ACCESS ROUTES

The Contractor shall not impede the local Police or Fire Departments access to the Airport during construction. The access route is similar to the Contractor's Haul Route depicted on the Safety Plan and Details.

# V. CONSTRUCTION STAGING AREAS

Refer to the Safety Plan and Details.

# VI. CONSTRUCTION ACCESS AND HAUL ROUTES

The Contractor shall access the site as indicated on the Safety Plan and Details.

#### VII. IMPACT TO NAVAIDS

Refer to Table 3: NAVAID Facility Impacts in Section 6.

#### VIII. LIGHTING AND MARKING CHANGES

The existing lighting system will not be altered with this project. The existing pavement markings will not be altered with this project.

#### IX. AVAILABLE RUNWAY LENGTH

This project does not include any changes to the length Runway 17-35.

#### X. REQUIRED HAZARD MARKING AND LIGHTING

The Contractor shall install low-profile barricades, acting as temporary airport visual aids, to depict airfield pavements that are closed. Refer to the Safety Plan and Details.

#### XI. LEAD TIMES FOR REQUIRED NOTIFICATIONS

Forty-five (45) days prior to the start of construction.

#### B. CONSTRUCTION SAFETY DRAWINGS

Detailed Safety Plan and Details are included within Appendix I of this report.

#### 5. AREA AND OPERATIONS AFFECTED BY CONSTRUCTION ACTIVITY (Section 2.7)

#### A. OPERATIONAL AFFECT TABLE

Contained within **Table 1: Airport Operations Affected by Construction** are the anticipated operational impacts to the Salem Memorial Airport during the course of the project. The Contractor is required to coordinate with the Sponsor and the Engineer and/or the RPR as detailed in Section 3 and 7 of this document prior to impacting operations on the airport.

Operational Requirement	Normal	Phase 1
Runway 17-35	2,998' x 60' ADG B-I	Open
Connecting Taxiways	TDG-2	Open
Hangar Taxilanes	TDG-2	Open
Apron	TDG-2	Open
T-Hangar Taxilanes	TDG-1 (East Side) TDG-2 (West Side)	Closed

#### Table 1: Airport Operations Affected by Construction

## B. RUNWAY SAFETY AREAS

The Contractor shall not enter into the Runway Object Free Area (R-OFA) of an active runway. The R-OFA, as well as the Runway Safety Area (RSA) and Runway Obstacle Free Zone (R-OFZ) dimensions, are listed in **Table 2: Runway Safety Dimensions** and are depicted on the Safety Plan and Details.

#### Table 2: Runway Safety Dimensions

Runway	Runway Dimensions	Aircraft Approach Category	Airplane Design Group	RSA Dimensions	OFA Dimensions	OFZ Dimensions
17-35	Length: 2,998' Width: 60'	В	I	Length: 3,478' Width: 120'	Length: 3,478' Width: 250'	Length: 3,398' Width: 250'

## C. RUNWAY APPROACH PROTECTION AREA

No construction activities are anticipated inside the approach/departure surfaces of Runway 17-35.

# D. IDENTIFICATION OF AFFECTED AREAS

Refer to the Safety Plan and Details.

#### E. MITIGATION OF EFFECTS

Refer to the Safety Plan and Details and **Table 1**. Some tenants may need to relocate their aircraft prior to construction if they intend to operate during this period.

#### 6. NAVIGATION AID (NAVAID) PROTECTION (Section 2.8)

## A. EFFECTS OF CONSTRUCTION TO NAVAIDS

Construction activities can have negative impacts on the functionality and serviceability of NAVAIDs. The Contractor must coordinate their work effort and limit their operations so that NAVAIDs are not impacted beyond what is planned. See **Table: 3 NAVAID Facility Impacts** for planned NAVAID impacts.

The Contractor will be required to limit operations so that material, equipment, and personnel do not enter NAVAID critical areas (as shown in the Safety Plan and Details if applicable) or disturb power to NAVAID facilities without prior coordination with Sponsor and the RPR and/or Engineer.

Facility Type	Phase Impacted	Impact	
Runway 17 PAPI	None	Facility will remain operational throughout construction.	
Runway 35 PAPI	None	Facility will remain operational throughout construction.	
Runway 17 REIL	None	Facility will remain operational throughout construction.	
Runway 35 REIL	None	Facility will remain operational throughout construction.	
Primary Wind Cone	None	Facility will remain operational throughout construction.	

#### **Table 3: NAVAID Facility Impacts**

#### B. COORDINATION OF NAVAID IMPACTS

Planned NAVAID impacts must be addressed in the Contractor's construction schedule. The Contractor is required to provide adequate notice, meeting the requirements stated in Section 4.A.XI, to the Sponsor and the Engineer prior to removing a NAVAID from service.

# 7. CONTRACTOR ACCESS (Section 2.9)

## A. LOCATION OF STOCKPILED CONSTRUCTION MATERIALS

The Contractor is limited to the placement of stockpiled materials at the locations shown within the Safety Plan and Details. For this project, stockpiled materials must be located within the Contractor's Staging Area. Additionally, the Contractor may place stockpiled materials (topsoil, aggregate, etc.) at any location within the project work limits as shown in the Safety Plan and Details while utilizing the materials. However, stockpiled materials are not permitted within the R-OFA of an operational runway unless approved by the FAA. The Contractor will be required to submit a SF-7460-1 form to the FAA for any stockpiles or equipment that exceeds 25 feet above the ground. Processing time for the SF-7460-1 form is 45-60 days.

#### I. HEIGHT RESTRICTIONS

Stockpiles shall have height limits of 25 feet (Refer to the Safety Plan and Details and Section 11.E).

#### II. WILDLIFE ATTRACTANT

The Contractor shall manage stockpiles and maintain positive drainage so they do not become wildlife attractions (Refer to Section 8.B).

#### III. FOREIGN OBJECT DEBRIS (FOD)

The Contractor shall manage stockpiles so they do not create FOD (Refer to Section 9).

#### IV. MARKING AND LIGHTING OF STOCKPILES

The Contractor will not be required to mark or light material stockpiles, so long as material stockpiles are not taller than 25 feet.

#### B. VEHICLE AND PEDESTRIAN OPERATIONS

Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the Airport Operations Area (AOA).

#### C. ACCESS TO AIRPORT OPERATIONS AREA (AOA)

The AOA is defined by the perimeter fence surrounding the airfield. Contractor access onto the AOA is limited to the entrance gate shown on the Safety Plan and Details.

#### I. CONSTRUCTION SITE PARKING

Contractor employee personal vehicles may not be parked or driven in the AOA. Employee parking areas are identified on the Safety Plan and Details as the Contractor's Staging Area. Contractor vehicles and equipment are allowed inside the AOA but confined to the project work limits. Equipment staging and parking areas are as shown in the Safety Plan and Details. Additionally, the Contractor may park vehicles anywhere within the project work area as defined by the construction limits on the Safety Plan and Details. Contractor vehicles and personnel should not be operating vehicles outside of the construction limits unless following a haul route as depicted on the Safety Plan and Details.

#### II. CONSTRUCTION EQUIPMENT

Except for concrete pavers, no crawler-type equipment will be allowed on any airport pavement surface shown to remain. Only rubber-tired vehicles under 35,000 lbs. GVWR will be allowed on airport pavement surfaces without prior Engineer approval. The Contractor shall be responsible for repairing any areas damaged by construction vehicles. Repairs shall be adequate to return the damaged area to a condition equal to or better than the condition prior to construction. Construction equipment not being used for daily operations shall be parked in the Contractor's Staging Area as depicted on the Safety Plan and Details.

#### III. ACCESS AND HAUL ROADS

The Safety Plan and Details depict haul routes for both overall site access from surrounding public roadways and haul routes to the individual phased work areas on the airfield. Contractor access and hauling operations are strictly limited to the haul routes shown. Any time a nonactive existing runway, taxiway, or apron pavement is traversed or crossed, the Contractor shall provide protection to the pavement edges.

Following completion of construction, the Contractor is required to restore the haul route to its original condition. The Contractor shall be responsible for the restoration and seeding of the Contractor's Staging Area, access roads and haul roads. Payment shall be made under Bid Item "Haul Road, Staging Area, and Site Restoration". Seeding shall be done in accordance with item T-901: Seeding and T-908: Mulching, of the Project Specifications, or by the discretion of the RPR.

The Contractor will be required to repair any damage to public and airport roads and crossings caused by the Contractor's trucks and equipment during the construction of the project. Repairs shall be adequate to return the roads to a condition equal to or better than the condition prior to damage. All repair work shall be at the Contractor's expense. The public roads and airport roads and crossings shall be video recorded in the presence of the RPR or the on-site representative prior to construction in order to document their existing condition.

#### IV. MARKING AND LIGHTING OF VEHICLE

All construction vehicles on site shall be flagged and have a flashing beacon at all times in accordance with AC 150/5210-5D.

#### V. DESCRIPTION OF PROPER VEHICLE OPERATIONS

The following rules of operation must be followed at all times when driving on the airport. Read each rule carefully and make sure you understand your responsibilities as a driver on the airport.

- a) No person shall operate motorized vehicles or equipment of any kind on the airport unless in possession of a valid operator's license as required by the State for the type of vehicle operated.
- b) No person shall operate a motor vehicle or any other motorized equipment of any kind on the airport in a reckless or negligent manner or without caution or in any manner that endangers or is likely to endanger persons or property, or in excess of 20 mph.
- c) No person shall fail to give pedestrians or aircraft the right-of-way over vehicular traffic. All ground vehicles shall pass to the rear of taxiing aircraft.
- d) No person under the influence of alcohol or drugs shall operate a motor vehicle on the airport.

#### VI. REQUIRED ESCORTS

Vehicle escorts are not required with this project.

#### VII. TRAINING REQUIREMENTS FOR VEHICLE DRIVERS

Construction personnel new to the construction site will be given an initial safety briefing during orientation, including requirements for operating a motor vehicle within the AOA.

#### VIII. SITUATIONAL AWARENESS

Vehicle drivers must confirm by personal observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway or taxiway or other area open to airport operations.

#### IX. TWO-WAY RADIO COMMUNICATION PROCEDURES

The Contractor shall monitor the Common Traffic Advisory Frequency (CTAF) frequency 122.90 at all times during construction and shall respond to any instructions from the Engineer and/or Airport Personnel immediately. The Contractor shall provide for their own radios capable of transmitting and receiving. The Contractor may utilize two way construction radios on the project provided that they do not interfere with existing Airport and FAA communication equipment and frequencies.

#### X. MAINTENANCE OF THE SECURED AREA OF THE AIRPORT

Except when moving materials, equipment, or personnel through the entrance gate identified on the Safety Plan and Details, the Contractor shall keep the access gate closed. The gate shall be locked during non-working hours.

#### XI. USE OF A FLAG PERSON

A Contractor furnished flagger is required when construction traffic is crossing through the Taxiway Object Free Area (T-OFA) within the construction limits. The Contractor furnished flagger shall alert construction crews when aircraft are within the vicinity and shall ensure no construction vehicles or equipment are within the T-OFA at the time of aircraft passage. The Contractor furnished flagger shall have knowledge of airport operations and procedures and shall undergo airport knowledge and basic training prior to the beginning of the project. This training shall be completed at the expense of the Contractor. The Contractor shall confirm safety information with the RPR and the Sponsor prior to teaching the Contractor furnished flagger.

#### 8. WILDLIFE MANAGEMENT (Section 2.10)

#### A. TRASH

All trash and food waste must be collected each day from construction personnel activities and removed off airport property.

# B. STANDING WATER

All grading operations shall maintain positive drainage so as not to create ponding or other wildlife attractions.

#### C. TALL GRASS AND SEEDS

The Contractor will be required to establish a uniform stand of grass on all disturbed areas resulting from construction activities. The airport maintenance personnel shall be responsible for mowing the airfield.

# D. POORLY MAINTAINED FENCING AND GATES

If any existing fence and/or gate is damaged during construction the Contractor shall repair it immediately at the Contractor's expense to the satisfaction of the Engineer.

## E. DISRUPTION OF EXISTING WILDLIFE HABITAT

No existing wildlife habitat will be impacted by the construction activities associated with this project.

# 9. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT (Section 2.11)

The Contractor shall keep the project area free from loose or blowable debris at all times. This work shall be considered subsidiary to other items in the contract. All pavements used by the Contractor shall be kept free of debris and thoroughly cleaned by the Contractor.

# 10. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT (Section 2.12)

The Contractor shall handle all the hazardous material (HAZMAT) management with the relevant authorities and pursuant to local, state, and federal rules and regulations. Contractor equipment fueling operations shall be confined to the Contractor's Staging Area. All pavement used by the Contractor shall be kept free of debris and thoroughly cleaned by the Contractor.

# 11. NOTIFICATION OF CONSTRUCTION ACTIVITIES (Section 2.13)

# A. LIST OF RESPONSIBLE REPRESENTATIVES

The Contractor shall provide, to the Sponsor and the RPR, the name and telephone number of the person to act as the Contractor's representative, available 24 hours per day, should problems pertaining to the construction work arise which would require the Contractor's immediate attention.
#### B. NOTAMS

The Contractor is required to provide adequate notice, meeting the requirements stated in Section 4.A.XI, to the Engineer, RPR, and the Sponsor so that the Sponsor can issue all NOTAMs to Flight Service with regards to the construction of the airport.

Only the airport operator may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway. The airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (approach control or air traffic control center), and must provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM.

#### C. EMERGENCY NOTIFICATION PROCEDURES

In the event of an Emergency the Contractor shall call 911. Once the emergency personnel have been notified, the Contractor shall contact **Ms. Sally Burbridge**, **Sponsor (573) 729-2428** and **Larry Wagner**, **Lochner (816) 945-5840**. The Sponsor will then contact additional authorities as necessary. The Sponsor shall be notified of any conditions that adversely impact operational safety on the airport. Any hazardous conditions on the airport movement areas shall be reported to the Sponsor immediately.

#### D. COORDINATION WITH ARFF

The Contractor shall provide the local Police and Fire Department personnel with the Safety Plan and Details and details of any interruption of services (e.g. fire hydrant shut off or new emergency routes due to construction activities at the Airport).

#### E. NOTIFICATION TO THE FAA

The Contractor will be required to maintain the stockpiles, etc. clear of the existing Runway 17-35 Primary Surface. The primary surface for Runway 17-35 extends 250 foot at centerline grade from the runway centerline, then up at 7:1 slope. Airspace approval from the FAA will be required prior to construction of batch plants, stockpiles, etc. The Contractor will be required to submit a SF-7460-1 form to the FAA for any equipment (boom truck, batch plant, etc.) that exceeds 25 feet above ground line. Processing time for the SF-7460-1 form is typically 45-60 days.

#### 12. INSPECTION REQUIREMENTS (Section 2.14)

#### A. DAILY INSPECTIONS

The RPR or the Sponsor will conduct daily inspections. The Contractor's SPCD shall include daily inspections made and recorded by the Contractor's on-site representative for the duration of the project. These inspections shall include the review for compliance of the CSPP Report.

#### B. FINAL INSPECTIONS

The RPR and/or Engineer and the Sponsor will conduct a final inspection of the project after substantial completion is reached. The final inspection will note any deficiencies or safety concerns that need to be addressed prior to re-opening airport pavements. The airport pavements shall not be re-opened until the pavement is swept free of loose or blowable debris. All pavement edges shall have no greater than a 1.5-inch edge drop.

#### 13. UNDERGROUND UTILITIES (Section 2.15)

Extreme caution shall be used when working near existing airport light fixtures, underground electrical ducts, underground electrical cable, and any other airport fixtures. Should damage occur to any of these items, they will be replaced immediately at the Contractor's expense to the satisfaction of the RPR.

The Contractor shall notify Kansas One Call at 1-800-344-7233 a minimum of 48 hours prior to any construction activities to allow sufficient time to locate and mark any existing utilities which might be affected by this project.

#### 14. PENALTIES (Section 2.16)

The Contractors' personnel shall comply with the airport safety plan and the airport security measures as stated by the Sponsor. Noncompliance with the airport rules and regulations and the Safety Plan and Details will result in work being suspended until appropriate remedies are taken or put in place to the satisfaction of the RPR and/or Engineer. The Contractor shall remove personnel who are noncompliant with the airport rules, regulations, and Safety Plan and Details. Any costs involved with noncompliance to the Safety Plan and Details shall solely be borne by the Contractor.

#### 15. SPECIAL CONDITIONS (Section 2.17)

Air Operations will not be affected on Runway 17-35 during construction. During construction, Runway 17-35 will remain operational. The Contractor shall review Section 80-04 of the General Provisions of the Project Specifications.

#### 16. RUNWAY AND TAXIWAY VISUAL AIDS (Section 2.18)

#### A. GENERAL

Airport markings, lighting, signs, and visual NAVAIDs directing aircraft to closed areas of the airport will be covered, removed, or disabled during construction. All markings, lighting, signs, and visual NAVAIDs must be secured in place to prevent movement by prop wash, jet blast, wing vortices, and other wind currents and constructed of materials that will minimize damage to an aircraft in the event of inadvertent contact.

#### B. MARKINGS

Low profile barricades shall comply with the details shown on the Safety Plan and Details. Low profile barricades shall be maintained as needed by the Contractor throughout the duration of the project.

#### C. LIGHTING AND VISUAL NAVAIDS

Refer to Section 6 of the CSPP Report for NAVAID status. The Runway 17-35 lighting system and NAVAID systems will remain operational throughout the project.

#### D. SIGNS

Holding position signs will not need to be covered as Runway 17-35 will remain operational throughout construction.

#### 17. MARKINGS AND SIGNS FOR ACCESS ROUTES (Section 2.19)

The Contractor may use cones to delineate the access route across the airfield. The Contractor shall follow the set haul route as defined in the Safety Plan and Details. Any temporary pavement markings or signs used to delineate the access route shall conform to AC 150/5340-18 and, to the extent practicable, with the MUTCD and/or State highway specifications.

#### 18. HAZARD MARKING, LIGHTING, AND SIGNING (Section 2.20)

#### A. PURPOSE

The Contractor shall install low profile barricades no more than 18 inches high, with flashing red lights, for all pavement closures. Cones may be utilized to establish limits of construction haul routes. Barricade spacing may be varied (made smaller) to fit pavement widths but may not exceed 12 feet center to center. Refer to the Safety Plan and Details for the exact locations of the low profile barricades.

The Contractor shall place low profile barricades prior to construction. All construction activities shall conform to AC 150/5370-2G. The Contractors Representative shall be available 24 hours per day for emergency maintenance of airport hazard lighting and barricades.

#### B. EQUIPMENT

All vehicles on site shall be flagged and have a flashing beacon at all times in accordance with AC 150/5210-5D. All equipment, including low profile barricades, must be sturdy enough to remain in place when subjected to typical winds, prop wash, and jet blast.

#### 19. WORK ZONE LIGHTING FOR NIGHTTIME CONSTRUCTION (Section 2.21)

Lighting equipment must adequately illuminate the work area if the construction is to be performed during nighttime hours. All support equipment must be equipped with artificial illumination to safely illuminate the area immediately surrounding their work areas. Light towers shall be removed from the construction site when the area is reopened to aircraft operations. Construction lighting units should be identified and generally located on the construction phasing plans in relationship to the ATCT (if applicable) and active runways and taxiways. If the Contractor intends to perform night work, a lighting plan shall be submitted and approved by the Engineer prior to night work.

Nighttime construction operations must be approved by the RPR and Sponsor.

#### 20. PROTECTION OF RUNWAY AND TAXIWAY SAFETY AREAS (Section 2.22)

The Runway Safety Area (RSA), Runway Obstacle Free Zone (R-OFZ), and Runway Object Free Area (R-OFA) are shown on the Safety Plan and Details. Any equipment used by the Contractor shall be removed from the R-OFA when not in use. No work shall be conducted within the R-OFA of an active runway. No construction may occur within a Taxiway Safety Area (TSA) while the taxiway is open for aircraft operations. Open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open. The RSA and TSA must be cleared and graded to have no potentially hazardous ruts, humps, depressions, or other surface variations under dry conditions. The RSA and TSA must be capable, under dry conditions, of supporting snow removal equipment, aircraft rescue, and firefighting equipment and the occasional passage of aircraft without causing structural damage to the aircraft. Construction activities are not anticipated within the approach/departure surfaces of Runway 17-35, therefore, no adverse effects are anticipated.

#### 21. OTHER LIMITATIONS ON CONSTRUCTION (Section 2.23)

#### A. PROHIBITIONS

- I. The Contractor may not use tall equipment (cranes, concrete pumps, etc.) in excess of 25 feet inside the AOA unless a 7460-1 determination letter is issued for such equipment.
- II. The use of open flame welding or torches is prohibited unless fire safety precautions are provided and airport operator has approved their use. The use of "flare pots" and "electrical blasting" is prohibited for this project.

#### B. RESTRICTIONS

None at this time.

# **APPENDIX I**

## SAFETY PLAN AND DETAILS





# LOCHNER

16105 W. 113th Street Suite 107 Lenexa, KS 66219 816.945.5840 www.hwlochner.com

Project No. 000015546





# Advisory Circular

Subject: Operational Safety on Airports During Construction Date: 12/13/2017 Initiated By: AAS-100 AC No: 150/5370-2G Change:

#### 1 Purpose.

This AC sets forth guidelines for operational safety on airports during construction.

#### 2 Cancellation.

This AC cancels AC 150/5370-2F, Operational Safety on Airports during Construction, dated September 29, 2011.

#### 3 Application.

This AC assists airport operators in complying with Title 14 Code of Federal Regulations (CFR) Part 139, *Certification of Airports*. For those certificated airports, this AC provides one way, but not the only way, of meeting those requirements. The use of this AC is mandatory for those airport construction projects receiving funds under the Airport Improvement Program (AIP). See Grant Assurance No. 34, *Policies, Standards, and Specifications*. While we do not require non-certificated airports without grant agreements or airports using Passenger Facility Charge (PFC) Program funds for construction projects to adhere to these guidelines, we recommend that they do so to help these airports maintain operational safety during construction.

#### 4 Related Documents.

ACs and Orders referenced in the text of this AC do not include a revision letter, as they refer to the latest version. <u>Appendix A</u> contains a list of reading material on airport construction, design, and potential safety hazards during construction, as well as instructions for obtaining these documents.

#### 5 Principal Changes.

The AC incorporates the following principal changes:

1. Notification about impacts to both airport owned and FAA-owned NAVAIDs was added. See paragraph 2.13.5.3, NAVAIDs.

- Guidance for the use of orange construction signs was added. See paragraph 2.18.4.2, Temporary Signs.
- Open trenches or excavations may be permitted in the taxiway safety area while the taxiway is open to aircraft operations, subject to restrictions. See paragraph <u>2.22.3.4</u>, Excavations.
- 4. Guidance for temporary shortened runways and displaced thresholds has been enhanced. See Figure 2-1 and Figure 2-2.
- 5. Figures have been improved and a new <u>Appendix F</u> on the placement of orange construction signs has been added.

Hyperlinks (allowing the reader to access documents located on the internet and to maneuver within this document) are provided throughout this document and are identified with underlined text. When navigating within this document, return to the previously viewed page by pressing the "ALT" and " $\leftarrow$ " keys simultaneously.

Figures in this document are schematic representations and are not to scale.

#### 6 Use of Metrics.

Throughout this AC, U.S. customary units are used followed with "soft" (rounded) conversion to metric units. The U.S. customary units govern.

#### 7 Where to Find this AC.

You can view a list of all ACs at <u>http://www.faa.gov/regulations\_policies/advisory\_circulars/</u>. You can view the Federal Aviation Regulations at <u>http://www.faa.gov/regulations\_policies/faa\_regulations/</u>.

#### 8 Feedback on this AC.

If you have suggestions for improving this AC, you may use the <u>Advisory Circular</u> <u>Feedback</u> form at the end of this AC.

ohn R. Dermody

Director of Airport Safety and Standards

#### CONTENTS

Paragraph			
Cha	apte	r 1. Planning an Airfield Construction Project1-1	
	1.1	Overview1-1	
	1.2	Plan for Safety1-1	
	1.3	Develop a Construction Safety and Phasing Plan (CSPP)1-3	
	1.4	Who Is Responsible for Safety During Construction?1-4	
Ch	apte	r 2. Construction Safety and Phasing Plans2-1	
	2.1	Overview	
	2.2	Assume Responsibility	
	2.3	Submit the CSPP	
	2.4	Meet CSPP Requirements	
	2.5	Coordination	
	2.6	Phasing2-7	
	2.7	Areas and Operations Affected by Construction Activity	
	2.8	Navigation Aid (NAVAID) Protection2-11	
	2.9	Contractor Access	
	2.10	Wildlife Management	
	2.11	Foreign Object Debris (FOD) Management	
	2.12	Hazardous Materials (HAZMAT) Management2-16	
	2.13	Notification of Construction Activities	
	2.14	Inspection Requirements	
	2.15	Underground Utilities	
	2.16	Penalties	
	2.17	Special Conditions	
J.	2.18	Runway and Taxiway Visual Aids	
	2.19	Marking and Signs for Access Routes	
	2.20	Hazard Marking, Lighting and Signing	
	2.21	Work Zone Lighting for Nighttime Construction2-32	
2	2.22	Protection of Runway and Taxiway Safety Areas	
d	2.23	Other Limitations on Construction	

Chapte	r 3. Guidelines for Writing a CSPP 3-1
3.1	General Requirements
3.2	Applicability of Subjects
3.3	Graphical Representations
3.4	Reference Documents
3.5	Restrictions
3.6	Coordination
3.7	Phasing
3.8	Areas and Operations Affected by Construction
3.9	NAVAID Protection
3.10	Contractor Access
3.11	Wildlife Management
3.12	FOD Management
3.13	HAZMAT Management
3.14	Notification of Construction Activities
3.15	Inspection Requirements
3.16	Underground Utilities
3.17	Penalties
3.18	Special Conditions
3.19	Runway and Taxiway Visual Aids
3.20	Marking and Signs for Access Routes
3.21	Hazard Marking and Lighting
3.22	Work Zone Lighting for Nighttime Construction
3.23	Protection of Runway and Taxiway Safety Areas
3.24	Other Limitations on Construction
Append	dix A. Related Reading Material A-1
Append	dix B. Terms and AcronymsB-1
Append	dix C. Safety and Phasing Plan ChecklistC-1
Append	dix D. Construction Project Daily Safety Inspection Checklist
Append	lix E. Sample Operational Effects TableE-1
Append	lix F. Orange Construction SignsF-1

#### FIGURES

Number	Page
Figure 2-1. Temporary Partially Closed Runway	2-9
Figure 2-2. Temporary Displaced Threshold	2-10
Figure 2-3. Markings for a Temporarily Closed Runway	2-21
Figure 2-4. Temporary Taxiway Closure	2-22
Figure 2-5. Temporary Outboard White Threshold Bars and Yellow Arrowheads	2-24
Figure 2-6. Lighted X in Daytime	2-26
Figure 2-7. Lighted X at Night	2-26
Figure 2-8. Interlocking Barricades	2-31
Figure 2-9. Low Profile Barricades	2-32
Figure E-1. Phase I Example	E-1
Figure E-2. Phase II Example	E-2
Figure E-3. Phase III Example	E-3
Figure F-1. Approved Sign Legends	F-1
Figure F-2. Orange Construction Sign Example 1	F-2
Figure F-3. Orange Construction Sign Example 2	F-3

#### TABLES

Number	Page
Table A-1. FAA Publications	A-1
Table A-2. Code of Federal Regulation	A-3
Table B-1. Terms and Acronyms	B-1
Table C-1. CSPP Checklist	C-1
Table D-1. Potentially Hazardous Conditions	D-1
Table E-1. Operational Effects Table	E-4
Table E-2. Runway and Taxiway Edge Protection	E-6
Table E-3. Protection Prior to Runway Threshold	E-7

## Page Intentionally Blank

#### CHAPTER 1. PLANNING AN AIRFIELD CONSTRUCTION PROJECT

#### 1.1 Overview.

Airports are complex environments, and procedures and conditions associated with construction activities often affect aircraft operations and can jeopardize operational safety. Safety considerations are paramount and may make operational impacts unavoidable. However, careful planning, scheduling, and coordination of construction activities can minimize disruption of normal aircraft operations and avoid situations that compromise the airport's operational safety. The airport operator must understand how construction activities and aircraft operations affect one another to be able to develop an effective plan to complete the project. While the guidance in this AC is primarily used for construction operations, the concepts, methods and procedures described may also enhance the day-to-day airport maintenance operations, such as lighting maintenance and snow removal operations.

#### 1.2 Plan for Safety.

Safety, maintaining aircraft operations, and construction costs are all interrelated. Since safety must not be compromised, the airport operator must strike a balance between maintaining aircraft operations and construction costs. This balance will vary widely depending on the operational needs and resources of the airport and will require early coordination with airport users and the FAA. As the project design progresses, the necessary construction locations, activities, and associated costs will be identified and their impact to airport operations must be assessed. Adjustments are made to the proposed construction activities, often by phasing the project, and/or to airport operational safety. This planning effort will ultimately result in a project Construction Safety and Phasing Plan (CSPP). The development of the CSPP takes place through the following five steps:

#### 1.2.1 Identify Affected Areas.

The airport operator must determine the geographic areas on the airport affected by the construction project. Some, such as a runway extension, will be defined by the project. Others may be variable, such as the location of haul routes and material stockpiles.

#### 1.2.2 Describe Current Operations.

Identify the normal airport operations in each affected area for each phase of the project. This becomes the baseline from which the impact on operations by construction activities can be measured. This should include a narrative of the typical users and aircraft operating within the affected areas. It should also include information related to airport operations: the Aircraft Approach Category (AAC) and Airplane Design Group (ADG) of the airplanes that operate on each runway; the ADG and Taxiway Design Group (TDG)<sup>1</sup> for each affected taxiway; designated approach visibility minimums;

<sup>&</sup>lt;sup>1</sup> Find Taxiway Design Group information in <u>AC 150/5300-13</u>, Airport Design.

available approach and departure procedures; most demanding aircraft; declared distances; available air traffic control services; airport Surface Movement Guidance and Control System (SMGCS) plan; and others. The applicable seasons, days and times for certain operations should also be identified as applicable.

#### 1.2.3 Allow for Temporary Changes to Operations.

To the extent practical, current airport operations should be maintained during the construction. In consultation with airport users, Aircraft Rescue and Fire Fighting (ARFF) personnel, and FAA Air Traffic Organization (ATO) personnel, the airport operator should identify and prioritize the airport's most important operations. The construction activities should be planned, through project phasing if necessary, to safely accommodate these operations. When the construction activities cannot be adjusted to safely maintain current operations, regardless of their importance, then the operations must be revised accordingly. Allowable changes include temporary revisions to approach procedures, restricting certain aircraft to specific runways and taxiways, suspension of certain operations, decreased weights for some aircraft due to shortened runways, and other changes. An example of a table showing temporary operations versus current operations is shown in Appendix E.

#### 1.2.4 <u>Take Required Measures to Revise Operations.</u>

Once the level and type of aircraft operations to be maintained are identified, the airport operator must determine the measures required to safely conduct the planned operations during the construction. These measures will result in associated costs, which can be broadly interpreted to include not only direct construction costs, but also loss of revenue from impacted operations. Analysis of costs may indicate a need to reevaluate allowable changes to operations. As aircraft operations and allowable changes will vary widely among airports, this AC presents general guidance on those subjects.

#### 1.2.5 Manage Safety Risk.

The FAA is committed to incorporating proactive safety risk management (SRM) tools into its decision-making processes. FAA Order 5200.11, *FAA Airports (ARP) Safety Management System (SMS)*, requires the FAA to conduct a Safety Assessment for certain triggering actions. Certain airport projects may require the airport operator to provide a Project Proposal Summary to help the FAA determine whether a Safety Assessment is required prior to FAA approval of the CSPP. The airport operator must coordinate with the appropriate FAA Airports Regional or District Office early in the development of the CSPP to determine the need for a Safety Risk Assessment. If the FAA requires an assessment, the airport operator must at a minimum:

- 1. Notify the appropriate FAA Airports Regional or District Office during the project "scope development" phase of any project requiring a CSPP.
- 2. Provide documents identified by the FAA as necessary to conduct SRM.
- 3. Participate in the SRM process for airport projects.
- 4. Provide a representative to participate on the SRM panel.

5. Ensure that all applicable SRM identified risks elements are recorded and mitigated within the CSPP.

#### 1.3 Develop a Construction Safety and Phasing Plan (CSPP).

Development of an effective CSPP will require familiarity with many other documents referenced throughout this AC. See <u>Appendix A</u> for a list of related reading material.

#### 1.3.1 List Requirements.

A CSPP must be developed for each on-airfield construction project funded by the Airport Improvement Program (AIP) or located on an airport certificated under Part 139. For on-airfield construction projects at Part 139 airports funded without AIP funds, the preparation of a CSPP represents an acceptable method the certificate holder may use to meet Part 139 requirements during airfield construction activity. As per FAA Order 5200.11, projects that require Safety Assessments do not include construction, rehabilitation, or change of any facility that is entirely outside the air operations area, does not involve any expansion of the facility envelope and does not involve construction equipment, haul routes or placement of material in locations that require access to the air operations area, increase the facility envelope, or impact line-of-sight. Such facilities may include passenger terminals and parking or other structures. However, extraordinary circumstances may trigger the need for a Safety Assessment and a CSPP. The CSPP is subject to subsequent review and approval under the FAA's Safety Risk Management procedures (see paragraph <u>1.2.5</u>).

#### 1.3.2 Prepare a Safety Plan Compliance Document (SPCD).

The Safety Plan Compliance Document (SPCD) details how the contractor will comply with the CSPP. Also, it will not be possible to determine all safety plan details (for example specific hazard equipment and lighting, contractor's points of contact, construction equipment heights) during the development of the CSPP. The successful contractor must define such details by preparing an SPCD that the airport operator reviews for approval prior to issuance of a notice-to-proceed. The SPCD is a subset of the CSPP, similar to how a shop drawing review is a subset to the technical specifications.

#### 1.3.3 Assume Responsibility for the CSPP.

The airport operator is responsible for establishing and enforcing the CSPP. The airport operator may use the services of an engineering consultant to help develop the CSPP. However, writing the CSPP cannot be delegated to the construction contractor. Only those details the airport operator determines cannot be addressed before contract award are developed by the contractor and submitted for approval as the SPCD. The SPCD does not restate nor propose differences to provisions already addressed in the CSPP.

#### 1.4 Who Is Responsible for Safety During Construction?

#### 1.4.1 Establish a Safety Culture.

Everyone has a role in operational safety on airports during construction: the airport operator, the airport's consultants, the construction contractor and subcontractors, airport users, airport tenants, ARFF personnel, Air Traffic personnel, including Technical Operations personnel, FAA Airports Division personnel, and others, such as military personnel at any airport supporting military operations (e.g. national guard or a joint use facility). Close communication and coordination between all affected parties is the key to maintaining safe operations. Such communication and coordination should start at the project scoping meeting and continue through the completion of the project. The airport operator and contractor should conduct onsite safety inspections throughout the project and immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

#### 1.4.2 Assess Airport Operator's Responsibilities.

An airport operator has overall responsibility for all activities on an airport, including construction. This includes the predesign, design, preconstruction, construction, and inspection phases. Additional information on the responsibilities listed below can be found throughout this AC. The airport operator must:

- 1.4.2.1 Develop a CSPP that complies with the safety guidelines of <u>Chapter 2</u>, <u>Construction Safety and Phasing Plans</u>, and <u>Chapter 3</u>, <u>Guidelines for</u> <u>Writing a CSPP</u>. The airport operator may develop the CSPP internally or have a consultant develop the CSPP for approval by the airport operator. For tenant sponsored projects, approve a CSPP developed by the tenant or its consultant.
- 1.4.2.2 Require, review and approve the SPCD by the contractor that indicates how it will comply with the CSPP and provides details that cannot be determined before contract award.
- 1.4.2.3 Convene a preconstruction meeting with the construction contractor, consultant, airport employees and, if appropriate, tenant sponsor and other tenants to review and discuss project safety before beginning construction activity. The appropriate FAA representatives should be invited to attend the meeting. See <u>AC 150/5370-12</u>, *Quality Management for Federally Funded Airport Construction Projects*. (Note "FAA" refers to the Airports Regional or District Office, the Air Traffic Organization, Flight Standards Service, and other offices that support airport operations, flight regulations, and construction/environmental policies.)
- 1.4.2.4 Ensure contact information is accurate for each representative/point of contact identified in the CSPP and SPCD.
- 1.4.2.5 Hold weekly or, if necessary, daily safety meetings with all affected parties to coordinate activities.
- 1.4.2.6 Notify users, ARFF personnel, and FAA ATO personnel of construction and conditions that may adversely affect the operational safety of the airport via Notices to Airmen (NOTAM) and other methods, as appropriate. Convene a meeting for review and discussion if necessary.
- 1.4.2.7 Ensure construction personnel know applicable airport procedures and changes to those procedures that may affect their work.
- 1.4.2.8 Ensure that all temporary construction signs are located per the scheduled list for each phase of the project.
- 1.4.2.9 Ensure construction contractors and subcontractors undergo training required by the CSPP and SPCD.
- 1.4.2.10 Ensure vehicle and pedestrian operations addressed in the CSPP and SPCD are coordinated with airport tenants, the airport traffic control tower (ATCT), and construction contractors.
- 1.4.2.11 At certificated airports, ensure each CSPP and SPCD is consistent with Part 139.

- 1.4.2.12 Conduct inspections sufficiently frequently to ensure construction contractors and tenants comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
- 1.4.2.13 Take immediate action to resolve safety deficiencies.
- 1.4.2.14 At airports subject to 49 CFR Part 1542, *Airport Security*, ensure construction access complies with the security requirements of that regulation.
- 1.4.2.15 Notify appropriate parties when conditions exist that invoke provisions of the CSPP and SPCD (for example, implementation of low-visibility operations).
- 1.4.2.16 Ensure prompt submittal of a Notice of Proposed Construction or Alteration (Form 7460-1) for conducting an aeronautical study of potential obstructions such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. A separate form may be filed for each potential obstruction, or one form may be filed describing the entire construction area and maximum equipment height. In the latter case, a separate form must be filed for any object beyond or higher than the originally evaluated area/height. The FAA encourages online submittal of forms for expediency at <u>https://oeaaa.faa.gov/oeaaa/external/portal.jsp</u>. The appropriate FAA Airports Regional or District Office can provide assistance in determining which objects require an aeronautical study.
- 1.4.2.17 Ensure prompt transmission of the Airport Sponsor Strategic Event Submission, FAA Form 6000-26, located at <u>https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT\_SPONSOR\_STR</u> <u>ATEGIC\_EVENT\_SUBMISSION\_FORM.pdf</u>, to assure proper coordination for NAS Strategic Interruption per Service Level Agreement with ATO.
- 1.4.2.18 Promptly notify the FAA Airports Regional or District Office of any proposed changes to the CSPP prior to implementation of the change. Changes to the CSPP require review and approval by the airport operator and the FAA. The FAA Airports Regional or District office will determine if further coordination within the FAA is needed. Coordinate with appropriate local and other federal government agencies, such as Environmental Protection Agency (EPA), Occupational Safety and Health Administration (OSHA), Transportation Security Administration (TSA), and the state environmental agency.

#### 1.4.3 Define Construction Contractor's Responsibilities.

The contractor is responsible for complying with the CSPP and SPCD. The contractor must:

- 1.4.3.1 Submit a Safety Plan Compliance Document (SPCD) to the airport operator describing how it will comply with the requirements of the CSPP and supply any details that could not be determined before contract award. The SPCD must include a certification statement by the contractor, indicating an understanding of the operational safety requirements of the CSPP and the assertion of compliance with the approved CSPP and SPCD unless written approval is granted by the airport operator. Any construction practice proposed by the contractor that does not conform to the CSPP and SPCD may impact the airport's operational safety and will require a revision to the CSPP and SPCD and re-coordination with the airport operator and the FAA in advance.
- 1.4.3.2 Have available at all times copies of the CSPP and SPCD for reference by the airport operator and its representatives, and by subcontractors and contractor employees.
- 1.4.3.3 Ensure that construction personnel are familiar with safety procedures and regulations on the airport. Provide a point of contact who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport. Many projects will require 24-hour coverage.
- 1.4.3.4 Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
- 1.4.3.5 Conduct sufficient inspections to ensure construction personnel comply with the CSPP and SPCD and that there are no altered construction activities that could create potential safety hazards.
- 1.4.3.6 Restrict movement of construction vehicles and personnel to permitted construction areas by flagging, barricading, erecting temporary fencing, or providing escorts, as appropriate, and as specified in the CSPP and SPCD.
- 1.4.3.7 Ensure that no contractor employees, employees of subcontractors or suppliers, or other persons enter any part of the air operations area (AOA) from the construction site unless authorized.
- 1.4.3.8 Ensure prompt submittal through the airport operator of Form 7460-1 for the purpose of conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, and other equipment), stock piles, and haul routes when different from cases previously filed by the airport operator. The FAA encourages online submittal of forms for expediency at <u>https://oeaaa.faa.gov/oeaaa/external/portal.jsp</u>.

- 1.4.3.9 Ensure that all necessary safety mitigations are understood by all parties involved, and any special requirements of each construction phase will be fulfilled per the approved timeframe.
- 1.4.3.10 Participate in pre-construction meetings to review construction limits, safety mitigations, NOTAMs, and understand all special airport operational needs during each phase of the project.

#### 1.4.4 Define Tenant's Responsibilities.

If planning construction activities on leased property, Airport tenants, such as airline operators, fixed base operators, and FAA ATO/Technical Operations sponsoring construction are strongly encouraged to:

- 1. Develop, or have a consultant develop, a project specific CSPP and submit it to the airport operator. The airport operator may forgo a complete CSPP submittal and instead incorporate appropriate operational safety principles and measures addressed in the advisory circular within their tenant lease agreements.
- 2. In coordination with its contractor, develop an SPCD and submit it to the airport operator for approval issued prior to issuance of a Notice to Proceed.
- 3. Ensure that construction personnel are familiar with safety procedures and regulations on the airport during all phases of the construction.
- Provide a point of contact of who will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational safety of the airport.
- 5. Identify in the SPCD the contractor's on-site employees responsible for monitoring compliance with the CSPP and SPCD during construction. At least one of these employees must be on-site when active construction is taking place.
- 6. Ensure that no tenant or contractor employees, employees of subcontractors or suppliers, or any other persons enter any part of the AOA from the construction site unless authorized.
- Restrict movement of construction vehicles to construction areas by flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate, as specified in the CSPP and SPCD.
- Ensure prompt submittal through the airport operator of Form 7460-1 for conducting an aeronautical study of contractor equipment such as tall equipment (cranes, concrete pumps, other), stock piles, and haul routes. The FAA encourages online submittal of forms for expediency at https://oeaaa.faa.gov/oeaaa/external/portal.jsp.
- Participate in pre-construction meetings to review construction limits, safety
  mitigations, NOTAMs, and understand all special airport operational needs during
  each phase of the project.

#### CHAPTER 2. CONSTRUCTION SAFETY AND PHASING PLANS

#### 2.1 Overview.

Aviation safety is the primary consideration at airports, especially during construction. The airport operator's CSPP and the contractor's Safety Plan Compliance Document (SPCD) are the primary tools to ensure safety compliance when coordinating construction activities with airport operations. These documents identify all aspects of the construction project that pose a potential safety hazard to airport operations and outline respective mitigation procedures for each hazard. They must provide information necessary for the Airport Operations department to conduct airfield inspections and expeditiously identify and correct unsafe conditions during construction. All aviation safety provisions included within the project drawings, contract specifications, and other related documents must also be reflected in the CSPP and SPCD.

#### 2.2 Assume Responsibility.

Operational safety on the airport remains the airport operator's responsibility at all times. The airport operator must develop, certify, and submit for FAA approval each CSPP. It is the airport operator's responsibility to apply the requirements of the FAA approved CSPP. The airport operator must revise the CSPP when conditions warrant changes and must submit the revised CSPP to the FAA for approval. The airport operator must also require and approve a SPCD from the project contractor.

#### 2.3 Submit the CSPP.

Construction Safety and Phasing Plans should be developed concurrently with the project design. Milestone versions of the CSPP should be submitted for review and approval as follows. While these milestones are not mandatory, early submission will help to avoid delays. Submittals are preferred in  $8.5 \times 11$  inch or  $11 \times 17$  inch format for compatibility with the FAA's Obstruction Evaluation / Airport Airspace Analysis (OE / AAA) process.

#### 2.3.1 Submit an Outline/Draft.

By the time approximately 25% to 30% of the project design is completed, the principal elements of the CSPP should be established. Airport operators are encouraged to submit an outline or draft, detailing all CSPP provisions developed to date, to the FAA for review at this stage of the project design.

#### 2.3.2 Submit a CSPP.

The CSPP should be formally submitted for FAA approval when the project design is 80 percent to 90 percent complete. Since provisions in the CSPP will influence contract costs, it is important to obtain FAA approval in time to include all such provisions in the procurement contract.

#### 2.3.3 Submit an SPCD.

The contractor should submit the SPCD to the airport operator for approval to be issued prior to the Notice to Proceed.

#### 2.3.4 Submit CSPP Revisions.

All revisions to a previously approved CSPP must be re-submitted to the FAA for review and approval/disapproval action.

#### 2.4 Meet CSPP Requirements.

- 2.4.1 To the extent possible, the CSPP should address the following as outlined in <u>Chapter 3</u>, <u>Guidelines for Writing a CSPP</u>. Details that cannot be determined at this stage are to be included in the SPCD.
  - 1. Coordination.
    - a. Contractor progress meetings.
    - b. Scope or schedule changes.
    - c. FAA ATO coordination.
  - 2. Phasing.
    - a. Phase elements.
    - b. Construction safety drawings.
  - 3. Areas and operations affected by the construction activity.
    - a. Identification of affected areas.
    - b. Mitigation of effects.
  - 4. Protection of navigation aids (NAVAIDs).
  - 5. Contractor access.
    - a. Location of stockpiled construction materials.
    - b. Vehicle and pedestrian operations.
  - 6. Wildlife management.
    - a. Trash.
    - b. Standing water.
    - c. Tall grass and seeds.
    - d. Poorly maintained fencing and gates.
    - e. Disruption of existing wildlife habitat.
  - 7. Foreign Object Debris (FOD) management.
  - 8. Hazardous materials (HAZMAT) management.
  - 9. Notification of construction activities.

- a. Maintenance of a list of responsible representatives/ points of contact.
- b. NOTAM.
- c. Emergency notification procedures.
- d. Coordination with ARFF Personnel.
- e. Notification to the FAA.
- 10. Inspection requirements.
  - a. Daily (or more frequent) inspections.
  - b. Final inspections.
- 11. Underground utilities.
- 12. Penalties.
- 13. Special conditions.
- 14. Runway and taxiway visual aids. Marking, lighting, signs, and visual NAVAIDs.
  - a. General.
  - b. Markings.
  - c. Lighting and visual NAVAIDs.
  - d. Signs, temporary, including orange construction signs, and permanent signs.
- 15. Marking and signs for access routes.
- 16. Hazard marking and lighting.
  - a. Purpose.
  - b. Equipment.
- 17. Work zone lighting for nighttime construction (if applicable).
- 18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces.
  - a. Runway Safety Area (RSA).
  - b. Runway Object Free Area (ROFA).
  - c. Taxiway Safety Area (TSA). Provide details for any adjustments to Taxiway Safety Area width to allow continued operation of smaller aircraft. See paragraph <u>2.22.3</u>.
  - d. Taxiway Object Free Area (TOFA). Provide details for any continued aircraft operations while construction occurs within the TOFA. See paragraph <u>2.22.4</u>.
  - e. Obstacle Free Zone (OFZ).
  - f. Runway approach/departure surfaces.
- 19. Other limitations on construction.
  - a. Prohibitions.

#### b. Restrictions.

- 2.4.2 The Safety Plan Compliance Document (SPCD) should include a general statement by the construction contractor that he/she has read and will abide by the CSPP. In addition, the SPCD must include all supplemental information that could not be included in the CSPP prior to the contract award. The contractor statement should include the name of the contractor, the title of the project CSPP, the approval date of the CSPP, and a reference to any supplemental information (that is, "I, (Name of Contractor), have read the (Title of Project) CSPP, approved on (Date), and will abide by it as written and with the following additions as noted:"). The supplemental information in the SPCD should be written to match the format of the CSPP indicating each subject by corresponding CSPP subject number and title. If no supplemental information," should be written after the corresponding subject title. The SPCD should not duplicate information in the CSPP:
  - 1. Coordination. Discuss details of proposed safety meetings with the airport operator and with contractor employees and subcontractors.
  - 2. Phasing. Discuss proposed construction schedule elements, including:
    - a. Duration of each phase.
    - b. Daily start and finish of construction, including "night only" construction.
    - c. Duration of construction activities during:
      - i. Normal runway operations.
      - ii. Closed runway operations.
      - iii. Modified runway "Aircraft Reference Code" usage.
  - 3. Areas and operations affected by the construction activity. These areas and operations should be identified in the CSPP and should not require an entry in the SPCD.
  - Protection of NAVAIDs. Discuss specific methods proposed to protect operating NAVAIDs.
  - 5. Contractor access. Provide the following:
    - a. Details on how the contractor will maintain the integrity of the airport security fence (gate guards, daily log of construction personnel, and other).
    - Listing of individuals requiring driver training (for certificated airports and as requested).
    - c. Radio communications.
      - i. Types of radios and backup capabilities.
      - ii. Who will be monitoring radios.
      - iii. Who to contact if the ATCT cannot reach the contractor's designated person by radio.

- d. Details on how the contractor will escort material delivery vehicles.
- 6. Wildlife management. Discuss the following:
  - a. Methods and procedures to prevent wildlife attraction.
  - b. Wildlife reporting procedures.
- 7. Foreign Object Debris (FOD) management. Discuss equipment and methods for control of FOD, including construction debris and dust.
- Hazardous Materials (HAZMAT) management. Discuss equipment and methods for responding to hazardous spills.
- 9. Notification of construction activities. Provide the following:
  - a. Contractor points of contact.
  - b. Contractor emergency contact.
  - c. Listing of tall or other requested equipment proposed for use on the airport and the timeframe for submitting 7460-1 forms not previously submitted by the airport operator.
  - d. Batch plant details, including 7460-1 submittal.
- Inspection requirements. Discuss daily (or more frequent) inspections and special inspection procedures.
- 11. Underground utilities. Discuss proposed methods of identifying and protecting underground utilities.
- 12. Penalties. Penalties should be identified in the CSPP and should not require an entry in the SPCD.
- Special conditions. Discuss proposed actions for each special condition identified in the CSPP.
- 14. Runway and taxiway visual aids. Including marking, lighting, signs, and visual NAVAIDs. Discuss proposed visual aids including the following:
  - a. Equipment and methods for covering signage and airfield lights.
  - b. Equipment and methods for temporary closure markings (paint, fabric, other).
  - c. Temporary orange construction signs.
  - d. Types of temporary Visual Guidance Slope Indicators (VGSI).
- Marking and signs for access routes. Discuss proposed methods of demarcating access routes for vehicle drivers.
- 16. Hazard marking and lighting. Discuss proposed equipment and methods for identifying excavation areas.
- 17. Work zone lighting for nighttime construction (if applicable). Discuss proposed equipment, locations, aiming, and shielding to prevent interference with air traffic control and aircraft operations.

- 18. Protection of runway and taxiway safety areas, object free areas, obstacle free zones, and approach/departure surfaces. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:
  - a. Equipment and methods for maintaining Taxiway Safety Area standards.
  - b. Equipment and methods to ensure the safe passage of aircraft where Taxiway Safety Area or Taxiway Object Free Area standards cannot be maintained.
  - c. Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.
- 19. Other limitations on construction should be identified in the CSPP and should not require an entry in the SPCD.

#### 2.5 Coordination.

Airport operators, or tenants responsible for design, bidding and conducting construction on their leased properties, should ensure at all project developmental stages, such as predesign, prebid, and preconstruction conferences, they capture the subject of airport operational safety during construction (see <u>AC 150/5370-12</u>, *Quality Management for Federally Funded Airport Construction Projects*). In addition, the following should be coordinated as required:

#### 2.5.1 Progress Meetings.

Operational safety should be a standing agenda item for discussion during progress meetings throughout the project developmental stages.

#### 2.5.2 Scope or Schedule Changes.

Changes in the scope or duration at any of the project stages may require revisions to the CSPP and review and approval by the airport operator and the FAA (see paragraph 1.4.2.17).

#### 2.5.3 FAA ATO Coordination.

Early coordination with FAA ATO is highly recommended during the design phase and is required for scheduling Technical Operations shutdowns prior to construction. Coordination is critical to restarts of NAVAID services and to the establishment of any special procedures for the movement of aircraft. Formal agreements between the airport operator and appropriate FAA offices are recommended. All relocation or adjustments to NAVAIDs, or changes to final grades in critical areas, should be coordinated with FAA ATO and may require an FAA flight inspection prior to restarting the facility. Flight inspections must be coordinated and scheduled well in advance of the intended facility restart. Flight inspections may require a reimbursable agreement between the airport operator and FAA ATO. Reimbursable agreements should be coordinated a minimum of 12 months prior to the start of construction. (See paragraph 2.13.5.3.2 for required FAA notification regarding FAA-owned NAVAIDs.)

#### 2.6 Phasing.

Once it has been determined what types and levels of airport operations will be maintained, the most efficient sequence of construction may not be feasible. In this case, the sequence of construction may be phased to gain maximum efficiency while allowing for the required operations. The development of the resulting construction phases should be coordinated with local Air Traffic personnel and airport users. The sequenced construction phases established in the CSPP must be incorporated into the project design and must be reflected in the contract drawings and specifications.

#### 2.6.1 Phase Elements.

For each phase the CSPP should detail:

- Areas closed to aircraft operations.
- Duration of closures.
- Taxi routes and/or areas of reduced TSA and TOFA to reflect reduced ADG use.
- ARFF access routes.
- Construction staging, disposal, and cleanout areas.
- Construction access and haul routes.
- Impacts to NAVAIDs.
- Lighting, marking, and signing changes.
- Available runway length and/or reduced RSA and ROFA to reflect reduced ADG use.
- Declared distances (if applicable).
- Required hazard marking, lighting, and signing.
- Work zone lighting for nighttime construction (if applicable).
- Lead times for required notifications.

#### 2.6.2 Construction Safety Drawings.

Drawings specifically indicating operational safety procedures and methods in affected areas (i.e., construction safety drawings) should be developed for each construction phase. Such drawings should be included in the CSPP as referenced attachments and should also be included in the contract drawing package.

#### 2.7 Areas and Operations Affected by Construction Activity.

Runways and taxiways should remain in use by aircraft to the maximum extent possible without compromising safety. Pre-meetings with the FAA ATO will support operational simulations. See <u>Appendix E</u> for an example of a table showing temporary operations versus current operations. The tables in <u>Appendix E</u> can be useful for coordination among all interested parties, including FAA Lines of Business.

#### 2.7.1 Identification of Affected Areas.

Identifying areas and operations affected by the construction helps to determine possible safety problems. The affected areas should be identified in the construction safety drawings for each construction phase. (See paragraph <u>2.6.2</u>.) Of particular concern are:

2.7.1.1 Closing, or Partial Closing, of Runways, Taxiways and Aprons, and Displaced Thresholds.

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing, landing, or takeoff in either direction on that pavement is prohibited. A displaced threshold, by contrast, is established to ensure obstacle clearance and adequate safety area for landing aircraft. The pavement prior to the displaced threshold is normally available for take-off in the direction of the displacement and for landing and takeoff in the opposite direction. Misunderstanding this difference, may result in issuance of an inaccurate NOTAM, and can lead to a hazardous condition.

2.7.1.1.1 Partially Closed Runways.

The temporarily closed portion of a partially closed runway will generally extend from the threshold to a taxiway that may be used for entering and exiting the runway. If the closed portion extends to a point between taxiways, pilots will have to back-taxi on the runway, which is an undesirable operation. See Figure 2-1 for a desirable configuration.

2.7.1.1.2 Displaced Thresholds.

Since the portion of the runway pavement between the permanent threshold and a standard displaced threshold is available for takeoff and for landing in the opposite direction, the temporary displaced threshold need not be located at an entrance/exit taxiway. See <u>Figure 2-2</u>.

- 2.7.1.2 Closing of aircraft rescue and fire fighting access routes.
- 2.7.1.3 Closing of access routes used by airport and airline support vehicles.
- 2.7.1.4 Interruption of utilities, including water supplies for fire fighting.
- 2.7.1.5 Approach/departure surfaces affected by heights of objects.
- 2.7.1.6 Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads.



Figure 2-1. Temporary Partially Closed Runway



Figure 2-2. Temporary Displaced Threshold

Note: See paragraph 2.18.2.5.

#### 2.7.2 Mitigation of Effects.

Establishment of specific procedures is necessary to maintain the safety and efficiency of airport operations. The CSPP must address:

2.7.2.1	Temporary changes to runway and/or taxi operations.
2.7.2.2	Detours for ARFF and other airport vehicles.
2.7.2.3	Maintenance of essential utilities.
2.7.2.4	Temporary changes to air traffic control procedures. Such changes must be coordinated with the ATO.

#### 2.8 Navigation Aid (NAVAID) Protection.

Before commencing construction activity, parking vehicles, or storing construction equipment and materials near a NAVAID, coordinate with the appropriate FAA ATO/Technical Operations office to evaluate the effect of construction activity and the required distance and direction from the NAVAID. (See paragraph 2.13.5.3.) Construction activities, materials/equipment storage, and vehicle parking near electronic NAVAIDs require special consideration since they may interfere with signals essential to air navigation. If any NAVAID may be affected, the CSPP and SPCD must show an understanding of the "critical area" associated with each NAVAID and describe how it will be protected. Where applicable, the operational critical areas of NAVAIDs should be graphically delineated on the project drawings. Pay particular attention to stockpiling material, as well as to movement and parking of equipment that may interfere with line of sight from the ATCT or with electronic emissions. Interference from construction equipment and activities may require NAVAID shutdown or adjustment of instrument approach minimums for low visibility operations. This condition requires that a NOTAM be filed (see paragraph 2.13.2). Construction activities and materials/equipment storage near a NAVAID must not obstruct access to the equipment and instruments for maintenance. Submittal of a 7460-1 form is required for construction vehicles operating near FAA NAVAIDs. (See paragraph 2.13.5.3.)

#### 2.9 Contractor Access.

The CSPP must detail the areas to which the contractor must have access, and explain how contractor personnel will access those areas. Specifically address:

#### 2.9.1 Location of Stockpiled Construction Materials.

Stockpiled materials and equipment storage are not permitted within the RSA and OFZ, and if possible should not be permitted within the Object Free Area (OFA) of an operational runway. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval. The airport operator must ensure that stockpiled materials and equipment adjacent to these areas are prominently marked and lighted during hours of restricted visibility or darkness. (See paragraph 2.18.2.) This includes determining and

verifying that materials are stabilized and stored at an approved location so as not to be a hazard to aircraft operations and to prevent attraction of wildlife and foreign object damage from blowing or tracked material. See paragraphs <u>2.10</u> and <u>2.11</u>.

2.9.2 Vehicle and Pedestrian Operations.

The CSPP should include specific vehicle and pedestrian requirements. Vehicle and pedestrian access routes for airport construction projects must be controlled to prevent inadvertent or unauthorized entry of persons, vehicles, or animals onto the AOA. The airport operator should coordinate requirements for vehicle operations with airport tenants, contractors, and the FAA air traffic manager. In regard to vehicle and pedestrian operations, the CSPP should include the following, with associated training requirements:

#### 2.9.2.1 Construction Site Parking.

Designate in advance vehicle parking areas for contractor employees to prevent any unauthorized entry of persons or vehicles onto the AOA. These areas should provide reasonable contractor employee access to the job site.

#### 2.9.2.2 Construction Equipment Parking.

Contractor employees must park and service all construction vehicles in an area designated by the airport operator outside the OFZ and never in the safety area of an active runway or taxiway. Unless a complex setup procedure makes movement of specialized equipment infeasible, inactive equipment must not be parked on a closed taxiway or runway. If it is necessary to leave specialized equipment on a closed taxiway or runway at night, the equipment must be well lighted. Employees should also park construction vehicles outside the OFA when not in use by construction personnel (for example, overnight, on weekends, or during other periods when construction is not active). Parking areas must not obstruct the clear line of sight by the ATCT to any taxiways or runways under air traffic control nor obstruct any runway visual aids, signs, or navigation aids. The FAA must also study those areas to determine effects on airport design criteria, surfaces established by 14 CFR Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace (Part 77), and on NAVAIDs and Instrument Approach Procedures (IAP). See paragraph 2.13.1 for further information.

#### 2.9.2.3 Access and Haul Roads.

Determine the construction contractor's access to the construction sites and haul roads. Do not permit the construction contractor to use any access or haul roads other than those approved. Access routes used by contractor vehicles must be clearly marked to prevent inadvertent entry to areas open to airport operations. Pay special attention to ensure that if construction traffic is to share or cross any ARFF routes that ARFF right of way is not impeded at any time, and that construction traffic on haul
roads does not interfere with NAVAIDs or approach surfaces of operational runways. Address whether access gates will be blocked or inoperative or if a rally point will be blocked or inaccessible.

- 2.9.2.4 Marking and lighting of vehicles in accordance with <u>AC 150/5210-5</u>, *Painting, Marking, and Lighting of Vehicles Used on an Airport.*
- 2.9.2.5 Description of proper vehicle operations on various areas under normal, lost communications, and emergency conditions.
- 2.9.2.6 Required escorts.
- 2.9.2.7 Training Requirements for Vehicle Drivers to Ensure Compliance with the Airport Operator's Vehicle Rules and Regulations.
  Specific training should be provided to vehicle operators, including those providing escorts. See <u>AC 150/5210-20</u>, Ground Vehicle Operations on Airports, for information on training and records maintenance requirements.

#### 2.9.2.8 Situational Awareness.

Vehicle drivers must confirm by personal observation that no aircraft is approaching their position (either in the air or on the ground) when given clearance to cross a runway, taxiway, or any other area open to airport operations. In addition, it is the responsibility of the escort vehicle driver to verify the movement/position of all escorted vehicles at any given time. At non-towered airports, all aircraft movements and flight operations rely on aircraft operators to self-report their positions and intentions. However, there is no requirement for an aircraft to have radio communications. Because aircraft do not always broadcast their positions or intentions, visual checking, radio monitoring, and situational awareness of the surroundings is critical to safety.

#### 2.9.2.9 Two-Way Radio Communication Procedures.

# 2.9.2.9.1 General.

The airport operator must ensure that tenant and construction contractor personnel engaged in activities involving unescorted operation on aircraft movement areas observe the proper procedures for communications, including using appropriate radio frequencies at airports with and without ATCT. When operating vehicles on or near open runways or taxiways, construction personnel must understand the critical importance of maintaining radio contact, as directed by the airport operator, with:

- 1. Airport operations
- 2. ATCT

- Common Traffic Advisory Frequency (CTAF), which may include UNICOM, MULTICOM.
- 4. Automatic Terminal Information Service (ATIS). This frequency is useful for monitoring conditions on the airport. Local air traffic will broadcast information regarding construction related runway closures and "shortened" runways on the ATIS frequency.
- 2.9.2.9.2 <u>Areas Requiring Two-Way Radio Communication with the ATCT.</u> Vehicular traffic crossing active movement areas must be controlled either by two-way radio with the ATCT, escort, flagman, signal light, or other means appropriate for the particular airport.
- 2.9.2.9.3 Frequencies to be Used.

The airport operator will specify the frequencies to be used by the contractor, which may include the CTAF for monitoring of aircraft operations. Frequencies may also be assigned by the airport operator for other communications, including any radio frequency in compliance with Federal Communications Commission requirements. At airports with an ATCT, the airport operator will specify the frequency assigned by the ATCT to be used between contractor vehicles and the ATCT.

- 2.9.2.9.4 Proper radio usage, including read back requirements.
- 2.9.2.9.5 Proper phraseology, including the International Phonetic Alphabet.
- 2.9.2.9.6 Light Gun Signals.

Even though radio communication is maintained, escort vehicle drivers must also familiarize themselves with ATCT light gun signals in the event of radio failure. See the FAA safety placard "Ground Vehicle Guide to Airport Signs and Markings." This safety placard may be downloaded through the Runway Safety Program Web site at <u>http://www.faa.gov/airports/runway\_safety/publications/</u> (see "Signs & Markings Vehicle Dashboard Sticker") or obtained from the FAA Airports Regional Office.

#### 2.9.2.10 Maintenance of the secured area of the airport, including:

2.9.2.10.1 Fencing and Gates.

Airport operators and contractors must take care to maintain security during construction when access points are created in the security fencing to permit the passage of construction vehicles or personnel. Temporary gates should be equipped so they can be securely closed and locked to prevent access by animals and unauthorized people. Procedures should be in place to ensure that only authorized persons and vehicles have access to the AOA and to prohibit "piggybacking" behind another person or vehicle. The Department of Transportation (DOT) document DOT/FAA/AR- 00/52, Recommended Security Guidelines for Airport Planning and Construction, provides more specific information on fencing. A copy of this document can be obtained from the Airport Consultants Council, Airports Council International, or American Association of Airport Executives.

# 2.9.2.10.2 Badging Requirements.

Airports subject to 49 CFR Part 1542, *Airport Security*, must meet standards for access control, movement of ground vehicles, and identification of construction contractor and tenant personnel.

### 2.10 Wildlife Management.

The CSPP and SPCD must be in accordance with the airport operator's wildlife hazard management plan, if applicable. See <u>AC 150/5200-33</u>, *Hazardous Wildlife Attractants* On or Near Airports, and CertAlert 98-05, Grasses Attractive to Hazardous Wildlife. Construction contractors must carefully control and continuously remove waste or loose materials that might attract wildlife. Contractor personnel must be aware of and avoid construction activities that can create wildlife hazards on airports, such as:

### 2.10.1 Trash.

Food scraps must be collected from construction personnel activity.

- 2.10.2 Standing Water.
- 2.10.3 Tall Grass and Seeds.

Requirements for turf establishment can be at odds with requirements for wildlife control. Grass seed is attractive to birds. Lower quality seed mixtures can contain seeds of plants (such as clover) that attract larger wildlife. Seeding should comply with the guidance in <u>AC 150/5370-10</u>, *Standards for Specifying Construction of Airports*, Item T-901, Seeding. Contact the local office of the United Sates Department of Agriculture Soil Conservation Service or the State University Agricultural Extension Service (County Agent or equivalent) for assistance and recommendations. These agencies can also provide liming and fertilizer recommendations.

2.10.4 <u>Poorly Maintained Fencing and Gates.</u> See paragraph <u>2.9.2.10.1</u>.

# 2.10.5 Disruption of Existing Wildlife Habitat.

While this will frequently be unavoidable due to the nature of the project, the CSPP should specify under what circumstances (location, wildlife type) contractor personnel should immediately notify the airport operator of wildlife sightings.

# 2.11 Foreign Object Debris (FOD) Management.

Waste and loose materials, commonly referred to as FOD, are capable of causing damage to aircraft landing gears, propellers, and jet engines. Construction contractors must not leave or place FOD on or near active aircraft movement areas. Materials capable of creating FOD must be continuously removed during the construction project. Fencing (other than security fencing) or covers may be necessary to contain material that can be carried by wind into areas where aircraft operate. See <u>AC 150/5210-24</u>, *Foreign Object Debris (FOD) Management*.

# 2.12 Hazardous Materials (HAZMAT) Management.

Contractors operating construction vehicles and equipment on the airport must be prepared to expeditiously contain and clean-up spills resulting from fuel or hydraulic fluid leaks. Transport and handling of other hazardous materials on an airport also requires special procedures. See <u>AC 150/5320-15</u>, *Management of Airport Industrial Waste*.

# 2.13 Notification of Construction Activities.

The CSPP and SPCD must detail procedures for the immediate notification of airport users and the FAA of any conditions adversely affecting the operational safety of the airport. It must address the notification actions described below, as applicable.

2.13.1 List of Responsible Representatives/points of contact for all involved parties, and procedures for contacting each of them, including after hours.

# 2.13.2 NOTAMs.

Only the airport operator may initiate or cancel NOTAMs on airport conditions, and is the only entity that can close or open a runway. The airport operator must coordinate the issuance, maintenance, and cancellation of NOTAMs about airport conditions resulting from construction activities with tenants and the local air traffic facility (control tower, approach control, or air traffic control center), and must either enter the NOTAM into NOTAM Manager, or provide information on closed or hazardous conditions on airport movement areas to the FAA Flight Service Station (FSS) so it can issue a NOTAM. The airport operator must file and maintain a list of authorized representatives with the FSS. Refer to <u>AC 150/5200-28</u>, *Notices to Airmen (NOTAMs) for Airport Operators*, for a sample NOTAM form. Only the FAA may issue or cancel NOTAMs on shutdown or irregular operation of FAA owned facilities. Any person having reason to believe that a NOTAM is missing, incomplete, or inaccurate must notify the airport operator. See paragraph <u>2.7.1.1</u> about issuing NOTAMs for partially closed runways versus runways with displaced thresholds.

2.13.3 Emergency notification procedures for medical, fire fighting, and police response.

### 2.13.4 Coordination with ARFF.

The CSPP must detail procedures for coordinating through the airport sponsor with ARFF personnel, mutual aid providers, and other emergency services if construction requires:

- 1. The deactivation and subsequent reactivation of water lines or fire hydrants, or
- 2. The rerouting, blocking and restoration of emergency access routes, or
- 3. The use of hazardous materials on the airfield.
- 2.13.5 Notification to the FAA.
  - 2.13.5.1 Part 77.

Any person proposing construction or alteration of objects that affect navigable airspace, as defined in Part 77, must notify the FAA. This includes construction equipment and proposed parking areas for this equipment (i.e., cranes, graders, other equipment) on airports. FAA Form 7460-1, *Notice of Proposed Construction or Alteration*, can be used for this purpose and submitted to the appropriate FAA Airports Regional or District Office. See <u>Appendix A</u> to download the form. Further guidance is available on the FAA web site at <u>oeaaa.faa.gov</u>.

# 2.13.5.2 Part 157.

With some exceptions, Title 14 CFR Part 157, Notice of Construction, Alteration, Activation, and Deactivation of Airports, requires that the airport operator notify the FAA in writing whenever a non-Federally funded project involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport. Notification involves submitting FAA Form 7480-1, Notice of Landing Area Proposal, to the nearest FAA Airports Regional or District Office. See <u>Appendix A</u> to download the form.

#### 2.13.5.3 NAVAIDs.

For emergency (short-notice) notification about impacts to both airport owned and FAA owned NAVAIDs, contact: 866-432-2622.

#### 2.13.5.3.1 Airport Owned/FAA Maintained.

If construction operations require a shutdown of 24 hours or greater in duration, or more than 4 hours daily on consecutive days, of a NAVAID owned by the airport but maintained by the FAA, provide a 45-day minimum notice to FAA ATO/Technical Operations prior to facility shutdown, using Strategic Event Coordination (SEC) Form 6000.26 contained within FAA Order 6000.15, *General Maintenance Handbook for National Airspace System (NAS) Facilities*.

# 2.13.5.3.2 FAA Owned.

- 1. The airport operator must notify the appropriate FAA ATO Service Area Planning and Requirements (P&R) Group a minimum of 45 days prior to implementing an event that causes impacts to NAVAIDs, using SEC Form 6000.26.
- Coordinate work for an FAA owned NAVAID shutdown with the local FAA ATO/Technical Operations office, including any necessary reimbursable agreements and flight checks. Detail procedures that address unanticipated utility outages and cable cuts that could impact FAA NAVAIDs. Refer to active Service Level Agreement with ATO for specifics.

### 2.14 Inspection Requirements.

### 2.14.1 Daily Inspections.

Inspections should be conducted at least daily, but more frequently if necessary to ensure conformance with the CSPP. A sample checklist is provided in <u>Appendix D</u>, <u>Construction Project Daily Safety Inspection Checklist</u>. See also <u>AC 150/5200-18</u>, *Airport Safety Self-Inspection*. Airport operators holding a Part 139 certificate are required to conduct self-inspections during unusual conditions, such as construction activities, that may affect safe air carrier operations.

#### 2.14.2 Interim Inspections.

Inspections should be conducted of all areas to be (re)opened to aircraft traffic to ensure the proper operation of lights and signs, for correct markings, and absence of FOD. The contractor should conduct an inspection of the work area with airport operations personnel. The contractor should ensure that all construction materials have been secured, all pavement surfaces have been swept clean, all transition ramps have been properly constructed, and that surfaces have been appropriately marked for aircraft to operate safely. Only if all items on the list meet with the airport operator's approval should the air traffic control tower be notified to open the area to aircraft operations. The contractor should be required to retain a suitable workforce and the necessary equipment at the work area for any last minute cleanup that may be requested by the airport operator prior to opening the area.

# 2.14.3 Final Inspections.

New runways and extended runway closures may require safety inspections at certificated airports prior to allowing air carrier service. Coordinate with the FAA Airport Certification Safety Inspector (ACSI) to determine if a final inspection will be necessary.

### 2.15 Underground Utilities.

The CSPP and/or SPCD must include procedures for locating and protecting existing underground utilities, cables, wires, pipelines, and other underground facilities in excavation areas. This may involve coordinating with public utilities and FAA ATO/Technical Operations. Note that "One Call" or "Miss Utility" services do not include FAA ATO/Technical Operations.

#### 2.16 Penalties.

The CSPP should detail penalty provisions for noncompliance with airport rules and regulations and the safety plans (for example, if a vehicle is involved in a runway incursion). Such penalties typically include rescission of driving privileges or access to the AOA.

### 2.17 Special Conditions.

The CSPP must detail any special conditions that affect the operation of the airport and will require the activation of any special procedures (for example, low-visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, Vehicle / Pedestrian Deviation (VPD) and other activities requiring construction suspension/resumption).

### 2.18 Runway and Taxiway Visual Aids.

This includes marking, lighting, signs, and visual NAVAIDs. The CSPP must ensure that areas where aircraft will be operating are clearly and visibly separated from construction areas, including closed runways. Throughout the duration of the construction project, verify that these areas remain clearly marked and visible at all times and that marking, lighting, signs, and visual NAVAIDs that are to continue to perform their functions during construction remain in place and operational. Visual NAVAIDs that are not serving their intended function during construction must be temporarily disabled, covered, or modified as necessary. The CSPP must address the following, as appropriate:

# 2.18.1 General.

Airport markings, lighting, signs, and visual NAVAIDs must be clearly visible to pilots, not misleading, confusing, or deceptive. All must be secured in place to prevent movement by prop wash, jet blast, wing vortices, and other wind currents and constructed of materials that will minimize damage to an aircraft in the event of inadvertent contact. Items used to secure such markings must be of a color similar to the marking.

#### 2.18.2 Markings.

During the course of construction projects, temporary pavement markings are often required to allow for aircraft operations during or between work periods. During the design phase of the project, the designer should coordinate with the project manager, airport operations, airport users, the FAA Airports project manager, and Airport Certification Safety Inspector for Part 139 airports to determine minimum temporary markings. The FAA Airports project manager will, wherever a runway is closed, coordinate with the appropriate FAA Flight Standards Office and disseminate findings to all parties. Where possible, the temporary markings on finish grade pavements should be placed to mirror the dimensions of the final markings. Markings must be in compliance with the standards of <u>AC 150/5340-1</u>, *Standards for Airport Markings*, except as noted herein. Runways and runway exit taxiways closed to aircraft operations are marked with a yellow X. The preferred visual aid to depict temporary runway closure is the lighted X signal placed on or near the runway designation numbers. (See paragraph <u>2.18.2.1.2.</u>)

#### 2.18.2.1 Closed Runways and Taxiways.

2.18.2.1.1 Permanently Closed Runways.

For runways, obliterate the threshold marking, runway designation marking, and touchdown zone markings, and place an X at each end and at 1,000-foot (300 m) intervals. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X.

2.18.2.1.2 Temporarily Closed Runways.

For runways that have been temporarily closed, place an X at each end of the runway directly on or as near as practicable to the runway designation numbers. For a multiple runway environment, if the lighted X on a designated number will be located in the RSA of an adjacent active runway, locate the lighted X farther down the closed runway to clear the RSA of the active runway. In addition, the closed runway numbers located in the RSA of an active runway must be marked with a flat yellow X. See Figure 2-3. See also paragraph 2.18.3.3.

#### 2.18.2.1.3 Partially Closed Runways and Displaced Thresholds.

When threshold markings are needed to identify the temporary beginning of the runway that is available for landing, the markings must comply with <u>AC 150/5340-1</u>. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph <u>2.7.1.1</u> for the difference between partially closed runways and runways with displaced thresholds. Because of the temporary nature of threshold displacement due to construction, it is not necessary to re-adjust the existing runway centerline markings to meet standard spacing for a runway with a visual approach. Some of the requirements below may be waived in the cases of low-activity airports and/or short duration changes that are measured in days rather than weeks. Consider whether the presence of an airport traffic control tower allows for the development of special procedures. Contact the appropriate FAA Airports Regional or District Office for assistance.



Figure 2-3. Markings for a Temporarily Closed Runway

- 1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see <u>AC 150/5340-1</u>). Obliterate or cover markings prior to the moved threshold. Existing touchdown zone markings beyond the moved threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See Figure 2-4.
- Displaced Thresholds. Pavement markings for a displaced threshold consist of a runway threshold bar, runway designation, and white arrowheads with and without arrow shafts. These markings are required to identify the portion of the runway before the displaced threshold to provide centerline guidance for pilots during approaches, takeoffs, and landing rollouts from the opposite direction. See <u>AC 150/5340-1</u>. Obliterate markings prior to the displaced threshold. Existing touchdown zone markings beyond the displaced threshold may remain in place. Obliterate aiming point markings. Issue appropriate NOTAMs regarding any nonstandard markings. See Figure 2-2.

# 2.18.2.1.4 Taxiways.

1. Permanently Closed Taxiways. <u>AC 150/5300-13</u> Airport Design, notes that it is preferable to remove the pavement, but for pavement that is to remain, place an X at the entrance to both ends of the closed section. Obliterate taxiway centerline markings, including runway leadoff lines, leading to the closed taxiway. See Figure 2-4.





- 2. Temporarily Closed Taxiways. Place barricades outside the safety area of intersecting taxiways. For runway/taxiway intersections, place an X at the entrance to the closed taxiway from the runway. If the taxiway will be closed for an extended period, obliterate taxiway centerline markings, including runway leadoff lines and taxiway to taxiway turns, leading to the closed section. Always obliterate runway lead-off lines for high speed exits, regardless of the duration of the closure. If the centerline markings will be reused upon reopening the taxiway, it is preferable to paint over the marking. This will result in less damage to the pavement when the upper layer of paint is ultimately removed. See Figure 2-4.
- 2.18.2.1.5 <u>Temporarily Closed Airport.</u> When the airport is closed temporarily, mark all the runways as closed.
- 2.18.2.2 If unable to paint temporary markings on the pavement, construct them from any of the following materials: fabric, colored plastic, painted sheets of plywood, or similar materials. They must be properly configured and appropriately secured to prevent movement by prop wash, jet blast, or other wind currents. Items used to secure such markings must be of a color similar to the marking.
- 2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. When removing runway markings, apply the same treatment to areas between stripes or numbers, as the cleaned area will appear to pilots as a marking in the shape of the treated area.
- 2.18.2.4 If it is not possible to install threshold bars, chevrons, and arrows on the pavement, "temporary outboard white threshold bars and yellow arrowheads", see Figure 2-5, may be used. Locate them outside of the runway pavement surface on both sides of the runway. The dimensions must be as shown in Figure 2-5. If the markings are not discernible on grass or snow, apply a black background with appropriate material over the ground to ensure they are clearly visible.
- 2.18.2.5 The application rate of paint to mark a short-term temporary runway and taxiway markings may deviate from the standard (see Item P-620, "Runway and Taxiway Painting," in <u>AC 150/5370-10</u>), but the dimensions must meet the existing standards. When applying temporary markings at night, it is recommended that the fast curing, Type II paint be used to help offset the higher humidity and cooler temperatures often experienced at night. Diluting the paint will substantially increase cure time and is not recommended. Glass beads are not recommended for temporary markings. Striated markings may also be used for certain temporary markings. <u>AC</u>

<u>150/5340-1</u>, *Standards for Airport Markings*, has additional guidance on temporary markings.





#### 2.18.3 Lighting and Visual NAVAIDs.

This paragraph refers to standard runway and taxiway lighting systems. See below for hazard lighting. Lighting installation must be in conformance with AC 150/5340-30, Design and Installation Details for Airport Visual Aids, and fixture design in conformance with AC 150/5345-50, Specification for Portable Runway and Taxiway Lights. When disconnecting runway and taxiway lighting fixtures, disconnect the associated isolation transformers. See AC 150/5340-26, Maintenance of Airport Visual Aid Facilities, for disconnect procedures and safety precautions. Alternately, cover the light fixture in such a way as to prevent light leakage. Avoid removing the lamp from energized fixtures because an excessive number of isolation transformers with open secondaries may damage the regulators and/or increase the current above its normal value. Secure, identify, and place any above ground temporary wiring in conduit to prevent electrocution and fire ignition sources. Maintain mandatory hold signs to operate normally in any situation where pilots or vehicle drivers could mistakenly be in that location. At towered airports certificated under Part 139, holding position signs are required to be illuminated on open taxiways crossing to closed or inactive runways. If the holding position sign is installed on the runway circuit for the closed runway, install a jumper to the taxiway circuit to provide power to the holding position sign for nighttime operations. Where it is not possible to maintain power to signs that would normally be operational, install barricades to exclude aircraft. Figure 2-1, Figure 2-2, Figure 2-3, and Figure 2-4 illustrate temporary changes to lighting and visual NAVAIDs.

#### 2.18.3.1 Permanently Closed Runways and Taxiways.

For runways and taxiways that have been permanently closed, disconnect the lighting circuits.

# 2.18.3.2 Temporarily Closed Runways and New Runways Not Yet Open to Air Traffic.

If available, use a lighted X, both at night and during the day, placed at each end of the runway on or near the runway designation numbers facing the approach. (Note that the lighted X must be illuminated at all times that it is on a runway.) The use of a lighted X is required if night work requires runway lighting to be on. See <u>AC 150/5345-55</u>, *Specification for L-893*, *Lighted Visual Aid to Indicate Temporary Runway Closure*. For runways that have been temporarily closed, but for an extended period, and for those with pilot controlled lighting, disconnect the lighting circuits or secure switches to prevent inadvertent activation. For runways that will be opened periodically, coordinate procedures with the FAA air traffic manager or, at airports without an ATCT, the airport operator. Activate stop bars if available. Figure 2-6 shows a lighted X by day. Figure 2-7 shows a lighted X at night.

#### Figure 2-6. Lighted X in Daytime



Figure 2-7. Lighted X at Night



### 2.18.3.3 Partially Closed Runways and Displaced Thresholds.

When a runway is partially closed, a portion of the pavement is unavailable for any aircraft operation, meaning taxiing and landing or taking off in either direction. A displaced threshold, by contrast, is put in place to ensure obstacle clearance by landing aircraft. The pavement prior to the displaced threshold is available for takeoff in the direction of the displacement, and for landing and takeoff in the opposite direction. Misunderstanding this difference and issuance of a subsequently inaccurate NOTAM can result in a hazardous situation. For both partially closed runways and displaced thresholds, approach lighting systems at the affected end must be placed out of service.

2.18.3.3.1 Partially Closed Runways.

Disconnect edge and threshold lights on that part of the runway at and behind the threshold (that is, the portion of the runway that is closed). Alternately, cover the light fixtures in such a way as to prevent light leakage. See Figure 2-1.

2.18.3.3.2 Temporary Displaced Thresholds.

Edge lighting in the area of the displacement emits red light in the direction of approach and yellow light (white for visual runways) in the opposite direction. If the displacement is 700 feet or less, blank out centerline lights in the direction of approach or place the centerline lights out of service. If the displacement is over 700 feet, place the centerline lights out of service. See <u>AC 150/5340-30</u> for details on lighting displaced thresholds. See <u>Figure 2-2</u>.

- 2.18.3.3.3 Temporary runway thresholds and runway ends must be lighted if the runway is lighted and it is the intended threshold for night landings or instrument meteorological conditions.
- 2.18.3.3.4 A temporary threshold on an unlighted runway may be marked by retroreflective, elevated markers in addition to markings noted in paragraph 2.18.2.1.3. Markers seen by aircraft on approach are green. Markers at the rollout end of the runway are red. At certificated airports, temporary elevated threshold markers must be mounted with a frangible fitting (see 14 CFR Part 139.309). At non-certificated airports, the temporary elevated threshold markings may either be mounted with a frangible fitting or be flexible. See <u>AC 150/5345-39</u>, Specification for L-853, Runway and Taxiway Retroreflective Markers.
- 2.18.3.3.5 Temporary threshold lights and runway end lights and related visual NAVAIDs are installed outboard of the edges of the full-strength pavement only when they cannot be installed on the pavement. They are installed with bases at grade level or as low as possible, but not more than 3 inch (7.6 cm) above ground. (The standard above ground height for airport lighting fixtures is 14 inches (35 cm)). When any portion of a base is above grade, place properly compacted fill around the base to minimize the rate of gradient change so aircraft can, in an emergency, cross at normal landing or takeoff speeds without incurring significant damage. See <u>AC 150/5370-10</u>.
- 2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in <u>AC 150/5340-30</u>. Battery powered, solar, or portable lights that meet the criteria in <u>AC 150/5345-50</u> may be used. These systems are intended primarily for visual flight rules (VFR) aircraft operations but may

be used for instrument flight rules (IFR) aircraft operations, upon individual approval from the Flight Standards Division of the applicable FAA Regional Office.

- 2.18.3.3.7 When runway thresholds are temporarily displaced, reconfigure yellow lenses (caution zone), as necessary, and place the centerline lights out of service.
- 2.18.3.3.8 Relocate the Visual Glide Slope Indicator (VGSI), such as Visual Approach Slope Indicator (VASI) and Precision Approach Path Indicator (PAPI); other airport lights, such as Runway End Identifier Lights (REIL); and approach lights to identify the temporary threshold. Another option is to disable the VGSI or any equipment that would give misleading indications to pilots as to the new threshold location. Installation of temporary visual aids may be necessary to provide adequate guidance to pilots on approach to the affected runway. If the FAA owns and operates the VGSI, coordinate its installation or disabling with the local ATO/Technical Operations Office. Relocation of such visual aids will depend on the duration of the project and the benefits gained from the relocation, as this can result in great expense. See FAA JO 6850.2, *Visual Guidance Lighting Systems*, for installation criteria for FAA owned and operated NAVAIDs.
- 2.18.3.3.9 Issue a NOTAM to inform pilots of temporary lighting conditions.

#### 2.18.3.4 Temporarily Closed Taxiways.

If possible, deactivate the taxiway lighting circuits. When deactivation is not possible (for example other taxiways on the same circuit are to remain open), cover the light fixture in a way as to prevent light leakage.

### 2.18.4 Signs.

To the extent possible, signs must be in conformance with <u>AC 150/5345-44</u>, *Specification for Runway and Taxiway Signs*, and <u>AC 150/5340-18</u>, *Standard for Airport Sign Systems*.

#### 2.18.4.1 Existing Signs.

Runway exit signs are to be covered for closed runway exits. Outbound destination signs are to be covered for closed runways. Any time a sign does not serve its normal function or would provide conflicting information, it must be covered or removed to prevent misdirecting pilots. Note that information signs identifying a crossing taxiway continue to perform their normal function even if the crossing taxiway is closed. For long term construction projects, consider relocating signs, especially runway distance remaining signs.

#### 2.18.4.2 Temporary Signs.

Orange construction signs comprise a message in black on an orange background. Orange construction signs may help pilots be aware of changed conditions. The airport operator may choose to introduce these signs as part of a movement area construction project to increase situational awareness when needed. Locate signs outside the taxiway safety limits and ahead of construction areas so pilots can take timely action. Use temporary signs judiciously, striking a balance between the need for information and the increase in pilot workload. When there is a concern of pilot "information overload," the applicability of mandatory hold signs must take precedence over orange construction signs recommended during construction. Temporary signs must meet the standards for such signs in Engineering Brief 93, Guidance for the Assembly and Installation of Temporary Orange Construction Signs. Many criteria in AC 150/5345-44, Specification for Runway and Taxiway Signs, are referenced in the Engineering Brief. Permissible sign legends are:

- 1. CONSTRUCTION AHEAD,
- 2. CONSTRUCTION ON RAMP, and
- 3. RWY XX TAKEOFF RUN AVAILABLE XXX FT.

Phasing, supported by drawings and sign schedule, for the installation of orange construction signs must be included in the CSPP or SPCD.

#### 2.18.4.2.1 <u>Takeoff Run Available (TORA) signs.</u>

**Recommended:** Where a runway has been shortened for takeoff, install orange TORA signs well before the hold lines, such as on a parallel taxiway prior to a turn to a runway hold position. See EB 93 for sign size and location.

2.18.4.2.2 Sign legends are shown in Figure F-1.

**Note:** See Figure E-1, Figure E-2, Figure E-3, Figure F-2, and Figure F-3 for examples of orange construction sign locations.

#### 2.19 Marking and Signs for Access Routes.

The CSPP should indicate that pavement markings and signs for construction personnel will conform to <u>AC 150/5340-18</u> and, to the extent practicable, with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) and/or State highway specifications. Signs adjacent to areas used by aircraft must comply with the frangibility requirements of <u>AC 150/5220-23</u>, *Frangible Connections*, which may require modification to size and height guidance in the MUTCD.

#### 2.20 Hazard Marking, Lighting and Signing.

2.20.1 Hazard marking, lighting, and signing prevent pilots from entering areas closed to aircraft, and prevent construction personnel from entering areas open to aircraft. The CSPP must specify prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles. Hazard marking and lighting must also be specified to identify open manholes, small areas under repair, stockpiled material, waste areas, and areas subject to jet blast. Also consider less obvious construction-related hazards and include markings to identify FAA, airport, and National Weather Service facilities cables and power lines; instrument landing system (ILS) critical areas; airport surfaces, such as RSA, OFA, and OFZ; and other sensitive areas to make it easier for contractor personnel to avoid these areas.

#### 2.20.2 Equipment.

#### 2.20.2.1 Barricades.

Low profile barricades, including traffic cones, (weighted or sturdily attached to the surface) are acceptable methods used to identify and define the limits of construction and hazardous areas on airports. Careful consideration must be given to selecting equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast. The spacing of barricades must be such that a breach is physically prevented barring a deliberate act. For example, if barricades are intended to exclude aircraft, gaps between barricades must be smaller than the wingspan of the smallest aircraft to be excluded; if barricades are intended to exclude vehicles, gaps between barricades must be smaller than the width of the excluded vehicles, generally 4 feet (1.2 meters). Provision must be made for ARFF access if necessary. If barricades are intended to exclude pedestrians, they must be continuously linked. Continuous linking may be accomplished through the use of ropes, securely attached to prevent FOD.

#### 2.20.2.2 Lights.

Lights must be red, either steady burning or flashing, and must meet the luminance requirements of the State Highway Department. Batteries powering lights will last longer if lights flash. Lights must be mounted on barricades and spaced at no more than 10 feet (3 meters). Lights must be operated between sunset and sunrise and during periods of low visibility whenever the airport is open for operations. They may be operated by photocell, but this may require that the contractor turn them on manually during periods of low visibility during daytime hours.

2.20.2.3 Supplement Barricades with Signs (for example) As Necessary. Examples are "No Entry" and "No Vehicles." Be aware of the increased effects of wind and jet blast on barricades with attached signs.

#### 2.20.2.4 Air Operations Area – General.

Barricades are not permitted in any active safety area or on the runway side of a runway hold line. Within a runway or taxiway object free area, and on aprons, use orange traffic cones, flashing or steady burning red lights as noted above, highly reflective collapsible barricades marked with diagonal, alternating orange and white stripes; and/or signs to separate all construction/maintenance areas from the movement area. Barricades may be supplemented with alternating orange and white flags at least 20 by 20 inch (50 by 50 cm) square and securely fastened to eliminate FOD. All barricades adjacent to any open runway or taxiway / taxilane safety area, or apron must be as low as possible to the ground, and no more than 18 inches high, exclusive of supplementary lights and flags. Barricades must be of low mass; easily collapsible upon contact with an aircraft or any of its components; and weighted or sturdily attached to the surface to prevent displacement from prop wash, jet blast, wing vortex, and other surface wind currents. If affixed to the surface, they must be frangible at grade level or as low as possible, but not to exceed 3 inch (7.6 cm) above the ground. Figure 2-8 and Figure 2-9 show sample barricades with proper coloring and flags.

#### **Figure 2-8. Interlocking Barricades**



### Figure 2-9. Low Profile Barricades



# 2.20.2.5 Air Operations Area – Runway/Taxiway Intersections.

Use highly reflective barricades with lights to close taxiways leading to closed runways. Evaluate all operating factors when determining how to mark temporary closures that can last from 10 to 15 minutes to a much longer period of time. However, even for closures of relatively short duration, close all taxiway/runway intersections with barricades. The use of traffic cones is appropriate for short duration closures.

#### 2.20.2.6 Air Operations Area – Other.

Beyond runway and taxiway object free areas and aprons, barricades intended for construction vehicles and personnel may be many different shapes and made from various materials, including railroad ties, sawhorses, jersey barriers, or barrels.

### 2.20.2.7 Maintenance.

The construction specifications must include a provision requiring the contractor to have a person on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades. The contractor must file the contact person's information with the airport operator. Lighting should be checked for proper operation at least once per day, preferably at dusk.

#### 2.21 Work Zone Lighting for Nighttime Construction.

Lighting equipment must adequately illuminate the work area if the construction is to be performed during nighttime hours. Refer to <u>AC 150/5370-10</u> for minimum illumination levels for nighttime paving projects. Additionally, it is recommended that all support equipment, except haul trucks, be equipped with artificial illumination to safely

illuminate the area immediately surrounding their work areas. The lights should be positioned to provide the most natural color illumination and contrast with a minimum of shadows. The spacing must be determined by trial. Light towers should be positioned and adjusted to aim away from ATCT cabs and active runways to prevent blinding effects. Shielding may be necessary. Light towers should be removed from the construction site when the area is reopened to aircraft operations. Construction lighting units should be identified and generally located on the construction phasing plans in relationship to the ATCT and active runways and taxiways.

### 2.22 Protection of Runway and Taxiway Safety Areas.

Runway and taxiway safety areas, OFZs, OFAs, and approach surfaces are described in <u>AC 150/5300-13</u>. Protection of these areas includes limitations on the location and height of equipment and stockpiled material. An FAA airspace study may be required. Coordinate with the appropriate FAA Airports Regional or District Office if there is any doubt as to requirements or dimensions (see paragraph <u>2.13.5</u>) as soon as the location and height of materials or equipment are known. The CSPP should include drawings showing all safety areas, object free areas, obstacle free zones and approach departure surfaces affected by construction.

### 2.22.1 Runway Safety Area (RSA).

A runway safety area is the defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway (see AC 150/5300-13). Construction activities within the existing RSA are subject to the following conditions:

- 2.22.1.1 No construction may occur within the existing RSA while the runway is open for aircraft operations. The RSA dimensions may be temporarily adjusted if the runway is restricted to aircraft operations requiring an RSA that is equal to the RSA width and length beyond the runway ends available during construction. (See <u>AC 150/5300-13</u>). The temporary use of declared distances and/or partial runway closures may provide the necessary RSA under certain circumstances. Coordinate with the appropriate FAA Airports Regional or District Office to have declared distances information published, and appropriate NOTAMs issued. See <u>AC 150/5300-13</u> for guidance on the use of declared distances.
- 2.22.1.2 The airport operator must coordinate the adjustment of RSA dimensions as permitted above with the appropriate FAA Airports Regional or District Office and the local FAA air traffic manager and issue a NOTAM.
- 2.22.1.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations.

#### 2.22.1.4 Excavations.

- 2.22.1.4.1 Open trenches or excavations are not permitted within the RSA while the runway is open. Backfill trenches before the runway is opened. If backfilling excavations before the runway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the runway across the trench without damage to the aircraft.
- 2.22.1.4.2 Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

### 2.22.1.5 Erosion Control.

Soil erosion must be controlled to maintain RSA standards, that is, the RSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and fire fighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

#### 2.22.2 Runway Object Free Area (ROFA).

Construction, including excavations, may be permitted in the ROFA. However, equipment must be removed from the ROFA when not in use, and material should not be stockpiled in the ROFA if not necessary. Stockpiling material in the OFA requires submittal of a 7460-1 form and justification provided to the appropriate FAA Airports Regional or District Office for approval.

#### 2.22.3 Taxiway Safety Area (TSA).

- 2.22.3.1 A taxiway safety area is a defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway. (See <u>AC 150/5300-13</u>.) Since the width of the TSA is equal to the wingspan of the design aircraft, no construction may occur within the TSA while the taxiway is open for aircraft operations. The TSA dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a TSA that is equal to the TSA width available during construction. Give special consideration to TSA dimensions at taxiway turns and intersections. (see <u>AC 150/5300-13</u>).
- 2.22.3.2 The airport operator must coordinate the adjustment of the TSA width as permitted above with the appropriate FAA Airports Regional or District Office and the FAA air traffic manager and issue a NOTAM.

2.22.3.3 The CSPP and SPCD must provide procedures for ensuring adequate distance for protection from blasting operations.

#### 2.22.3.4 Excavations.

- Curves. Open trenches or excavations are not permitted within the TSA while the taxiway is open. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations appropriately. Covering for open trenches must be designed to allow the safe operation of the heaviest aircraft operating on the taxiway across the trench without damage to the aircraft.
- 2. Straight Sections. Open trenches or excavations are not permitted within the TSA while the taxiway is open for unrestricted aircraft operations. Trenches should be backfilled before the taxiway is opened. If backfilling excavations before the taxiway must be opened is impracticable, cover the excavations to allow the safe passage of ARFF equipment and of the heaviest aircraft operating on the taxiway across the trench without causing damage to the equipment or aircraft. In rare circumstances where the section of taxiway is indispensable for aircraft movement, open trenches or excavations may be permitted in the TSA while the taxiway is open to aircraft operations, subject to the following restrictions:
  - a. Taxiing speed is limited to 10 mph.
  - b. Appropriate NOTAMs are issued.
  - Marking and lighting meeting the provisions of paragraphs <u>2.18</u> and <u>2.20</u> are implemented.
  - d. Low mass, low-profile lighted barricades are installed.
  - e. Appropriate temporary orange construction signs are installed.
- 3. Construction contractors must prominently mark open trenches and excavations at the construction site with red or orange flags, as approved by the airport operator, and light them with red lights during hours of restricted visibility or darkness.

#### 2.22.3.5 Erosion control.

Soil erosion must be controlled to maintain TSA standards, that is, the TSA must be cleared and graded and have no potentially hazardous ruts, humps, depressions, or other surface variations, and capable, under dry conditions, of supporting snow removal equipment, aircraft rescue and firefighting equipment, and the occasional passage of aircraft without causing structural damage to the aircraft.

### 2.22.4 Taxiway Object Free Area (TOFA).

Unlike the Runway Object Free Area, aircraft wings regularly penetrate the taxiway object free area during normal operations. Thus, the restrictions are more stringent. Except as provided below, no construction may occur within the taxiway object free area while the taxiway is open for aircraft operations.

- 2.22.4.1 The taxiway object free area dimensions may be temporarily adjusted if the taxiway is restricted to aircraft operations requiring a taxiway object free area that is equal to the taxiway object free area width available. Give special consideration to TOFA dimensions at taxiway turns and intersections.
- 2.22.4.2 Offset taxiway centerline and edge pavement markings (do not use glass beads) may be used as a temporary measure to provide the required taxiway object free area. Where offset taxiway pavement markings are provided, centerline lighting, centerline reflectors, or taxiway edge reflectors are required. Existing lighting that does not coincide with the temporary markings must be taken out of service.
- 2.22.4.3 Construction activity, including open excavations, may be accomplished without adjusting the width of the taxiway object free area, subject to the following restrictions:
- 2.22.4.3.1 Taxiing speed is limited to 10 mph.
- 2.22.4.3.2 NOTAMs issued advising taxiing pilots of hazard and recommending reduced taxiing speeds on the taxiway.
- 2.22.4.3.3 Marking and lighting meeting the provisions of paragraphs <u>2.18</u> and <u>2.20</u> are implemented.
- 2.22.4.3.4 If desired, appropriate orange construction signs are installed. See paragraph 2.18.4.2 and Appendix F.
- 2.22.4.3.5 Five-foot clearance is maintained between equipment and materials and any part of an aircraft (includes wingtip overhang). If such clearance can only be maintained if an aircraft does not have full use of the entire taxiway width (with its main landing gear at the edge of the usable pavement), then it will be necessary to move personnel and equipment for the passage of that aircraft.
- 2.22.4.3.6 Flaggers furnished by the contractor must be used to direct and control construction equipment and personnel to a pre-established setback distance for safe passage of aircraft, and airline and/or airport personnel. Flaggers must also be used to direct taxiing aircraft. Due to liability issues, the airport operator should require airlines to provide flaggers for directing taxiing aircraft.

# 2.22.5 Obstacle Free Zone (OFZ).

In general, personnel, material, and/or equipment may not penetrate the OFZ while the runway is open for aircraft operations. If a penetration to the OFZ is necessary, it may be possible to continue aircraft operations through operational restrictions. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

### 2.22.6 Runway Approach/Departure Areas and Clearways.

All personnel, materials, and/or equipment must remain clear of the applicable threshold siting surfaces, as defined in <u>AC 150/5300-13</u>. Objects that do not penetrate these surfaces may still be obstructions to air navigation and may affect standard instrument approach procedures. Coordinate with the FAA through the appropriate FAA Airports Regional or District Office.

2.22.6.1 Construction activity in a runway approach/departure area may result in the need to partially close a runway or displace the existing runway threshold. Partial runway closure, displacement of the runway threshold, as well as closure of the complete runway and other portions of the movement area also require coordination through the airport operator with the appropriate FAA air traffic manager (FSS if non-towered) and ATO/Technical Operations (for affected NAVAIDS) and airport users.

# 2.22.6.2 Caution About Partial Runway Closures.

When filing a NOTAM for a partial runway closure, clearly state that the portion of pavement located prior to the threshold is not available for landing and departing traffic. In this case, the threshold has been moved for both landing and takeoff purposes (this is different than a displaced threshold). There may be situations where the portion of closed runway is available for taxiing only. If so, the NOTAM must reflect this condition).

# 2.22.6.3 Caution About Displaced Thresholds.

Implementation of a displaced threshold affects runway length available for aircraft landing over the displacement. Depending on the reason for the displacement (to provide obstruction clearance or RSA), such a displacement may also require an adjustment in the landing distance available and accelerate-stop distance available in the opposite direction. If project scope includes personnel, equipment, excavation, or other work within the existing RSA of any usable runway end, do not implement a displaced threshold unless arrivals and departures toward the construction activity are prohibited. Instead, implement a partial closure.

# 2.23 Other Limitations on Construction.

The CSPP must specify any other limitations on construction, including but not limited to:

2.23.2

# 2.23.1 Prohibitions.

2.23.1.1	No use of tall equipment (cranes, concrete pumps, and so on) unless a 7460-1 determination letter is issued for such equipment.	
2.23.1.2	2 No use of open flame welding or torches unless fire safety precautions are provided and the airport operator has approved their use.	
2.23.1.3	No use of electrical blasting caps on or within 1,000 feet (300 meters) of the airport property. See <u>AC 150/5370-10</u> .	
Restriction	18.	

- 2.23.2.1 Construction suspension required during specific airport operations.
- 2.23.2.2 Areas that cannot be worked on simultaneously.
- 2.23.2.3 Day or night construction restrictions.
- 2.23.2.4 Seasonal construction restrictions.
- 2.23.2.5 Temporary signs not approved by the airport operator.
- 2.23.2.6 Grades changes that could result in unplanned effects on NAVAIDs.

#### CHAPTER 3. GUIDELINES FOR WRITING A CSPP

#### 3.1 General Requirements.

The CSPP is a standalone document written to correspond with the subjects outlined in paragraph 2.4. The CSPP is organized by numbered sections corresponding to each subject listed in paragraph 2.4, and described in detail in paragraphs 2.5 - 2.23. Each section number and title in the CSPP matches the corresponding subject outlined in paragraph 2.4 (for example, 1. Coordination, 2. Phasing, 3. Areas and Operations Affected by the Construction Activity, and so on). With the exception of the project scope of work outlined in Section 2. Phasing, only subjects specific to operational safety during construction should be addressed.

#### 3.2 Applicability of Subjects.

Each section should, to the extent practical, focus on the specific subject. Where an overlapping requirement spans several sections, the requirement should be explained in detail in the most applicable section. A reference to that section should be included in all other sections where the requirement may apply. For example, the requirement to protect existing underground FAA ILS cables during trenching operations could be considered FAA ATO coordination (Coordination, paragraph 2.5.3), an area and operation affected by the construction activity (Areas and Operations Affected by the Construction Activity, paragraph 2.7.1.4), a protection of a NAVAID (Protection of Navigational Aids (NAVAIDs), paragraph 2.8), or a notification to the FAA of construction activities (Notification of Construction Activities, paragraph 2.13.5.3.2). However, it is more specifically an underground utility requirement (Underground Utilities, paragraph 2.15). The procedure for protecting underground ILS cables during trenching operations should therefore be described in 2.4.2.11: "The contractor must coordinate with the local FAA System Support Center (SSC) to mark existing ILS cable routes along Runway 17-35. The ILS cables will be located by hand digging whenever the trenching operation moves within 10 feet of the cable markings." All other applicable sections should include a reference to 2.4.2.11: "ILS cables shall be identified and protected as described in 2.4.2.11" or "See 2.4.2.11 for ILS cable identification and protection requirements." Thus, the CSPP should be considered as a whole, with no need to duplicate responses to related issues.

#### 3.3 Graphical Representations.

Construction safety drawings should be included in the CSPP as attachments. When other graphical representations will aid in supporting written statements, the drawings, diagrams, and/or photographs should also be attached to the CSPP. References should be made in the CSPP to each graphical attachment and may be made in multiple sections.

#### 3.4 Reference Documents.

The CSPP must not incorporate a document by reference unless reproduction of the material in that document is prohibited. In that case, either copies of or a source for the referenced document must be provided to the contractor. Where this AC recommends references (e.g. as in paragraph <u>3.9</u>) the intent is to include a reference to the corresponding section in the CSPP, not to this Advisory Circular.

#### 3.5 Restrictions.

The CSPP should not be considered as a project design review document. The CSPP should also avoid mention of permanent ("as-built") features such as pavements, markings, signs, and lighting, except when such features are intended to aid in maintaining operational safety during the construction.

#### 3.6 Coordination.

Include in this section a detailed description of conferences and meetings to be held both before and during the project. Include appropriate information from <u>AC 150/5370-</u> <u>12</u>. Discuss coordination procedures and schedules for each required FAA ATO Technical Operations shutdown and restart and all required flight inspections.

### 3.7 Phasing.

Include in this section a detailed scope of work description for the project as a whole and each phase of work covered by the CSPP. This includes all locations and durations of the work proposed. Attach drawings to graphically support the written scope of work. Detail in this section the sequenced phases of the proposed construction. Include a reference to paragraph <u>3.8</u>, as appropriate.

#### 3.8 Areas and Operations Affected by Construction.

Focus in this section on identifying the areas and operations affected by the construction. Describe corresponding mitigation that is not covered in detail elsewhere in the CSPP. Include references to paragraphs below as appropriate. Attach drawings as necessary to graphically describe affected areas and mechanisms proposed. See <u>Appendix F</u> for sample operational effects tables and figures.

### 3.9 NAVAID Protection.

List in this section all NAVAID facilities that will be affected by the construction. Identify NAVAID facilities that will be placed out of service at any time prior to or during construction activities. Identify individuals responsible for coordinating each shutdown and when each facility will be out of service. Include a reference to paragraph <u>3.6</u> for FAA ATO NAVAID shutdown, restart, and flight inspection coordination. Outline in detail procedures to protect each NAVAID facility remaining in service from interference by construction activities. Include a reference to paragraph <u>3.14</u> for the issuance of NOTAMs as required. Include a reference to paragraph 3.16 for the protection of underground cables and piping serving NAVAIDs. If temporary visual aids are proposed to replace or supplement existing facilities, include a reference to paragraph 3.19. Attach drawings to graphically indicate the affected NAVAIDS and the corresponding critical areas.

#### 3.10 Contractor Access.

This will necessarily be the most extensive section of the CSPP. Provide sufficient detail so that a contractor not experienced in working on airports will understand the unique restrictions such work will require. Due to this extent, it should be broken down into subsections as described below:

#### 3.10.1 Location of Stockpiled Construction Materials.

Describe in this section specific locations for stockpiling material. Note any height restrictions on stockpiles. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify stockpiles. Include a reference to paragraph 3.11 for provisions to prevent stockpile material from becoming wildlife attractants. Include a reference to paragraph 3.12 for provisions to prevent stockpile material from becoming wildlife attractants. Include a reference to paragraph 3.12 for provisions to prevent stockpile material from becoming FOD. Attach drawings to graphically indicate the stockpile locations.

### 3.10.2 Vehicle and Pedestrian Operations.

While there are many items to be addressed in this major subsection of the CSPP, all are concerned with one main issue: keeping people and vehicles from areas of the airport where they don't belong. This includes preventing unauthorized entry to the AOA and preventing the improper movement of pedestrians or vehicles on the airport. In this section, focus on mechanisms to prevent construction vehicles and workers traveling to and from the worksite from unauthorized entry into movement areas. Specify locations of parking for both employee vehicles and construction equipment, and routes for access and haul roads. In most cases, this will best be accomplished by attaching a drawing. Quote from AC 150/5210-5 specific requirements for contractor vehicles rather than referring to the AC as a whole, and include special requirements for identifying HAZMAT vehicles. Quote from, rather than incorporate by reference, AC 150/5210-20 as appropriate to address the airport's rules for ground vehicle operations, including its training program. Discuss the airport's recordkeeping system listing authorized vehicle operators.

#### 3.10.3 <u>Two-Way Radio Communications.</u>

Include a special section to identify all individuals who are required to maintain communications with Air Traffic (AT) at airports with active towers, or monitor CTAF at airports without or with closed ATCT. Include training requirements for all individuals required to communicate with AT. Individuals required to monitor AT frequencies should also be identified. If construction employees are also required to communicate by radio with Airport Operations, this procedure should be described in detail. Usage of vehicle mounted radios and/or portable radios should be addressed. Communication procedures for the event of disabled radio communication (that is, light signals, telephone numbers, others) must be included. All radio frequencies should by identified (Tower, Ground Control, CTAF, UNICOM, ATIS, and so on).

#### 3.10.4 Airport Security.

Address security as it applies to vehicle and pedestrian operations. Discuss TSA requirements, security badging requirements, perimeter fence integrity, gate security, and other needs. Attach drawings to graphically indicate secured and/or Security Identification Display Areas (SIDA), perimeter fencing, and available access points.

#### 3.11 Wildlife Management.

Discuss in this section wildlife management procedures. Describe the maintenance of existing wildlife mitigation devices, such as perimeter fences, and procedures to limit wildlife attractants. Include procedures to notify Airport Operations of wildlife encounters. Include a reference to paragraph <u>3.10</u> for security (wildlife) fence integrity maintenance as required.

#### 3.12 FOD Management.

In this section, discuss methods to control and monitor FOD: worksite housekeeping, ground vehicle tire inspections, runway sweeps, and so on. Include a reference to paragraph <u>3.15</u> for inspection requirements as required.

### 3.13 HAZMAT Management.

Describe in this section HAZMAT management procedures: fuel deliveries, spill recovery procedures, Safety Data Sheet (SDS), Material Safety Data Sheet (MSDS) or Product Safety Data Sheet (PSDS) availability, and other considerations. Any specific airport HAZMAT restrictions should also be identified. Include a reference to paragraph 3.10 for HAZMAT vehicle identification requirements. Quote from, rather than incorporate by reference, <u>AC 150/5320-15</u>.

#### 3.14 Notification of Construction Activities.

List in this section the names and telephone numbers of points of contact for all parties affected by the construction project. We recommend a single list that includes all telephone numbers required under this section. Include emergency notification procedures for all representatives of all parties potentially impacted by the construction. Identify individual representatives – and at least one alternate – for each party. List both on-duty and off-duty contact information for each individual, including individuals responsible for emergency maintenance of airport construction hazard lighting and barricades. Describe procedures to coordinate immediate response to events that might adversely affect the operational safety of the airport (such as interrupted NAVAID service). Explain requirements for and the procedures for the issuance of Notices to Airmen (NOTAMs), notification to FAA required by 14 CFR Part 77 and Part 157 and in the event of affected NAVAIDs. For NOTAMs, identify an individual, and at least one alternate, responsible for issuing and cancelling each specific type of Notice to

Airmen (NOTAM) required. Detail notification methods for police, fire fighting, and medical emergencies. This may include 911, but should also include direct phone numbers of local police departments and nearby hospitals. Identify the E911 address of the airport and the emergency access route via haul roads to the construction site. Require the contractor to have this information available to all workers. The local Poison Control number should be listed. Procedures regarding notification of Airport Operations and/or the ARFF Department of such emergencies should be identified, as applicable. If airport radio communications are identified as a means of emergency notification, include a reference to paragraph <u>3.10</u>. Differentiate between emergency and nonemergency notification of ARFF personnel, the latter including activities that affect ARFF water supplies and access roads. Identify the primary ARFF contact person and at least one alternate. If notification is to be made through Airport Operations, then detail this procedure. Include a method of confirmation from the ARFF department.

#### 3.15 Inspection Requirements.

Describe in this section inspection requirements to ensure airfield safety compliance. Include a requirement for routine inspections by the resident engineer (RE) or other airport operator's representative and the construction contractors. If the engineering consultants and/or contractors have a Safety Officer who will conduct such inspections, identify this individual. Describe procedures for special inspections, such as those required to reopen areas for aircraft operations. Part 139 requires daily airfield inspections at certificated airports, but these may need to be more frequent when construction is in progress. Discuss the role of such inspections on areas under construction. Include a requirement to immediately remedy any deficiencies, whether caused by negligence, oversight, or project scope change.

#### 3.16 Underground Utilities.

Explain how existing underground utilities will be located and protected. Identify each utility owner and include contact information for each company/agency in the master list. Address emergency response procedures for damaged or disrupted utilities. Include a reference to paragraph 3.14 for notification of utility owners of accidental utility disruption as required.

#### 3.17 Penalties.

Describe in this section specific penalties imposed for noncompliance with airport rules and regulations, including the CSPP: SIDA violations, VPD, and others.

#### 3.18 Special Conditions.

Identify any special conditions that may trigger specific safety mitigation actions outlined in this CSPP: low visibility operations, snow removal, aircraft in distress, aircraft accident, security breach, VPD, and other activities requiring construction suspension/resumption. Include a reference to paragraph <u>3.10</u> for compliance with airport safety and security measures and for radio communications as required. Include

a reference to paragraph 3.14 for emergency notification of all involved parties, including police/security, ARFF, and medical services.

#### 3.19 Runway and Taxiway Visual Aids.

Include marking, lighting, signs, and visual NAVAIDS. Detail temporary runway and taxiway marking, lighting, signs, and visual NAVAIDs required for the construction. Discuss existing marking, lighting, signs, and visual NAVAIDs that are temporarily, altered, obliterated, or shut down. Consider non-federal facilities and address requirements for reimbursable agreements necessary for alteration of FAA facilities and for necessary flight checks. Identify temporary TORA signs or runway distance remaining signs if appropriate. Identify required temporary visual NAVAIDs such as REIL or PAPI. Quote from, rather than incorporate by reference, <u>AC 150/5340-1</u>, *Standards for Airport Markings; <u>AC 150/5340-18</u>, <i>Standards for Airport Sign Systems;* and <u>AC 150/5340-30</u>, as required. Attach drawings to graphically indicate proposed marking, lighting, signs, and visual NAVAIDs.

### 3.20 Marking and Signs for Access Routes.

Detail plans for marking and signs for vehicle access routes. To the extent possible, signs should be in conformance with the Federal Highway Administration MUTCD and/or State highway specifications, not hand lettered. Detail any modifications to the guidance in the MUTCD necessary to meet frangibility/height requirements.

# 3.21 Hazard Marking and Lighting.

Specify all marking and lighting equipment, including when and where each type of device is to be used. Specify maximum gaps between barricades and the maximum spacing of hazard lighting. Identify one individual and at least one alternate responsible for maintenance of hazard marking and lighting equipment in the master telephone list. Include a reference to paragraph 3.14. Attach drawings to graphically indicate the placement of hazard marking and lighting equipment.

# 3.22 Work Zone Lighting for Nighttime Construction.

If work is to be conducted at night, specify all lighting equipment, including when and where each type of device is to be used. Indicate the direction lights are to be aimed and any directions that aiming of lights is prohibited. Specify any shielding necessary in instances where aiming is not sufficient to prevent interference with air traffic control and aircraft operations. Attach drawings to graphically indicate the placement and aiming of lighting equipment. Where the plan only indicates directions that aiming of lights is prohibited, the placement and positioning of portable lights must be proposed by the Contractor and approved by the airport operator's representative each time lights are relocated or repositioned.

# 3.23 Protection of Runway and Taxiway Safety Areas.

This section should focus exclusively on procedures for protecting all safety areas, including those altered by the construction: methods of demarcation, limit of access, movement within safety areas, stockpiling and trenching restrictions, and so on. Reference AC 150/5300-13, as required. Include a reference to paragraph 3.10 for procedures regarding vehicle and personnel movement within safety areas. Include a reference to paragraph 3.10 for material stockpile restrictions as required. Detail requirements for trenching, excavations, and backfill. Include a reference to paragraph 3.21 for hazard marking and lighting devices used to identify open excavations as required. If runway and taxiway closures are proposed to protect safety areas, or if temporary displaced thresholds and/or revised declared distances are used to provide the required Runway Safety Area, include a reference to paragraphs 3.14 and 3.19. Detail procedures for protecting the runway OFZ, runway OFA, taxiway OFA and runway approach surfaces including those altered by the construction: methods of demarcation, limit of cranes, storage of equipment, and so on. Quote from, rather than incorporate by reference, AC 150/5300-13, as required. Include a reference to paragraph 3.24 for height (i.e., crane) restrictions as required. One way to address the height of equipment that will move during the project is to establish a three-dimensional "box" within which equipment will be confined that can be studied as a single object. Attach drawings to graphically indicate the safety area, OFZ, and OFA boundaries.

### 3.24 Other Limitations on Construction.

This section should describe what limitations must be applied to each area of work and when each limitation will be applied: limitations due to airport operations, height (i.e., crane) restrictions, areas which cannot be worked at simultaneously, day/night work restrictions, winter construction, and other limitations. Include a reference to paragraph <u>3.7</u> for project phasing requirements based on construction limitations as required.

# Page Intentionally Blank

3-8

# APPENDIX A. RELATED READING MATERIAL

Obtain the latest version of the following free publications from the FAA on its Web site at <u>http://www.faa.gov/airports/</u>.

Number	Title and Description
AC 150/5200-28	Notices to Airmen (NOTAMs) for Airport Operators
	Guidance for using the NOTAM System in airport reporting.
AC 150/5200-30	Airport Field Condition Assessments and Winter Operations Safety
	Guidance for airport owners/operators on the development of an acceptable airport snow and ice control program and on appropriate field condition reporting procedures.
AC 150/5200-33	Hazardous Wildlife Attractants On or Near Airports
	Guidance on locating certain land uses that might attract hazardous wildlife to public-use airports.
AC 150/5210-5	Painting, Marking, and Lighting of Vehicles Used on an Airport
	Guidance, specifications, and standards for painting, marking, and lighting vehicles operating in the airport air operations areas.
AC 150/5210-20	Ground Vehicle Operations to include Taxiing or Towing an Aircraft on Airports
	Guidance to airport operators on developing ground vehicle operation training programs.
AC 150/5300-13	Airport Design
	FAA standards and recommendations for airport design. Establishes approach visibility minimums as an airport design parameter, and contains the Object Free area and the obstacle free-zone criteria.
AC 150/5210-24	Airport Foreign Object Debris (FOD) Management Guidance for developing and managing an airport foreign object debris
	(FOD) program

# **Table A-1. FAA Publications**

Number	Title and Description
AC 150/5320-15	Management of Airport Industrial Waste
	Basic information on the characteristics, management, and regulations of industrial wastes generated at airports. Guidance for developing a Storm Water Pollution Prevention Plan (SWPPP) that applies best management practices to eliminate, prevent, or reduce pollutants in storm water runoff with particular airport industrial activities.
AC 150/5340-1	Standards for Airport Markings
	FAA standards for the siting and installation of signs on airport runways and taxiways.
AC 150/5340-18	Standards for Airport Sign Systems
	FAA standards for the siting and installation of signs on airport runways and taxiways.
AC 150/5345-28	Precision Approach Path Indicator (PAPI) Systems
	FAA standards for PAPI systems, which provide pilots with visual glide slope guidance during approach for landing.
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
	Guidance and recommendations on the installation of airport visual aids.
AC 150/5345-39	Specification for L-853, Runway and Taxiway Retroreflective Markers
AC 150/5345-44	Specification for Runway and Taxiway Signs
	FAA specifications for unlighted and lighted signs for taxiways and runways.
AC 150/5345-53	Airport Lighting Equipment Certification Program
	Details on the Airport Lighting Equipment Certification Program (ALECP).
AC 150/5345-50	Specification for Portable Runway and Taxiway Lights
	FAA standards for portable runway and taxiway lights and runway end identifier lights for temporary use to permit continued aircraft operations while all or part of a runway lighting system is inoperative.
AC 150/5345-55	Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure
Number	Title and Description
-----------------------	---
<u>AC 150/5370-10</u>	Standards for Specifying Construction of Airports Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction.
AC 150/5370-12	Quality Management for Federally Funded Airport Construction Projects
EB 93	Guidance for the Assembly and Installation of Temporary Orange Construction Signs
FAA Order 5200.11	FAA Airports (ARP) Safety Management System (SMS) Basics for implementing SMS within ARP. Includes roles and responsibilities of ARP management and staff as well as other FAA lines of business that contribute to the ARP SMS.
FAA Certalert 98-05	Grasses Attractive to Hazardous Wildlife Guidance on grass management and seed selection.
FAA Form 7460-1	Notice of Proposed Construction or Alteration
FAA Form 7480-1	Notice of Landing Area Proposal
FAA Form 6000.26	National NAS Strategic Interruption Service Level Agreement, Strategic Events Coordination, Airport Sponsor Form

Obtain the latest version of the following free publications from the Electronic Code of Federal Regulations at <u>http://www.ecfr.gov/</u>.

## Table A-2. Code of Federal Regulation

Number	Title
Title 14 CFR Part 77	Safe, Efficient Use and Preservation of the Navigable Airspace
Title 14 CFR Part 139	Certification of Airports
Title 49 CFR Part 1542	Airport Security

Obtain the latest version of the Manual on Uniform Traffic Control Devices from the Federal Highway Administration at <u>http://mutcd.fhwa.dot.gov/</u>.

Page Intentionally Blank

## APPENDIX B. TERMS AND ACRONYMS

# Table B-1. Terms and Acronyms

Term	Definition				
Form 7460-1	Notice of Proposed Construction or Alteration. For on-airport projects, the form submitted to the FAA regional or airports division office as formal written notification of any kind of construction or alteration of objects that affect navigable airspace, as defined in 14 CFR Part 77, <i>Safe, Efficient Use, and Preservation of the Navigable Airspace.</i> (See guidance available on the FAA web site at <a href="https://oeaaa.faa.gov">https://oeaaa.faa.gov</a> .) The form may be downloaded at <a href="https://www.faa.gov/airports/resources/forms/">https://www.faa.gov/airports/resources/forms/</a> , or filed electronically at: <a href="https://www.faa.gov">https://www.faa.gov</a> .				
Form 7480-1	Notice of Landing Area Proposal. Form submitted to the FAA Airports Regional Division Office or Airports District Office as formal written notification whenever a project without an airport layout plan on file with the FAA involves the construction of a new airport; the construction, realigning, altering, activating, or abandoning of a runway, landing strip, or associated taxiway; or the deactivation or abandoning of an entire airport The form may be downloaded at <u>http://www.faa.gov/airports/resources/forms/</u> .				
Form 6000-26	Airport Sponsor Strategic Event Submission Form				
AC	Advisory Circular				
ACSI	Airport Certification Safety Inspector				
ADG	Airplane Design Group				
AIP	Airport Improvement Program				
ALECP	Airport Lighting Equipment Certification Program				
ANG	Air National Guard				
ΑΟΑ	Air Operations Area, as defined in 14 CFR Part 107. Means a portion of an airport, specified in the airport security program, in which security measures are carried out. This area includes aircraft movement areas, aircraft parking areas, loading ramps, and safety areas, and any adjacent areas (such as general aviation areas) that are not separated by adequate security systems, measures, or procedures. This area does not include the secured area of the airport terminal building.				
ARFF	Aircraft Rescue and Fire Fighting				
ARP	FAA Office of Airports				
ASDA	Accelerate-Stop Distance Available				
AT	Air Traffic				
ATCT	Airport Traffic Control Tower				
ATIS	Automatic Terminal Information Service				
ATO	Air Traffic Organization				
Certificated Airport	An airport that has been issued an Airport Operating Certificate by the FAA under				

Term	Definition
	the authority of 14 CFR Part 139, Certification of Airports.
CFR	Code of Federal Regulations
Construction	The presence of construction-related personnel, equipment, and materials in any location that could infringe upon the movement of aircraft.
CSPP	Construction Safety and Phasing Plan. The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.
CTAF	Common Traffic Advisory Frequency
Displaced Threshold	A threshold that is located at a point on the runway other than the designated beginning of the runway. The portion of pavement behind a displaced threshold is available for takeoffs in either direction or landing from the opposite direction.
DOT	Department of Transportation
EPA	Environmental Protection Agency
FAA	Federal Aviation Administration
FOD	Foreign Object Debris/Damage
FSS	Flight Service Station
GA	General Aviation
HAZMAT	Hazardous Materials
HMA	Hot Mix Asphalt
IAP	Instrument Approach Procedures
IFR	Instrument Flight Rules
ILS	Instrument Landing System
LDA	Landing Distance Available
LOC	Localizer antenna array
Movement Area	The runways, taxiways, and other areas of an airport that are used for taxiing or hover taxiing, air taxiing, takeoff, and landing of aircraft, exclusive of loading aprons and aircraft parking areas (reference 14 CFR Part 139).
MSDS	Material Safety Data Sheet
MUTCD	Manual on Uniform Traffic Control Devices
NAVAID	Navigation Aid
NAVAID Critical Area	An area of defined shape and size associated with a NAVAID that must remain clear and graded to avoid interference with the electronic signal.
Non-Movement Area	The area inside the airport security fence exclusive of the Movement Area. It is important to note that the non-movement area includes pavement traversed by aircraft.

Term	Definition
NOTAM	Notices to Airmen
Obstruction	Any object/obstacle exceeding the obstruction standards specified by 14 CFR Part 77, subpart C.
OCC	Operations Control Center
OE / AAA	Obstruction Evaluation / Airport Airspace Analysis
OFA	Object Free Area. An area on the ground centered on the runway, taxiway, or taxi lane centerline provided to enhance safety of aircraft operations by having the area free of objects except for those objects that need to be located in the OFA for air navigation or aircraft ground maneuvering purposes. (See <u>AC 150/5300-13</u> for additional guidance on OFA standards and wingtip clearance criteria.)
OFZ	Obstacle Free Zone. The airspace below 150 ft (45 m) above the established airport elevation and along the runway and extended runway centerline that is required to be clear of all objects, except for frangible visual NAVAIDs that need to be located in the OFZ because of their function, in order to provide clearance protection for aircraft landing or taking off from the runway and for missed approaches. The OFZ is subdivided as follows: Runway OFZ, Inner Approach OFZ, Inner Transitional OFZ, and Precision OFZ. Refer to <u>AC 150/5300-13</u> for guidance on OFZ.
OSHA	Occupational Safety and Health Administration
OTS	Out of Service
P&R	Planning and Requirements Group
NPI	NAS Planning & Integration
PAPI	Precision Approach Path Indicator
PFC	Passenger Facility Charge
PLASI	Pulse Light Approach Slope Indicator
Project Proposal Summary	A clear and concise description of the proposed project or change that is the object of Safety Risk Management.
RA	Reimbursable Agreement
RE	Resident Engineer
REIL	Runway End Identifier Lights
RNAV	Area Navigation
ROFA	Runway Object Free Area
RSA	Runway Safety Area. A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to airplanes in the event of an undershoot, overshoot, or excursion from the runway, in accordance with <u>AC 150/5300-13</u> .
SDS	Safety Data Sheet
SIDA	Security Identification Display Area
SMS	Safety Management System

Term	Definition
SPCD	Safety Plan Compliance Document. Details developed and submitted by a contractor to the airport operator for approval providing details on how the performance of a construction project will comply with the CSPP.
SRM	Safety Risk Management
SSC	System Support Center
Taxiway Safety Area	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an airplane unintentionally departing the taxiway, in accordance with $\underline{AC 150/5300-13}$ .
TDG	Taxiway Design Group
Temporary	Any condition that is not intended to be permanent.
Temporary Runway End	The beginning of that portion of the runway available for landing and taking off in one direction, and for landing in the other direction. Note the difference from a displaced threshold.
Threshold	The beginning of that portion of the runway available for landing. In some instances, the landing threshold may be displaced.
TODA	Takeoff Distance Available
TOFA	Taxiway Object Free Area
TORA	Takeoff Run Available. The length of the runway less any length of runway unavailable and/or unsuitable for takeoff run computations. See <u>AC 150/5300-13</u> for guidance on declared distances.
TSA	Taxiway Safety Area, or Transportation Security Administration
UNICOM	A radio communications system of a type used at small airports.
VASI	Visual Approach Slope Indicator
VGSI	Visual Glide Slope Indicator. A device that provides a visual glide slope indicator to landing pilots. These systems include precision approach path indicator (PAPI), visual approach slope indicator (VASI), and pulse light approach slope indicator (PLASI).
VFR	Visual Flight Rules
VOR	Very High Frequency Omnidirectional Radio Range
VPD	Vehicle / Pedestrian Deviation

# APPENDIX C. SAFETY AND PHASING PLAN CHECKLIST

This appendix is keyed to <u>Chapter 2</u>. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not a required submittal.

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Gen	eral Considera	tions			
Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	2.5				
Operational safety is a standing agenda item for construction progress meetings.	<u>2.5</u>				
Scheduling of the construction phases is properly addressed.	<u>2.6</u>				
Any formal agreements are established.	2.5.3				
Areas and Operation	ns Affected by (	Construction A	Activity		
Drawings showing affected areas are included.	<u>2.7.1</u>				
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	<u>2.7.1.1</u>				
Access routes used by ARFF vehicles affected by the project are addressed.	<u>2.7.1.2</u>				
Access routes used by airport and airline support vehicles affected by the project are addressed.	<u>2.7.1.3</u>				
Underground utilities, including water supplies for firefighting and drainage.	<u>2.7.1.4</u>				

# Table C-1. CSPP Checklist

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Approach/departure surfaces affected by heights of temporary objects are addressed.	2.7.1.5				
Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings.	<u>2.7.1</u>				
Temporary changes to taxi operations are addressed.	2.7.2.1				
Detours for ARFF and other airport vehicles are identified.	2.7.2.2				
Maintenance of essential utilities and underground infrastructure is addressed.	<u>2.7.2.3</u>				
Temporary changes to air traffic control procedures are addressed.	2.7.2.4				
	NAVAIDs				
Critical areas for NAVAIDs are depicted on drawings.	<u>2.8</u>				
Effects of construction activity on the performance of NAVAIDS, including unanticipated power outages, are addressed.	<u>2.8</u>				
Protection of NAVAID facilities is addressed.	2.8				1.11
The required distance and direction from each NAVAID to any construction activity is depicted on drawings.	<u>2.8</u>				
Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.	<u>2.8, 2.13.1,</u> <u>2.13.5.3.1,</u> <u>2.18.1</u>				
	Contractor Acco	ess			
The CSPP addresses areas to which contractor will have access and how	<u>2.9</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
the areas will be accessed.					
The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.	<u>2.9</u>				
The location of stockpiled construction materials is depicted on drawings.	<u>2.9.1</u>				
The requirement for stockpiles in the ROFA to be approved by FAA is included.	<u>2.9.1</u>				
Requirements for proper stockpiling of materials are included.	2.9.1				
Construction site parking is addressed.	<u>2.9.2.1</u>				
Construction equipment parking is addressed.	<u>2.9.2.2</u>				
Access and haul roads are addressed.	<u>2.9.2.3</u>				
A requirement for marking and lighting of vehicles to comply with <u>AC 150/5210-5</u> , Painting, Marking and Lighting of Vehicles Used on an Airport, is included.	<u>2.9.2.4</u>				
Proper vehicle operations, including requirements for escorts, are described.	<u>2.9.2.5, 2.9.2.6</u>				
Training requirements for vehicle drivers are addressed.	<u>2.9.2.7</u>				
Two-way radio communications procedures are described.	<u>2.9.2.9</u>				
Maintenance of the secured area of the airport is addressed.	<u>2.9.2.10</u>				
W	ildlife Manageme	ent			
The airport operator's wildlife management procedures are addressed.	2.10				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Foreign	bject Debris M	anagement			
The airport operator's FOD management procedures are addressed.	<u>2.11</u>				
Hazardo	us Materials Ma	anagement			
The airport operator's hazardous materials management procedures are addressed.	<u>2.12</u>				
Notificatio	n of Constructi	on Activities			
Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.	2.13				
Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified.	<u>2.13.1</u>				
A list of local ATO/Technical Operations personnel is included.	<u>2.13.1</u>				1
A list of ATCT managers on duty is included.	<u>2.13.1</u>				
A list of authorized representatives to the OCC is included.	2.13.2				
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	<u>2.8, 2.13.2,</u> <u>2.18.3.3.9</u>				
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	<u>2.13.2</u>				
Emergency notification procedures for medical, fire fighting, and police	<u>2.13.3</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
response are addressed.					
Coordination with ARFF personnel for non-emergency issues is addressed.	<u>2.13.4</u>				
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	<u>2.13.5</u>				
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	<u>2.13.5.3.2</u>				
Ins	pection Requiren	ients			
Daily and interim inspections by both the airport operator and contractor are specified.	<u>2.14.1, 2.14.2</u>				
Final inspections at certificated airports are specified when required.	<u>2.14.3</u>				
U	nderground Utili	ties			
Procedures for protecting existing underground facilities in excavation areas are described.	<u>2.15</u>				
	Penalties				
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	<u>2.16</u>				
	Special Condition	15			(
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	<u>2.17</u>				
Runway and Taxiway Visual Aid	s - Marking, Ligl	nting, Signs,	and Visi	ual NA	VAIDs
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	<u>2.18.1</u>				
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	<u>2.18.1, 2.18.3,</u> <u>2.18.4.2,</u> <u>2.20.2.4</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
The requirement for markings to be in compliance with <u>AC 150/5340-1</u> , <i>Standards for Airport Markings</i> , is specified.	<u>2.18.2</u>				
Detailed specifications for materials and methods for temporary markings are provided.	<u>2.18.2</u>				
The requirement for lighting to conform to <u>AC 150/5340-30</u> , Design and Installation Details for Airport Visual Aids; <u>AC 150/5345-50</u> , Specification for Portable Runway and Taxiway Lights; and <u>AC</u> <u>150/5345-53</u> , Airport Lighting Certification Program, is specified.	<u>2.18.3</u>				
The use of a lighted X is specified where appropriate.	<u>2.18.2.1.2,</u> <u>2.18.3.2</u>				
The requirement for signs to conform to <u>AC 150/5345-44</u> , Specification for Runway and Taxiway Signs; AC 50/5340-18, Standards for Airport Sign Systems; and <u>AC 150/5345-53</u> , Airport Lighting Certification Program, is specified.	<u>2.18.4</u>				
Marking a	nd Signs For A	ccess Routes	-		
The CSPP specifies that pavement markings and signs intended for construction personnel should conform to <u>AC 150/5340-18</u> and, to the extent practicable, with the MUTCD and/or State highway specifications.	<u>2.18.4.2</u>				
Hazard	d Marking and	Lighting	-		
Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.	<u>2.20.1</u>				

Coordination	Reference	Addressed	Addressed?		Remarks	
		Yes	No	NA		
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	<u>2.20.1</u>					
The CSPP considers less obvious construction-related hazards.	<u>2.20.1</u>					
Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.	<u>2.20.2.1</u>					
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	2.20.2.1					
Red lights meeting the luminance requirements of the State Highway Department are specified.	2.20.2.2					
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high.	<u>2.20.2.3</u>					
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	<u>2.20.2.3</u>					
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	2.20.2.5					
Markings for temporary closures are specified.	2.20.2.5					
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	<u>2.20.2.7</u>					

Coordination	Reference	Addressed	?		Remarks
		Yes	No	NA	
Work Zone Ligh	ting for Nightt	ime Construc	tion		
If work is to be conducted at night, the CSPP identifies construction lighting units and their general locations and aiming in relationship to the ATCT and active runways and taxiways.	2.21				
Protection of Ru	nway and Taxi	iway Safety A	reas		
The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.	<u>2.22.1.1,</u> <u>2.22.3.1</u>				
The CSPP specifies that the airport operator coordinates the adjustment of RSA or TSA dimensions with the ATCT and the appropriate FAA Airports Regional or District Office and issues a local NOTAM.	<u>2.22.1.2,</u> <u>2.22.3.2</u>				
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	<u>2.22.3.3</u>				
The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open, subject to approved exceptions.	<u>2.22.1.4</u>				
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	<u>2.22.1.4</u>				
The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.	<u>2.22.1.4</u>				
Grading and soil erosion control to maintain RSA/TSA standards are	2.22.3.5				

Coordination	Reference	Addressed	Addressed?		Remarks	
		Yes	No	NA	1	
addressed.						
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	<u>2.22.2</u>					
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	2.22.3					
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	<u>2.22.4</u>					
Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included.	<u>2.22.4.3.6</u>					
Provisions for protection of runway approach/departure areas and clearways are included.	2.22.6					
Other Lin	nitations on Co	nstruction	_			
The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided and the airport operator has approved their use.	2.23.1.2					
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft (300 m) of the airport property.	<u>2.23.1.3</u>					

# APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

Item	Action Required (Describe)	No Action Required (Check)
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and		

## **Table D-1. Potentially Hazardous Conditions**

Item	Action Required (Describe)	No Action Required (Check)
approach zones.		
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		

Item	Action Required (Describe)	No Action Required (Check)
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

Item	Action Required (Describe)	No Action Required (Check)
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		

## APPENDIX E. SAMPLE OPERATIONAL EFFECTS TABLE

## E.1 Project Description.

Runway 15-33 is currently 7820 feet long, with a 500 foot stopway on the north end. This project will remove the stopway and extend the runway 1000 feet to the north and 500 feet to the south. Finally, the existing portion of the runway will be repaved. The runway 33 glide slope will be relocated. The new runway 33 localizer has already been installed by FAA Technical Operations and only needs to be switched on. Runway 15 is currently served only by a localizer, which will remain in operation as it will be beyond the future RSA. Appropriate NOTAMS will be issued throughout the project.

E.1.1 During Phase I, the runway 15 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 15 takeoff and the departure end of runway 33 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 33 will be adjusted to provide the required RSA and applicable departure surface. Excavation near Taxiway G will require its ADG to be reduced from IV to III. See Figure E-1.



## Figure E-1. Phase I Example

- Note 1: Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.
- Note 2: Based on the declared distances for Runway 33 departures, the maximum equipment height in the construction area is 12.5 feet (500/40 = 12.5).

E.2 During Phase II, the runway 33 threshold will be displaced 1000 feet to keep construction equipment below the approach surface. The start of runway 33 takeoff and the departure end of runway 15 will also be moved 500 feet to protect workers from jet blast. Declared distances for runway 15 will be adjusted to provide the required RSA and applicable departure surface. See Figure E-2.



## Figure E-2. Phase II Example

Note 1: Where hold signs are installed on both sides of a taxiway, install the TORA sign on the left side of the taxiway before the final turn to the runway intersection.

Note 2: Based on the declared distances for Runway 15 departures, the maximum equipment height in the construction area is 12.5 feet (500/40 = 12.5).

E.3 During Phase III, the existing portion of the runway will be repaved with Hot Mix Asphalt (HMA) and the runway 33 glide slope will be relocated. Construction will be accomplished between the hours of 8:00 pm and 5:00 am, during which the runway will be closed to operations.

	9,320 (TOF	RA, TODA, ASD	A. LDA)	
	9,320 (TOP	RA, TODA, ASD	A, LDA)	
	Ri	JNWAY 15 - 33		
And man		TAXIW	AY G	
	RAMP	(SECU)	(BARRICADES WI DURING HOURS (	TH SIGN INSTALLED DF CONSTRUCTION)
NSTALL LIGHTED "X" OR YELI	LOW "X" ON NUMBE	ERS AND REMO	VE WHEN RUNWAY	'S ARE OPEN FOR OPERATIONS.
	RXXXXXXA	CLOSED	8777772	
		9,320 (TOF 9,320 (TOF 9,320 (TOF 9,320 (TOF RAMP DRTH NSTALL LIGHTED "X" OR YELLOW "X" ON NUMBER	9,320 (TORA, TODA, ASD 9,320 (TORA, TODA, ASD 9,320 (TORA, TODA, ASD "RUNWAY 15 - 33 TAXIW RAMP ORTH (SECUI NSTALL LIGHTED "X" OR YELLOW "X" ON NUMBERS AND REMO	9,320 (TORA, TODA, ASDA, LDA) 9,320 (TORA, TODA, ASDA, LDA) 9,320 (TORA, TODA, ASDA, LDA) 9,320 (TORA, TODA, ASDA, LDA) RUNWAY 15 - 33 TAXIWAY G (BARRICADES WI DURING HOURS ( DURING HOURS ( SECURED TO BARRICADE NSTALL LIGHTED "X" OR YELLOW "X" ON NUMBERS AND REMOVE WHEN RUNWAY

Figure E-3. Phase III Example

Project		Runway 15-33 Extension and Repaving					
Phase	Normal (Existing)	Phase I: Extend Runway 15 End	I: Extend Phase II: Extend Phase III: ay 15 End Runway 33 End Runw				
Scope of Work	N/A	Extend Runway 15-33 1,000 ft on north end with Hot Mix Asphaltic Concrete (HMA).	Extend Runway 15-33 500 ft on south end with Hot Mix Asphaltic Concrete (HMA).	Repave existing runway with HMA Relocate Runway 33 Glide Slope			
Effects of Construction Operations	N/A	Existing North 500 ft closed	Existing South 500 ft closed	Runway closed between 8:00 pm and 5:00 am Edge lighting out of service			
Construction Phase	N/A	Phase I (Anticipated)	Phase II (Anticipated)	Phase III (Anticipated)			
Runway 15 Average Aircraft Operations	Carrier: 52 /day GA: 26 /day Military: 11 /day	Carrier: 40 /day GA: 26 /day Military: 0 /day	Carrier: 45 /day GA: 26 /day Military: 5 /day	Carrier: 45 / day GA: 20 / day Military: 0 /day			
Runway 33 Average Aircraft Operations	Carrier: 40 /day GA: 18 /day Military: 10 /day	Carrier: 30 /day GA: 18 /day Military: 0 /day	Carrier: 25 /day GA: 18 /day Military: 5 /day	Carrier: 20 /day GA: 5 /day Military: 0 /day			
Runway 15-33 Aircraft Category	C-IV	C-IV	C-IV	C-IV			
Runway 15 Approach Visibility Minimums	1 mile	1 mile	1 mile	1 mile			
Runway 33 Approach Visibility Minimums	³∕₄ mile	³⁄₄ mile	³⁄₄ mile	1 mile			

## Table E-1. Operational Effects Table

**Note:** Proper coordination with Flight Procedures group is necessary to maintain instrument approach procedures during construction.

Proje	ct	Runway 15-33 Extension and Repaving				
Phas	e	Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway	
Runway 15	TORA	7,820	7,320	8,320	9,320	
Declared Distances	TODA	7,820	7,320	8,320	9,320	
	ASDA	7,820	7,320	7,820	9,320	
	LDA	7,820	6,820	7,820	9,320	
Runway 33	TORA	7,820	7,320	8,320	9,320	
Declared Distances	TODA	7,820	7,320	8,320	9,320	
	ASDA	8,320	6,820	8,320	9,320	
	LDA	7,820	6,820	7,820	9,320	
Runway 15 Approach		LOC only	LOC only	LOC only	LOC only	
		RNAV	RNAV	RNAV	RNAV	
Proced	ures	VOR	VOR	VOR	VOR	
Runwa	y 33	ILS	ILS	ILS	LOC only	
Approach		RNAV	RNAV	RNAV	RNAV	
Proced	ures	VOR	VOR	VOR	VOR	
Runwa NAVA	y 15 IDs	LOC	LOC	LOC	LOC	
Runwa NAVA	y 33 IDs	ILS, MALSR	ILS, MALSR	ILS, MALSR	LOC, MALSR	
Taxiway (	G ADG	IV	III	IV	IV	
Taxiway (	G TDG	4	4	4	4	
ATCT (hou	rs open)	24 hours	24 hours	24 hours	0500 - 2000	
ARFF I	ndex	D	D	D	D	

Project	Runway 15-33 Extension and Repaving					
Phase	Normal (Existing)	Phase I: Extend Runway 15 End	Phase II: Extend Runway 33 End	Phase III: Repave Runway		
Special Conditions	Air National Guard (ANG) military operations	All military aircraft relocated to alternate ANG Base	Some large military aircraft relocated to alternate ANG Base	All military aircraft relocated to alternate ANG Base		
Information for NOTAMs		Refer above for applicable declared distances. Taxiway G limited to 118 ft wingspan	Refer above for applicable declared distances.	Refer above for applicable declared distances. Airport closed 2000 – 0500. Runway 15 glide slope OTS.		

**Note:** This table is one example. It may be advantageous to develop a separate table for each project phase and/or to address the operational status of the associated NAVAIDs per construction phase.

Complete the following chart for each phase to determine the area that must be protected along the runway and taxiway edges:

Runway/Taxiway	Aircraft Approach Category* A, B, C, or D	Airplane Design Group* I, II, III, or IV	Safety Area Width in Feet Divided by 2*

able E-2. Runway and	Taxiway	Edge	Protection
----------------------	---------	------	------------

\*See AC 150/5300-13 to complete the chart for a specific runway/taxiway.

Complete the following chart for each phase to determine the area that must be protected before the runway threshold:

Runway End Number	Airplane Design Group* I, II, III, or IV	Aircraft Approach Category* A, B, C, or D	Minimum Safety Area Prior to the Threshold* ft	Minimum Distance to Threshold Based on Required Approach Slope*		
				ft	:1	
			ft	ft	: 1	
			ft	ft	: 1	
		·	ft	ft	: 1	

# Table E-3. Protection Prior to Runway Threshold

\*See <u>AC 150/5300-13</u> to complete the chart for a specific runway.

# Page Intentionally Blank

## APPENDIX F. ORANGE CONSTRUCTION SIGNS

## Figure F-1. Approved Sign Legends









Figure F-2. Orange Construction Sign Example 1

Note: For proper placement of signs, refer to EB 93.



Figure F-3. Orange Construction Sign Example 2

Note: For proper placement of signs, refer to EB 93.

Page Intentionally Blank

# Advisory Circular Feedback

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by (1) mailing this form to Manager, Airport Engineering Division, Federal Aviation Administration ATTN: AAS-100, 800 Independence Avenue SW, Washington DC 20591 or (2) faxing it to the attention of the Office of Airport Safety and Standards at (202) 267-5383.

Sub	ject: AC 150/5370-2G	Date:	
Plea	ase check all appropriate line is	tems:	
	An error (procedural or typog	graphical) has been noted in paragraph	on page
	Recommend paragraph	on page	be changed as follows:
	In a future change to this AC, (Briefly describe what you want	, please cover the following subject: added.)	
	Other comments:		
	I would like to discuss the ab	ove. Please contact me at (phone num)	ber, email address).
Sub	mitted by:	Date:	

## PROPOSAL FORM CITY OF SALEM, MISSOURI SALEM MEMORIAL AIRPORT (K33) State Block Grant Project No. 23-066A-1

### TO: City Administrator, City of Salem, Missouri

The undersigned, in compliance with the request for bids for construction of the following Project:

## **Construct 6-Unit T-Hangar**

hereby proposes to furnish all labor, permits, material, machinery, tools, supplies and equipment to faithfully perform all work required for construction of the Project in accordance with the project manual, project drawings and issued Addenda within the specified time of performance for the following prices:

BID ITEM	FAA SPEC.	PEC. ITEM DESCRIPTION	APPROX. QTY. AND UNITS	UNIT PRICE		EXTENSION			
				1	DOLLARS	CTS	1	DOLLARS	CTS
Construct 6	-Unit T-Hanga	r				1	-	T. C. State	
1	C-105	Mobilization (NTE 10% of Total Bid Amount)	1 L.S.	\$	50,000	00	\$	50,000	00
2	TEMP	Temporary Marking, Lighting, and Barricades	1 L.S.	\$	3,500	00	\$	3,500	00
3	T-901 & T-908	Haul Road, Staging Area, and Site Restoration	1 L.S.	\$	17,700	00	\$	17,700	00
4		Construct 6-Unit T-Hangar	l L.S.	\$	524,000	00	\$	524,000	00
5	1444	Construct Hangar Approach	220 S.Y.	\$	135	00	\$	29,700	00
TOTAL	L BASE B	BID			-		\$	624,900	00

## ACKNOWLEDGEMENTS BY BIDDER

- a. By submittal of a proposal, the BIDDER acknowledges and accepts that the quantities established by the OWNER are an approximate estimate of the quantities required to fully complete the Project and that the estimated quantities are principally intended to serve as a basis for evaluation of bids. The BIDDER further acknowledges and accepts that payment under this contract will be made only for actual quantities and that quantities will vary in accordance with the General Provisions subsection entitled "Alteration of Work and Quantities".
- b. The BIDDER acknowledges and accepts that the Bid Documents are comprised of the documents identified within the General Provisions. The BIDDER further acknowledges that each the individual documents that comprise the Bid Documents are complementary to one another and together establishes the complete terms, conditions and obligations of the successful BIDDER.
- c. As evidence of good faith in submitting this proposal, the undersigned encloses a bid guaranty in the form of a certified check, cashier's check or bid bond in the amount of 5% of the bid price. The BIDDER acknowledges and accepts that refusal or failure to accept award and execute a contract within the terms and conditions established herein will result in forfeiture of the bid guaranty to the owner as a liquidated damage.
- d. The BIDDER acknowledges and accepts the OWNER'S right to reject any or all bids.
- e. The BIDDER acknowledges and accepts the OWNER'S right to hold all Proposals for purposes of review and evaluation and not issue a notice of award for a period not to exceed **ninety (90)** calendar days from the stated date for receipt of bids.

## PROPOSILI FURM CRIMINE SACEM MESSORE STUDIE MEMORIAL ARRIPORT (ECC) STUDIE MESSORE ARRIVEL

Contrals of worker or her manufacture and work and because of the contral manufacture is one of the contral of the contral

#### Contract of the formation of

in de pro-agesta fueran el tabal por era secarit enaderes, e conseguentes en securaria de secaritzar presente en energia para a secaritzar en añale Ereccia a preseñ secoritzar e a presente e arecer de secaritzar a secarit en entre entre tabal de casa en a contrate terra a anticar e entre entre entre entre entre entre entre entre en

1 1. API / 4	(1,1,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2	
27 1	<11 = }	
	(1) Construction (Construction) and a second descent on the second se	$\label{eq:constraint} \begin{array}{cccc} 0 & 0 & 0 & 0 \\ 0 & 2 & 0 & -\overline{3} & 0 & 0 \\ 0 & 0 & 0 & 0 & 0 \\ 0 & 0 & 0$
a service and the service of the ser		
1845 V. 1845 V.	and a second	
00 01/1 - 100027	, we set the second se	
	in the second se	and the second sec
41 E. K. P. C. C. L.		HILLING STATE

# TAL OFFICER AND LOTONS

and while been reported that is that is a part of their space weather that the formal of the part of the space many set of the set of the set of the set of the space weather of the set of the set of the set of the set of the many set of the Druck of the set of the Druck of the set of t

לפע הדריך "אי את בחיצר מה היידי הבמורה הפרוסים "אלד" ערבאיתברי הם המאוד אלט ידי איציא היידע היידי אוריוסיע. המצאה את להייה ל-1955 היום הדגע מרליך ל-1958 להמנואי על את האלעע להיידע עד ווער אבלי עלעה למה במצייה להיו הערביה היידע אורל להיי ההיידיה ביצוא היידעות היידע עדע מהילוע עינל היידעה מאנלעליה ביציהיית לבירעסיט. היידיית אני את הידעה. היידע אני אני אלי ללי

ne en companya posse en altre production de substantial l'accentent de cellorante a de companya de servici a responsa a companya en la desta de co en la desta de en la desta de en la desta de la desta de

- · 如母兄,所有田子,四日前,我也不是你们的,你也不可能是你的人,就是你不知道,你不知道,你们不可能吗?"
- a. 3 Statistic expressions and an environe the energy of a science of a comparison of the devices of the environment of the

- f. The undersigned agrees that upon written notice of award of contract, he or she will execute the contract within thirty (30) days of the notice of award, and furthermore, and provide executed payment and performance bonds within fifteen (15) days from the date of contract execution. The undersigned accepts that failure to execute the contract and provide the required bonds within the stated timeframe shall result in forfeiture of the bid guaranty to the owner as a liquidated damage.
- g. Time of Performance: By submittal of this proposal, the undersigned acknowledges and agrees to commence work within ten (10) calendar days of the date specified in the written "Notice to Proceed" as issued by the OWNER. The undersigned further agrees to complete the Project within one hundred eighty (180) calendar days for submittals, concrete mix design, material procurement and delivery from the date of the Notice-To-Proceed for <u>PROCUREMENT</u> and ninety (90) calendar days for all construction activities from the date of the Notice-to-Proceed for <u>CONSTRUCTION</u>.
- h. The undersigned acknowledges and accepts that for each and every Calendar day the project remains incomplete beyond the contract time of performance, the Contractor shall pay the non-penal amount of one thousand seven hundred dollars (\$1,700) per Calendar day as a liquidated damage to the OWNER.
- i. The undersigned prime contractor, if not a MoDOT certified DBE, hereby assures that they will subcontract 0.00 percent of the dollar value of the prime contract to DBE firms or make good faith efforts to meet the DBE contract goal. In addition, the prime contractor will include the DBE clauses (see Supplementary Provision No. 6 of the Federal and State Provisions) required by the DBE Program adopted by MoDOT and the Sponsor in all contracts and subcontracts relating to this project. The undersigned will complete the DBE Participation information included herein when a DBE goal has been established, including a demonstration of good faith efforts if the DBE goal is not met. If the undersigned prime contractor is a MoDOT certified DBE firm, then the prime contractor must perform at least thirty percent (30%) of the total contract value work with its own forces, and will receive DBE credit for all work which the prime contractor and any other MoDOT certified DBE firm performs directly.
- j. The BIDDER, by submission of a proposal, acknowledges that award of this contract is subject to the provisions of the Davis-Bacon Act and the Missouri Prevailing Wage Law. The BIDDER accepts the requirement to pay prevailing wages for each classification and type of worker as established in the attached wage rate determinations as issued by the United States Department of Labor and the Missouri Division of Labor Standards. The BIDDER further acknowledges and accepts their requirement to incorporate the provision to pay the established prevailing wages in every subcontract agreement entered into by the Bidder under this project. The highest rate between the two (Federal and State) for each job classification shall be considered the prevailing wage.
- k. Compliance Reports (41 CFR Part 60-1.7): Within 30 days after award of this contract, the Contractor/Subcontractor shall file a compliance report (Standard Form 100) if s/he has not submitted a complete compliance report within 12 months preceding the date of award. This report is required if the Contractor/Subcontractor meets all of the following conditions:
  - 1. Contractors/Subcontractors are not exempt based on 41 CFR 60-1,5.
  - 2. Has 50 or more employees.
  - 3. Is a prime contractor or first tier subcontractor.
  - 4. There is a contract, subcontract, or purchase order amounting to \$50,000 or more

8. Proclambrations are relatively and with the totake of chemical accountance has on the write contract to contract within a minimum caller of the contract and call to be more with an information metabolic approximation of a traveler or and selfore to action of the call of the date of an term or the term of the minimum call to the contract the contract and gravite for the formed to action to be strict to the term of the traveler to the contract the contract and gravite for the formed to action the strict to the strict term of the term of the contract on the many of the second formed to action the strict term of the term of the term of the formed to action the formed formed to action.

•

- (i) Human feet can be in the charation of the suppression wanted with a strategies and access of commutative waters is contracted of estimated and all of the succided is the total of the contract of strated by the Westify is to understand, which contracts on the contract of the total of a match of the contract of devision and the contract water on the instrument of the contract of the contract of the contract strategies of the instruction of the first of the contract of the contract of the contract from the devision of the contract water of the contract of the contract of the contract strategies of the contract from the date of the contract from the date of the contract of the contract of the contract of the contract.
- (i) The made sume state declaration matrix optic and first with end or environments of an interact of any complete methods with the transmission of the foreback of the foreback of the transmission of the foreback of the
- An effectively an environmentation of a proposal or knowledge of the control of Science (1) in other to the operation of the control of Science (1) in other to the operation of the control of the co
- P supporte la policie de la complete de la compl
  - A design of the technological state and the gap and assessed of which prove a set of the set of the technological state of the set of the
    - while the statement of the sect of
    - all and the state of the state of the state of the
  - and the second of the distributed of the second of the distributed of the second of the second of the second of
# \*\*\*\*\*\* OFFICIAL BID FORM \*\*\*\*\*\*

Page 3 of 12

1. The undersigned acknowledges receipt of the following addenda:

Addendum No.	1, dated May 23, 2023	Date Received May 25, 2023
Addendum No.	, dated	Date Received
Addendum No.	, dated	Date Received
Addendum No	, dated	Date Received
Addendum No.	, dated	Date Received

#### REPRESENTATIONS BY BIDDER

By submittal of a proposal (bid), the BIDDER represents the following:

- a. The BIDDER has read and thoroughly examined the bid documents, including all authorized addenda.
- b. The BIDDER has a complete understanding of the terms and conditions required for the satisfactory performance of project work.
- c. The BIDDER has fully informed themselves of the project site, the project site conditions and the surrounding area.
- d. The BIDDER has familiarized themselves with the requirements of working on an operating airport and understands the conditions that may in any manner affect cost, progress or performance of the work.
- e. The BIDDER has correlated their observations with that of the project documents.
- f. The BIDDER has found no errors, conflicts, ambiguities or omissions in the project documents, except as previously submitted in writing to the owner that would affect cost, progress or performance of the work.
- g. The BIDDER is familiar with all applicable Federal, State and local laws, rules and regulations pertaining to execution of the contract and the project work.
- h. The BIDDER has complied with all requirements of these instructions and the associated project documents.

#### CERTIFICATIONS BY BIDDER

a. The undersigned hereby declares and certifies that the only parties interested in this proposal are named herein and that this proposal is made without collusion with any other person, firm or corporation. The undersigned further certifies that no member, officer or agent of OWNER'S has direct or indirect financial interest in this proposal.

#### b. Trade Restriction Certification (49 U.S.C. § 50104, 49 CFR Part 30) The submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror:

- is not owned or controlled by one or more citizens of a foreign country included in the list of countries that discriminate against U.S. firms published by the Office of the United States Trade Representative (U.S.T.R.);
- 2. has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the U.S.T.R.; and

 has not entered into any subcontract for any product to be used on the project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

- 1. who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R. or
- whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such U.S.T.R. list or
- who incorporates in the public works project any product of a foreign country on such U.S.T.R. list.

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by U.S.T.R., unless the Offeror has knowledge that the certification is erroneous.

This certification is a material representation of fact upon which reliance was placed when making an award. If it is later determined that the Contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration (FAA) may direct through the Owner cancellation of the contract or subcontract for default at no cost to the Owner or the FAA.

c. Certification of Offeror/Bidder Regarding Debarment (2 CFR Part 180 (Subpart C), 2 CFR Part 1200, DOT Order 4200.5)

By submitting a bid/proposal under this solicitation, the Bidder or Offeror certifies that neither it nor its principals are presently debarred or suspended by any Federal department or agency from participation in this transaction.

d. Certification of Lower Tier Contractors Regarding Debarment (2 CFR Part 180 (Subpart C), 2 CFR Part 1200, DOT Order 4200.5)

The successful Bidder, by administering each lower tier subcontract that exceeds \$25,000 as a "covered transaction", must verify each lower tier participant of a "covered transaction" under the project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: http://www.sam.gov;

# Shite & seesal in the MACHINE LALOR HO have

3 para del enversi il dato any nominana e lo nervita di su nomeni dei il requisi dei se accessente in contra nella signi sena ny tanà ina mandri di delatori delete si ner ferritari a manazza. Si fatata performati n no 50 mm.

ידאלא אפריינטר רואג האומימיה עצמון אורי היראין געע עדייאלטיאיי אוועה עצמע אידאיי "אורעל מהאגביה" אמעריה. אועל עצמי היראר הנכני להמילא נגנע לאויינע לא איניע גערייט אינטאאי איי אואמי לאור הצוגרי אלאוגיי די אינטארי. ענגערה הירון אירי אוג היגנטה עלאנה לאוניא הייעל

ើកដឹកសាល់ដែលអាចសំណាល់សំពេវ កាលសំណាមដែលសំណាល់ សាល់សំណាល់ ដែលដើមដែល អើកអាយកអើតអាមេរិកអាមេរិកអាមេរិកអាមេរិកអា សាល់សំអាស់សំណាល់ដែលដឹង ហើយ ដែលដែល សំណាមដែល សំណាមដែល សំណាមដែល សំណាមដែល សំណាស់អី សំណាល់ កាល់សំពី អំណាមដែល អាយកសាល់អី សំណាមដែល សំហាស់សំណាស់ សំណាស់សំណាស់ សំណាមដែល សំណាមដែល សំណាមដែល សំណាមដែល សំណាម អាយកសាល់អី សំណាមដែល សំណាមដែល សំណាមដែល សំណាម សំណាមដែល សំណាមដែលសំណាម សំណាមដែល សំណាមដែល សំណាមសាល់អី សំណាម សំណាមដែល សំណាមដែល សំណាម សំណាមដែល សំណាមដែល សំណាមដែល សំណាមដែល សំណាមដែល សំណាមដែល សំណាមដែល សំណាម

, standard en la como e a la date como acosti te das da este colas da aparadore en avalenta das en la como en Las como da companiente da la companie da camento da camento da se en como selo c

- Tanaca 영화에 다 가방 2000년 2016년 2017년 1917년 그는 다 가방 영상에 다 가방에 가지 다양한 위에서 2017년 1917년 그는 1918년 1917년 그 2017 - 이 제 다에 한 것 같은 1917년 1917년 2017년 2017년 2017년 1917년 1917년 2017년 2017년 2017년 2017년 2017년 1917년 - 1917년 2017년 2017
  - (a) The second s Second sec
  - (c) in the manipulation of a factor of the second of the second methods in the two methods, and is used in the result of the second se

לויסאיאלי שניקהאסיר ביורא האשרי אנוילי הנגצעוליון המיינוראי איז ההיהדי שעני גאמי בהמיינוראי איז איז הייני באיזה (מקצעי אייי על בי קולגמיל כנגא קטנאזיה איזיראי הייני ביוראי לא היינטי דולא "לא היידאמי ביינטי איזיריוני לגם נגביל השליח היה מייניינג היינאג היימוסי ומייל הייני איזיראי היינטנעי המיישניי המינגאור הולאסי הייני בעיני הייני בעריינג היינאג בכלא איזיראי ומנגעניין איזיראי היינטנעי המיישניי המינגאור הולאסי מייני בעיני היינוינג היינאג היינאג בכלא איזיראי מנגענינג בייל איזיראי היינטנעי המיישניי הולאסינאיינאיינא

terra de la composition de la composition de la capital dels compositions en presentantes de la composition de ano de la compositione de la desta de la composition de la composition de la developera de la compositione de la compositione de la capital de la compositione de la composition de la composition de la compositione de la compositione de la capital de la compositione de la compositione de la compositione de la compositione de de la compositione de la capital de la compositione de la compositione de la compositione de la compositione de

- L. "Units Browner, O. Blanter Bridder Microsoft, "A scentered Q. C. & New Tech-Sociates Ch. 2004; Post 1776, 2015. Stellar 2016;7.
- u da uur e anno in taraban ean anna bainn ina a bear e a easann i 'anno e an anna ann anna anna anna anna e an Daemharacann anna ann do anna? an da par ina 1896 piearach in anno indexen anarach anna anna e anna e anna Tearrach
- [4] S. Song, Morter S. [1989] The Constraint Spreadown device and Equip F. A. Song, 455 (Schubert Cl. 2000) The Computer Distribution.

(1) Less Lustin Botton (1) Administration ou faints et de summar au etchniche Lustin (1996) et al process de l'interaction," UNITED (2016) and ferrar par estat (1976) "Construction (1986) de process to 1967), escentrabit a summer (Larteria) (1986) care primaquiante (1976) det d'Construction (1986) de process (1976) access) a bolder efforte destruction (1976).

the problem was a set of the set of the set of the set of the problem of the set

- Collecting a certification statement similar to the Certificate of Offeror/Bidder Regarding Debarment and Suspension, above;
- 3. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the FAA and/or MoDOT later determines that a lower tier participant failed to disclose to a higher tier participant that it was excluded or disqualified at the time it entered the covered transaction, the FAA and/or MoDOT may pursue any available remedies, including suspension and debarment of the non-compliant participant.

f. Certification Regarding Lobbying (31 U.S.C. § 1352, 2 CFR § 200 Appendix II(J), 49 CFR Part 20, Appendix A)

The Bidder or Offer certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- No Federal appropriated funds have been paid or will be paid, by or on behalf of the Bidder or Offeror, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employer of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- 2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- 3. The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, United States Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for such failure.

## g. Buy American Certification: (Title 49 U.S.C. § 50101)

The bidder agrees to comply with 49 U.S.C. § 50101, which provides that Federal funds may not be obligated unless all steel and manufactured goods used in AIP-funded projects are produced in the United States, unless the FAA has issued a waiver for the product; the product is listed as an Excepted Article, Material Or Supply in Federal Acquisition Regulation subpart 25.108; or is included in the FAA Nationwide Buy American Waivers Issued List.

A bidder or offeror must submit the appropriate Buy America certification included herein with their bid or offer. The Owner will reject as nonresponsive any bid or offer that does not include a completed Certificate of Buy American Compliance.

# STREET OFFICE ALL REPORT FOR MALE PROPERTY

- Collisensing Communities in Internet (2019) to the Conflictence of Collision (2019) Regarding Options and Collisensing Controls
  - 76 m 1401 346 52 96 52 1 (4): 71 (4): 71 (4): 72 34 1 (3) (3) (3) (3) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4)

a des Cales autorités de la construité dans catra forma de parta de calebra de la del la construit de construit Antorigant that compare al construités dans la troite de la parta de la construité de la construction d'Ale anto Antorio - anté more construité des des des autorités de la construité de la construction d'Ale de la constructio Dans la construité de la construction d'Ale

(c) Provide the Revise study to data and the Provide state of the Control of the State and States and State

r an amhainn - 179 a' ann an t-ige aguse sui taite a brite ag an trach in die institute britere. An tha an 179 anns

(i) A set in the provided of the set of the provide states of the providence of t

- 2. Consider the set of the start of the s
  - The first and provide out the constraint of the constraint action and the second of a second of a second out are set, but an according to B Constraint out, the Second action of the constraint out granteers are second of the second of the second out and a constraint action of the second of the constraint.

לה אלה העבריה הראדה ההימולים, היה האפרייה לאלה עם מצוג היולי איז הייישה אין הרקשים שהיה ההיישא אייריים אייניים שארייה עדיים האפינוליה כל האפיריאלי אילה השמילייה ערייה (אריצ האיינייה לאפרא האיינייה איינייה איינייה איינייה ה יהוא השאריה מאייר על היייקה לאליה האפראליות האפיריאלים האייריאלי האייניים עצמי אייניים אייניים אייניים אייניים על היייד בינוני

THE PETER MULTIME SHE WE THEN THE

الا الموجدة المحافظة المحافظة المحافظة المحافظة المسلطة المحافظة المحافظة المحافظة المحافظة المحافظة المحافظة ا المحافظة الم المحافظة الم المحافظة الم المحافظة الم

יינים או אין איני "שאמריתה אין אינים איניים איני איניים איני איניים איניים אומיי איניים אומים איניים איניים אי עניפר - אניל - איניל - איני איניים - איניים איני

# \*\*\*\*\*\* OFFICIAL BID FORM \*\*\*\*\*\*

# Page 6 of 12

# Type of Certification is based on Type of Project:

-#

There are two types of Buy American certifications.

- For projects for a facility, the Certificate of Compliance Based on Total Facility (Terminal or Building Project) must be submitted.
- For all other projects, the Certificate of Compliance Based on Equipment and Materials Used on the Project (Non-building construction projects such as runway or roadway construction; or equipment acquisition projects) must be submitted.

# THE OFFICIAL BID FORM IN A MARCH CREATER OFFICE

shots which we have a subscription of the state of the

AND CONTRACT SECTION OF THE SECTION

- A set of the standard standard of the standard base of the standard stand Standard stand Standard stand Standard st Standard stand Standard stand Standard stan Standard stand Standard stand Standar
- Standard and the standard and shirt spin addition is a grant and the grant and the standard standard and the standard standar Standard stand Standard stand Standard stand Standard stand Standard stand Standard s Standard stand Stand

-

# \*\*\*\*\*\* OFFICIAL BID FORM \*\*\*\*\*\*

Certificate of Buy American Compliance for Total Facility (Buildings such as Terminal, SRE, ARFF, etc.)

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with its proposal. The bidder or offeror must indicate how it intends to comply with 49 USC § 50101 by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e. not both) by inserting a checkmark ( $\sqrt{1}$ ) or the letter "X".

Bidder or offeror hereby certifies that it will comply with 49 USC § 50101 by:

- a) Only installing steel and manufactured products produced in the United States; or
- b) Installing manufactured products for which the FAA has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
- c) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

- To provide to the Owner evidence that documents the source and origin of the steel and manufactured product.
- 2. To faithfully comply with providing U.S. domestic products.
- To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

- 1. To submit to the Owner within 15 calendar days of the bid opening, a formal waiver request and required documentation that support the type of waiver being requested.
- 2. That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination that may result in rejection of the proposal.
- To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
- 4. To furnish U.S. domestic product for any waiver request that the FAA rejects.
- To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

#### Required Documentation

X

**Type 3 Waiver** – The cost of components and subcomponents produced in the United States is more than 60% of the cost of all components and subcomponents of the "facility". The required documentation for a Type 3 waiver is:

- a) Listing of all manufactured products that are not comprised of 100% U.S. domestic content (excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).
- b) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly and installation at project location.
- c) Percentage of non-domestic component and subcomponent cost as compared to total "facility" component and subcomponent costs, excluding labor costs associated with final assembly and installation at project location.

**Type 4 Waiver** – Total cost of project using U.S. domestic source product exceeds the total project cost using non-domestic product by 25%. The required documentation for a Type 4 waiver is:

a) Detailed cost information for total project using U.S. domestic product.

# \*\*\*\*\* OFROAL STD FORM \*\*\*\*\* Page 7 of 12

of a difference of the American Charge, and the Paral Farming distribution (a wolf, as farm rate, all?) it will and

osa e parter al historena desenan, di c'haidene e bietor - e a dimener e i duuced muent tita a ministra seus um ministra en ad i i techener en d'historena en d'historena entre en entre en minply nit a - elle Suffer - a meningiagen i freshcher ag ancienta en importenti. Elles etter en antaletter ministra - decommenten en europiant i en cartori - en baita en enemente esta discontente en ellester (NT

na 1907) – Gazel de men vien a lav de auguleer e ekser naak in antak in de se

- e, sini mulikus emerikus permituk program kongrunde professor protestantes en parta. Ar insperies manufactures - conseller, de bale in international a market an enternation.
- Mitting, and excellence of the part of the Material Companies Excellence (equilation).
   Material and Solve (2017) 10.

이 사람은 것 사람을 다 한 것이라. 것 것이라 가지 않는다. 같아요. 나는 것이 나는 것이다.

- F. S. Collettin And American Providence in Parameters, Instances 11, 2017. All respects both interviewed avoid Me.

  - o especie entre sector perto de respectere contra sector sectorem entre contra tente sectores. Entres especteres termes cateros, interfacion da sectores de cateros escriteda
- is internets a second second
- 2.5. איר איז אינגעליי יותאלא צראקעניי לאמצעיי זיינע, איז אלילה איצי אינגענע נאצא איר לאינאינא איר אור איזאינן ראיש בנארינן בעריי איז אינגענעניי האינגעניי האיז איראי אינא אינא איני און.
  - - 에서 가 되었습니다. 요즘 도 나가 나가지 않는 것 같아? 다 가지 않는 것 같아? 나는 것 같아? 이번 것 같아?
    - 2.110 ~ 1. 12:410 A. 614 19:12 프라이트 제품은 그 12:2010 19:12 전체 및 2014 및 2014 19:12 10:12 프라이트
      - elle i sure di Schut des mare carriere i galance.

most the other set for all and

urgen Malaho i Soromon Cenomona au accentententen politika da la des Barria Senora a Urben Pelo Politiko - En audori Andria Asian confini do entra en la Senora da Pelo Barria Senora a Brain en la seu tra Politika Senora e

- (a) A construction and product the local states and sets a first left. There is construct briefs and general descriptions is the Neulanian for the transmission of the states extend on its panet are under the briefs of the book on reductive Respondent Subgent 25 kdC (with the control of a states in the consultation of the states of the states of the formation of the states of the consultation of the states of the states of the formation of the states of the states of the consultation of the states of the consultation of the states of the st
- (a) "All conductions and the analysis and attending a construction of a construction of a construction (when a construction and and an automatical construction).
- າມ ມີມາດແມ່ນ ແມ່ນດີ ການປະຊຸມນາດປະຊຸມແມ່ນ ຜູ້ຊາຍເປັນການສູບຊາຍການນາຍແຜ່ນ ແມ່ນເຫັນແມ່ນ ແມ່ນຍະມະນະແມ່ນ ແມ່ນນາຍາຍແມ່ ແມ່ນການການການ ສະຫະນັກແມ່ນ ແມ່ນນາຍແມ່ນການນາຍ ການກິດຊຶ່ງແມ່ນຊົນ ການເຮັດ ແມ່ນຊາຍ ແຜ່ນ ເຊັ່ງການ ແຜ່ນນາຍ ການມາຍ ແມ່ນການການການ ແຜ່ນນາຍ ແມ່ນການ

ו יוםן ה-1986 קרא המנגל מייר או אווינגעל ווייזאה (1977 - איי אפגוון אאונגל באוגל באוגעל באוג אוויגעל לבי על די איז היי היי הייזאן המצוגל בייגלעירן שלמנג הל הייא הייגע בנואר "נערגעעל מיל מנשייינגלוי על איו על אווי איאנלטיי

an ƙaspero na 20 genero na kutan ka maraka ka ma

# \*\*\*\*\*\* OFFICIAL BID FORM \*\*\*\*\*\*

Page 8 of 12

b) Detailed cost information for total project using non-domestic product.

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

May 30, 2023 Date

X

gnature

BuildTec Construction Company Name Vice president Title

Certificate of Buy American Compliance for Manufactured Products (Non-building construction projects, equipment acquisition projects)

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101 by selecting one of the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (i.e. not both) by inserting a checkmark ( $\sqrt{}$ ) or the letter "X".

Bidder or offeror hereby certifies that it will comply with 49 USC 50101 by:

- a) Only installing steel and manufactured products produced in the United States:
- b) Installing manufactured products for which the FAA has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
- Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

- To provide to the Owner evidence that documents the source and origin of the steel and manufactured product.
- 2. To faithfully comply with providing U.S. domestic product.
- 3. To furnish U.S. domestic product for any waiver request that the FAA rejects.
- To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

- To submit to the Owner within 15 calendar days of the bid opening, a formal waiver request and required documentation that support the type of waiver being requested.
- That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination which may result in rejection of the proposal.
- To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
- To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

# State & eggs - Commission and JARNING more

i stan un miter mole ence qui au succe no teatro i d'Argina mai se delle assistante e el

· 한국과 영국 영국 영국 문화 관람 문화 시작 위험 가지 않는 것이 가지 않는 것이 가지 않는 것이 가지 않는 것 같아. 이름 이상 [4] (1996) 사람들 것이 가지 않는 것 같아요? 것 같아요? 것이 같아요? 정말 것 같아. 또 "한국 구성 같이 들었다. 이 가지 않는 것이 같아. 아이에는 2006년 1932년 234 (2396) 2019년 2019년

all the Relation for the start Professional and a reak tool be substituted

医自己间隙 的名词第一时间的 化化化硫酸盐的 化化电源原料 化二磷酸化合物 人名法尔 化干燥机

- sint associate data and material and and the second of the data and an order of the second and the second and a second second data in each second and the second second second second as a second second second second second and the second second data associated as a second second second second second second second second second second
- (a) state is presented and a state is light of the state is in a state is independent and state is in a state is in a state is in a state.

ココー こうかんもう 一般的にも強い いいのわしょう かがによいが しいりんしゃ

- a presidente sono sonto inidense i accreacionata na centra ne recono di la concente bone presenta sono da.
  - and a distance. Relatively the distance is a strength of the second s
  - (i) a point () and point () and ()
    - Too Reading American Control and the control of the c
- To entry the transmission of the second s The transmission of the second second
- en en en antigen de la companya de la comp
- The Alter contribution of a mount for data to gradience of material in the Anthropology of the dimension scale for the environment spectra in the Alter.
- 6. To subtract and a recent process of datapoints and the behavior of an association mathematical in the second database encoded in a net 6<sup>th</sup> metabase.

# \*\*\*\*\*\* OFFICIAL BID FORM \*\*\*\*\*\*

#### **Required Documentation**

Type 3 Waiver – The cost of the item components and subcomponents produced in the United States is more than 60% of the cost of all components and subcomponents of the "item". The required documentation for a Type 3 waiver is:

- a) Listing of all product components and subcomponents that are not comprised of 100% U.S. domestic content (excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).
- b) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
- c) Percentage of non-domestic component and subcomponent cost as compared to total "item" component and subcomponent costs, excluding labor costs associated with final assembly and at place of manufacture.

**Type 4 Waiver** – Total cost of project using U.S. domestic source product exceeds the total project cost using non-domestic product by 25%. The required documentation for a Type 4 waiver is:

d) Detailed cost information for total project using U.S. domestic product.

e) Detailed cost information for total project using non-domestic product.

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosegution under Title 18, United States Code.

Signature

May 30, 2023

Date

BuildTec Construction Company Name Vice president

# h. Compliance with the Work Authorization Law (as required by Section 285.530, Revised Statues of Missouri)

For all contracts where the total bid amount is in excess of \$50,000 (local match in excess of \$5,000), the Bidder, by submission of an offer and by signing the Worker Eligibility Verification Affidavit for All Contract Agreements in Excess of \$50,000, certifies that it:

- does not knowingly employ any person who is an unauthorized alien in connection with the contracted services;
- 2. has enrolled and actively participates in a federal work authorization program;

A general contractor or subcontractor of any tier shall not be liable under sections 285.525 to 285.550 when such general contractor or subcontractor contracts with its direct subcontractor who violates subsection 1 of this section, if the contract binding the contractor and subcontractor affirmatively states that the direct subcontractor is not knowingly in violation of subsection 1 of this section and shall not henceforth be in such violation and the contractor or subcontractor receives a sworn affidavit under the penalty of perjury attesting to the fact that the direct subcontractor's employees are lawfully present in the United States.

#### Propatority 17 manual

לק מינה" לאמר בריאי להיי האלורי מיר במתנה המתריחה את או איזה מקורת המציק משליי כיל מייייה להמילים. - "אוריייד היה לא כי מלו"ר מא מעשה יה הלעל מסמרים והמריחה" מיר באקר המייה מלולח "לייגרי" (המר - מושל גדילה בייה יייה גרימל יו" ייתר לירה המניל

- All PROPERTY AND A DESCRIPTION OF A D
- ov, i oskubini ovoranili, skombalar spilječno (je prete androžna plano) ovoranih se anno niskom niska senti Produktivaja sastronom nistrih ovarna bitelinit.
- ern Freisenbig genfins Hin opsigenten Steadert and Habberr guner in en die einen einen 2013 Hen einen eine Habberr mit der Ludskaardeksand en eine stressfern 1963 genet Geneter und im Bereit au Berleiten Ern - geneter Straamfansser
- Styre i Goostinen Lei zona et mediset deg Stale constru e serezzi produter zuitate me zona Leon nezzoe dip hen unterskie précieto ha intére resto l'esperie i l'enérgenistica a ta se la desirat - co co
  - and we see that find a state by equilibrium of the end of the second states of the
  - State of a construction of the state of a construction of the sector of the sector of the sector of the sector

(i) a substant count 1000 of 1500 the example international and the counter of the factor of the factor of the example of the factor of th

Ormentiones (1997-1997-1997), administrative European approximation (1997-1997), present Manuel (1997-1997). Michaele

רוק ול המשקרי אליישא להביקורא ההיישראיזיין במקצא הייליא היישראה היינו אמצע איי אלי אווי איני אייל אוויא לאון א דייליסי הן הלאנגאליאז ערייה היישרי אלי איי אווי אלי אוויין בייל אלייזיין להייצא הייליגנאיטה לילטוגאי הייליא לאי היישלא היינה איינטא אליגא הייה לאנה אליי אני הייטור המניירי שנהיי

- - 计保护性操作品 网络特别的人名 网络马斯泽美国古苏特拉 计正式推动计划 计图示 化分析 计

para so interpresentation of vibration and the actual so that and so is the 2.550 mm is the distribution of the source of vibration of a first so the conversion of vibration of the source of the distribution of the conversion of the conversion of the source of the rest of the distribution of the conversion of the conversion of the rest of the distribution of the conversion of the conversion of the rest of the distribution of the conversion of the conversion of the rest of the distribution of the conversion of the conversion of the rest of the distribution of the conversion of the conversion of the distribution of the rest of the distribution of the distri

# \*\*\*\*\*\* OFFICIAL BID FORM \*\*\*\*\*\* Page 10 of 12

WORKER ELIGIBILITY VERIFICATION AFFIDAVIT FOR ALL CONTRACT AGREEMENTS IN EXCESS OF \$50,000 (Local match in excess of \$5,000) (for joint ventures, a separate affidavit is required for each business entity)

STATE OF	Misso	ouri	)							
COUNTY OF	Phe	lps	) ss )							
On	this	30th	day	of	May		20 23,	before	me	appeared
Jason P	etty			persona	ally known to me	or proved to	me on the bas	sis of satis	factory	evidence to
be a person w	hose nam	ne is subscri	bed to th	is affid	lavit, who being l	y me duly sw	orn, deposed a	as follows:		

My name is <u>Jason Petty</u>, and I am of sound mind, capable of making this affidavit, and personally certify the facts herein stated, as required by Section 285.530, RSMo, to enter into any contract agreement with the state or any of its political subdivisions to perform any job, task, employment, labor, personal services, or any other activity for which compensation is provided, expected, or due, including but not limited to all activities conducted by business entities:

I am the <u>Vice pres</u> of <u>BuildTec Const</u>, and I am duly authorized, directed, and/or (business name) empowered to act officially and properly on behalf of this business entity.

I hereby affirm and warrant that the aforementioned business entity is enrolled in a federal work authorization program operated by the United States Department of Homeland Security, and the aforementioned business entity shall participate in said program to verify information (employment eligibility) of newly hired employees working in connection to work under the within contract agreement. I have attached documentation to this affidavit to evidence enrollment/participation by the aforementioned business entity in a federal work authorization program, as required by Section 285.530, RSMo.

In addition, I hereby affirm and warrant that the aforementioned business entity does not and shall not knowingly employ, in connection to work under the within contract agreement, any alien who does not have the legal right or authorization under federal law to work in the United States, as defined in 8 U.S.C. § 1324a(h)(3).

I am aware and recognize that, unless certain contract and affidavit conditions are satisfied pursuant to Section 285.530, RSMo, the aforementioned business entity may be held liable under Sections 285.525 through 285.550, RSMo, for subcontractors that knowingly employ or continue to employ any unauthorized alien to work within the state of Missouri.

I acknowledge that I am signing this affidavit as a free act and deep of the aforementanced business entity and not under duress.

	(Affiant Signature)
Subscribed and sworn to before me this 30	day of mary
AMY LEA PARROTT NOTARY PUBLIC - NOTARY SEAL STATE OF MISSOURI COMMISSIONED FOR PHELPS COUNTY MY COMMISSION EXPIRES JUN. 30, 2024 ID #20621084	(Notary Public)

[Documentation of enrollment/participation in a federal work authorization program is attached. Acceptable enrollment and participation documentation consists of the following two pages of the E-Verify Memorandum of Understanding: (1) A valid, completed copy of the first page identifying the business entity; and (2) A valid copy of the signature page completed and signed by the business entity, the Social Security Administration, and the Department of Homeland Security – Verification Division.]

# Stip at easily interview will be different to the

가족가락은 전환가 가족할 것을 수는 사람이 있는 것이가 가지 않는다. 또 이가 가지 않는다. 가지 않는다. 이가 가족을 수 있는다. 이 가락은 같은 것이 같은 전자들이 한 것을 통해 가락했는 것 같아요. 또는 것을 만들고 있는 것이 있는 것이 같다. 이라는 것은 아파리는 것이 같은 전자들이 한 것이 같아. 같은 아파리는 것이 같아. 것이 같아. 것이 같아. 것이 같아.

> , turn til en stattete Frei Bris NUMBER

Maria Signal Andreas Signal and a second se Second seco

and na secondare de state frank eards as tao na algebreidan de Constant de Constant and anno 1700 earde algebra 1963 - Consta d'Algades de la constant de Constant (1964 (1973)), de Constant da Constant anno 1700 earde algebra 1965 - Consta d'Algades tao haben de Constant (1964 (1973)), de Constant da Constant anno 1966 e recent de Const 1966 - Constant Algades tao haben de Constant (1965), de Constant (1965), de Constant de Constant de Constant e

tako (h. 1720) (1720) (1721) (1723) Marine (1720) Marine (1720) (1720) (1720) (1720) (1720) (1720) (1720) (1720)

Constant (1997) and Ordered Phase and Conference (1) (1998) and (10) (2009) and (10) (2009) and (2009) and

an adam a fini ma fini ma a fini sa anan sa ana sa ana sa ana mana anti an ana ang ana ana si Gaoshi anay s babaan da baaqame in 1997 dari 1914 Waan missing barang an ang asi al ah dasa bachan asi san 1917 n na sandar baba san fini man fini mang asi sanah asi sunahing palati sung tik adan 30

• All the second provide the experimentation of the second second device of the second behavior and the second se

en bal yn in dit de taan oorden en en de de de geber na met 'n ontwik <sup>m</sup>oorde pankel op het de staarden.

1.104. 072

பின் பன்பியின் மட்டல் கண்டின் இன்பில் மான் மின்னில் பின்பு பின்னை கூடன் பின்ன பல்ற விளியில் வாயில் பின்று வின் பின் மன் விடு முற்றி நின்பான் பெபில் இனிப்பட்டன் மன்றிய பின்பு பின்பைய பின் நாற்கவும் இது பெற்றிய பின்னை கூடிய மன்பு மன்பில் பிறும் பின்போன் பிலப்பில் குடியில் நிறும் பிலப்படல் தவிது குடியின் நீன் கலை காகிருப்பில் பின்னை க பின்பு மன்பில் பிறும் பிறுதிய பினப்பில் பிலில் துடியில் பிலப்பில் பின்பில் பின் நீன் கலை காகிருப்பில் பின்னை கு பின்பு பிறும் பிறும் பின்பின் பினப்பில் குடியில் குடியில் பிலப்பில் பின்றியின் நீன் கலை காகிருப்பில் பின்பில் பின்பில் கிலப்பில் பிலில் பின்பில் பின்பில் கின் கின்பில் பில தவிதியில் நீன் விளியில் பின்பில் பின்பில் பின்பில் பின்பில் கிலப்பில் கிலப்பில் பின்பில் பின்பில் கின் கின்பில் பில

a por l

# DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION

The information shown in this section must be completed when a DBE contract goal has been established. The percentage must equal or exceed the DBE contract goal. If the percentage is below the contract goal, then the bidder must submit complete written documentation of good faith efforts taken to meet the DBE contract goal.

- a. The undersigned submits the following list of DBEs to be used in accomplishing the work of this contract. The work, supplies or services, applicable value and percent of total federal contract each DBE is to perform or furnish is as follows:
- b. Joint venture with a DBE. The undersigned submits the following list of bid items the DBE prime is responsible for and any items that will be subcontracted out are noted with an asterisk or a similar notation. The work, applicable value and percentage of total federal contract the DBE prime is responsible for are as follows:

(A) DBE Name and Address	(B) Bid Item Number(s) Or Work Performed	(C) Dollar Value of DBE Work **	(D) Percent Applicable to DBE Goal (100%, 60%)	(E) Dollar Amount Applicable to DBE Goal (C x D)	(F) Percent of Total Contract (C / Total Contract Amount)
		TOTAL DBE PAR	TICIPATION	\$	9/

\*\*Cannot exceed contract amount for given item of work.

Trucking services credited at 100% if the DBE owns the trucks or is leasing from a DBE firm

Merchant wholesalers (supply) are credited at 60%.

Brokered services will only receive credit for fees.

(Please reproduce the above sheet if additional space is needed.)

# 11 IO IT GREET MATHING FOR UNDER STORE TO OFFICE

#### 2012/MD2/10/11/11/11/11/10/12/12/22/22/22/22/22/22/22/24

•Oto Provide the energy and the second state of the second states of the end of the end of the second state theory in the second state is an end of the second state is a second state in the second state is a second state in the secon

- . Des enterigio d'artantes porto tra contra chicio de su constructeur pesallo quale cente consistenza demastro C Martico consistente ento o des apportanta contra anti contra del contra contra construcción e la poneme en Constructeure en à desent
- ho dala versione con el Norregi de antendo danas (na senso dan constructe) el Hibrahamon yan en fr orregia da danas francis en sobra disente como se neces dan a canola el el Hibrahamon yan el order orregia el verse d'anad Koleno el data (norregia de constructe) el Alfredo da antendo el da antendo const

international Antifaction Antifaction and Antifaction Antifaction and Antifaction Antifaction and Antifaction Antifaction and Antifaction	10 102 - 3 145 - 5 10 10 10 10 10 10	tert i Tert der 1 <sup>° te</sup> tte	
			n an
e La construction de la construction La construction de la construction de		Nex 10, 1, 10,	

(i) the instruction of an extension of the second s second sec

and EAG Earship results in a long on each of the shift of the balance of the second second second second second

1. 27 E. L. 12 March 1995 Construction of the state of th

New rest was the state of the second second second

a finit of the first and a History (1996) and the Moodel's address for the

# \*\*\*\*\*\* OFFICIAL BID FORM \*\*\*\*\*\* Page 12 of 12

# THIS EXECUTED PROPOSAL FORM MUST BE SUBMITTED IN THE ORIGINAL BOUND PROJECT MANUAL.

# SIGNATURE OF BIDDER

The undersigned states that the correct LEGAL NAME AND ADDRESS of (1) the individual bidder, (2) each partner or joint venturer (whether individuals or corporations, and whether doing business under a fictitious name), or (3) the corporation (with the state in which it is incorporated) are shown below; that (if not signing with the intention to bind themselves to become responsible and sole bidder) they are the agent of, and they are signing and executing this (as indicated in the proper spaces below) as the bid of a

() sole individual	() partners	ship	() joint venture			
( 3 corporation, incorporated ur	der the laws of	state of Misso	ouri	<u> </u>		
Executed by bidder thi	s 30th	_day of _May		20_23		
Name of individual, all partners or joint venturers:		Address of	'each:			
Casey Petty		17250	St.RT.H, S	t James,	MO	65559
Jason Petty						
doing business under the name of	of:	Address of Missouri:	principal place of t	ousiness in		
(If using a fictitious name, show above in addition to legal names	this name	_ <u>PO_BO</u>	<u>1355</u> ames, MO. 6	5559		
BuildTec Construct	tion LLC					
ATTEST: (SEAL)	20076)	Time	1 Jult	Vice pres	side	ant
(Signature)	Secretary	(Signature)		(Title)		
Please print name	/	Jason Please print	L Petty			
		- teace print				

NOTE: If bidder is doing business under a fictitious name, the bid shall be executed in the legal name of the individual partners, joint ventures, or corporation, with the legal address shown, and registration of fictitious name filed with the secretary of state, as required by sections 417.200 to 417.230 RSMo. If the bidder is a corporation not organized under the laws of Missouri, it shall procure a certificate of authority to do business in Missouri, as required by section 351.572 et seq RSMo

# And DEPICIAL BID FORM TTT Page 12 of 12

TORS RADA CTUDIERO 6034 U CORMINECEN NECENI SE SUBMETRO E IN 1943 ORGENIZE RECENO PROJECTIVE LA UNIT.

#### STATEMENT DE LA DE

(i) reacting and a contribution of a service of the EAM of 2012 RED on (EEM) and class (also (E)) and the case of participants (E) and the case of the case of

a 1794 al. (M. 1997) Associated with the origination of the solution of the

Fire an edder of sugard	and the sale	2 10
Mome of shirt functions in party to on only territorian international	19.39.10.11 milit.	
	e de constante de la constante d	
	a model and a second second second	
fac entry and shirt entry of grants	าร์มาสาว - หลุ่มนักก หุ่นหยุ่ง	
and a final star and a final star with a second of the sec		and the second sec
and the second sec		a star a to de
1.28 Ber 128 (7.5		1911 - 1917
1379	(unit) and	-a(17)
marine and a	opear in a tore N	

ko 17 - Broaden e Bong Europeskiene en Calificar verscher Schelett ist sonate Calific negal terminal ist influider onder eogene unter ook op stearening volle die ook geboeren van spind negalaningen "ferderen name Heal wig, hie oog en aan een een ook op op see een die Doorde die Schelette Constitution is reactive constitution als vielen besoord "Kilonan stearen een een ook off Doorde die Schelette Ponse Halas is reactive constitution als vielen besoord "Kilonan stearen een een ook off Doorde die Schelette Ponse Halas is reactive constitution als vielen Boorde Schelette Boole

C1-14

PERFORMANCE BOND	BOND NUMBER TXHNSU0839422
PRINCIPAL (Legal Name and Business Address) BuildTec Construction, LLC 17250 State Route H	
SURETY (Legal Name and Business Address) Harco National Insurance Company 4200 Six Forks Road Raleigh, NC 27609	STATE OF INCORPORATION Illinois
PENAL SUM OF BOND (Expressed in words and numerals) Six Hundred Twenty Four Thousand Nine Hundred Dollars and Zero Cents (\$ 624,900.00)	CONTRACT DATE

## OBLIGATION

KNOW ALL PERSONS BY THESE PRESENTS, that the above named PRINCIPAL, hereinafter referred to and called CONTRACTOR, and the above named SURETY hereby bind themselves unto City of Salem, 400 N. Iron Street, Salem, MO 65560, as OBLIGEE, hereinafter referred to and called OWNER, in the penal sum stated above, in lawful money of the United States of America to be paid to OWNER. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

## WHEREAS,

CONTRACTOR has entered into the written contract agreement identified hereinabove with the OWNER for the following project:

## **Construct 6-Unit T-Hangar**

#### Project Location: Salem Memorial Airport (K33) City of Salem, Missouri

which said contract and associated contract documents, including any present or future amendment thereto, is incorporated herein by reference and is hereinafter referred to as the Contract.

#### CONDITION

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if CONTRACTOR shall promptly and faithfully perform all 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 OWNER, with or without notice to the SURETY, and during the period of any guarantee or warranties required under the Contract, and if CONTRACTOR shall perform and fulfill all undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of the Contract that hereafter are made, then this obligation shall be void; otherwise it shall remain in full force and effect subject to the following additional conditions:

- SURETY, for value received, hereby stipulates and agrees that no change, extension of time, modification, omission, addition or change in or to the Contract, or the work performed thereunder or the specifications accompanying the same, shall in any way affect the SURETY'S obligation on this bond; and SURETY hereby agrees to waive notice of any and all such extensions, modifications, omissions, alterations, and additions to the terms of the Contract, work or specifications.
- 2. Whenever CONTRACTOR shall be and declared by the OWNER to be in default under the Contract, the Surety shall promptly and at the SURETY'S expense remedy the default by implementing one or more of the following actions:
  - a. Arrange for the CONTRACTOR, with consent of the OWNER, to perform and complete the Contract; or
  - b. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

- c. Obtain bids or negotiated proposals from qualified contractors acceptable to the OWNER for a contract for performance and completion of the Contract; arrange for a contract to be prepared for execution by the OWNER and the contractor selected with the OWNER'S concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the Bonds issued on the Contract; and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the contract price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the penal sum of the bond. The term "balance of the contract price", as used in this paragraph, shall mean the total amount payable by OWNER to CONTRACTOR under the Contract and any amendments thereto, disbursed at the rate provided in the original contract, less the amount properly paid by OWNER to CONTRACTOR.
- d. With written consent of the OWNER, SURETY may waive its right to perform and complete, arrange for completion or obtain a new contractor and with reasonable promptness, investigate and determine the amount the SURETY is liable to the OWNER and tender payment therefor to the OWNER.
- CONTRACTOR and SURETY agree that if in connection with the enforcement of this Bond, the OWNER is
  required to engage the services of an attorney, that reasonable attorney fees incurred by the OWNER, with or without
  suit, are in addition to the balance of the contract price.
- 4. No right of action shall accrue on this bond to or for the use of any person or corporation other than the OWNER named herein or the successors or assigns of the OWNER.

# WITNESS

In witness whereof, this instrument is executed this the	day of	, 20 X
--	--------	--------

INDIVIDUAL PRINCIPAL:

Company Name: \_\_\_\_\_

Signature:

Name and Title:

# CORPORATE PRINCIPAL:

ATTEST:	Corporate Name	BuildTec Construction, LLC
Signature: formella	Signature:	Casey ??
Name and Title: <u>Ason L. Petty</u> , <u>Vice Presido</u> (Affix Corporate Seal)	TName and Title:	Casey L. Petty/President
SURETY: ATTEST:	Surety Name:	Harco National Insurance Company
Signature:	Signature:	Kothy R. Fapan
Name and Title: <u>Casey M. Parisoff, Witness</u> (Affix Seal)	Name and Title:	Kathy L. Fagan, Attorney-in-Fact (Attach Power of Attorney)
		-
OWNER ACCEPTANCE:		
The OWNER approves the form of this Performance Bond.		
ATTEST:	Date:	X

ATTEST:	Date:
Signature:	Signature:
Name and Title:(Affix Seal)	Name and Title:

PAYMENT BOND	BOND NUMBER TXHNSU0839422
PRINCIPAL (Legal Name and Business Address) BuildTec Construction, LLC 17250 State Route H St. James, MO 65559	
SURETY (Legal Name and Business Address) Harco National Insurance Company 4200 Six Forks Road Raleigh, NC 27609	STATE OF INCORPORATION Illinois
PENAL SUM OF BOND <i>(Expressed in words and numerals)</i> Six Hundred Twenty Four Thousand Nine Hundred Dollars and Zero Cents (\$ 624,900.00)	CONTRACT DATE

#### OBLIGATION

KNOW ALL PERSONS BY THESE PRESENTS, that the above named PRINCIPAL, hereinafter referred to and called CONTRACTOR, and the above named SURETY hereby bind themselves unto City of Salem, 400 N. Iron Street, Salem, MO 65560, as OBLIGEE, hereinafter referred to and called OWNER, in the penal sum stated above, in lawful money of the United States of America to be paid to OWNER. For payment of the penal sum, we bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

#### WHEREAS,

CONTRACTOR has entered into the written contract agreement identified hereinabove with the OWNER for the following project:

#### **Construct 6-Unit T-Hangar**

## Project Location: Salem Memorial Airport (K33) City of Salem, Missouri

which said contract and associated contract documents, including any present or future amendment thereto, is incorporated herein by reference and is hereinafter referred to as the Contract.

#### CONDITION

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if CONTRACTOR shall promptly make payment to all employees, persons, firms or corporations for all incurred indebtedness and just claims for labor, supplies, materials and services furnished for or used in connection with the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect subject to the following additional conditions:

- CONTRACTOR and SURETY indemnify and hold harmless the OWNER for all claims, demands, liens or suits
  that arise from performance of the Contract
- 2. SURETY, for value received, hereby stipulates and agrees that no change, extension of time, modification, omission, addition or change in or to the Contract, or the work performed thereunder or the specifications accompanying the same, shall in any way affect the SURETY'S obligation on this bond; and SURETY hereby agrees to waive notice of any and all such extensions, modifications, omissions, alterations, and additions to the terms of the Contract, work or specifications.
- 3. No final settlement between the OWNER and the CONTRACTOR shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.
- 4. The amount of this bond shall be reduced by and to the extent of any payments made in good faith hereunder.

5. Amounts owed by the OWNER to the CONTRACTOR under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any Performance Bond. By the CONTRACTOR furnishing and the OWNER accepting this Bond, they agree that all funds earned by the CONTRACTOR in the performance of the Contract are dedicated to satisfy obligations of the CONTRACTOR and the SURETY under this Bond, subject to the OWNER'S priority to use the funds for the completion of the project.

# WITNESS

In witness whereof, this instrument is executed this the	day of	, 20 <u>23</u> . ×

## INDIVIDUAL PRINCIPAL:

Company Name:		
---------------	--	--

Signature:

Name and Title:

# CORPORATE PRINCIPAL:

ATTEST:	Corporate Name:	BuildTec Construction, LLC	
Signature: Mun 19	Signature:	Carry RAS	
Name and Title: <u>ASON L. Petty</u> , <u>Vice Preside</u> (Affix Corporate Seal)	Name and Title:	Casey L. Petty, President	CUBIC CONTRACT

# SURETY:

SURETY:			and a second
ATTEST:	n n	Surety Name:	Harco National Insurance Company
Signature:	De	Signature:	Kathy X. Japa
Name and Title: _	Casey M. Parisoff, Witness	Name and Title:	Kathy L. Fagan, Attorney-in-Fact
	(Affix Seal)		(Attach Power of Attorney)

# **OWNER ACCEPTANCE:**

The OWNER approves the form of this Payment Bond.

ATTEST:	Date:	X
Signature:	Signature:	
Name and Title:(Affix Seal)	Name and Title:	

# FORM OF CONTRACT AGREEMENT CITY OF SALEM, MISSOURI SALEM MEMORIAL AIRPORT (K33) State Block Grant Project No. 23-066A-1

THIS AGREEMENT, made a	as of this	day of	, 20, is 🗙
BY AND BETWEEN			
the OWNER:	City of Sale	em, Missouri	
	400 N. Iron	Street	
	Salem, MO	65560	
And the CONTRACTOR:	BuildTec C	Construction, LLC	
	17250 State	e Route H	
	St. James,	MO 65559	

## WITNESSETH:

WHEREAS it is the intent of the Owner to make improvements at the Salem Memorial Airport (K33) generally described as follows;

## **Construct 6-Unit T-Hangar**

hereinafter referred to as the Project.

NOW THEREFORE in consideration of the mutual covenants hereinafter set forth, OWNER and CONTRACTOR agree as follows:

#### Article 1 - Work

It is hereby mutually agreed that for and in consideration of the payments as provided for herein to the CONTRACTOR by the OWNER, CONTRACTOR shall faithfully furnish all necessary labor, equipment, and material and shall fully perform all necessary work to complete the Project in strict accordance with this Contract Agreement and the Contract Documents.

## Article 2 - Contract Documents

CONTRACTOR agrees that the Contract Documents consist of the following: this Agreement, General Provisions, Supplementary Provisions, Specifications, Drawings, all issued addenda, Notice to Bidders, Instructions to Bidders, Proposal and associated attachments, Performance Bond, Payment Bond, Wage Rate Determinations, Insurance certificates, documents incorporated by reference, documents incorporated by attachment, and all OWNER authorized change orders issued subsequent to the date of this agreement. All documents comprising the Contract Documents are complementary to one another and together establish the complete terms, conditions and obligations of the CONTRACTOR. All said Contract Documents are incorporated by reference into the Contract Agreement as if fully rewritten herein or attached thereto.

# Article 3 - Contract Price

In consideration of the faithful performance and completion of the Work by the CONTRACTOR in accordance with the Contract Documents, OWNER shall pay the CONTRACTOR an amount equal to:

Six Hundred Twenty Four Thousand Nine Hundred Dollars and Zero Cents (Amount in Written Words)

(\$ 624,900.00 (Amount in Numerals) subject to the following;

- a. Said amount is based on the schedule of prices and estimated quantities stated in CONTRACTOR'S Bid Proposal, which is attached to and made a part of this Agreement;
- b. Said amount is the aggregate sum of the result of the CONTRACTOR'S stated unit prices multiplied by the associated estimated quantities;
- c. CONTRACTOR and OWNER agree that said estimated quantities are not guaranteed and that the determination of actual quantities is to be made by the OWNER'S ENGINEER;
- d. Said amount is subject to modification for additions and deductions as provided for within the Contract General Provisions.

## Article 4 - Payment

Upon the completion of the work and its acceptance by the OWNER, all sums due the CONTRACTOR by reason of faithful performance of the work, taking into consideration additions to or deductions from the Contract price by reason of alterations or modifications of the original Contract or by reason of "Extra Work" authorized under this Contract, will be paid to the CONTRACTOR by the OWNER after said completion and acceptance.

The acceptance of final payment by the CONTRACTOR shall be considered as a release in full of all claims against the OWNER, arising out of, or by reason of, the work completed and materials furnished under this Contract.

OWNER shall make progress payments to the CONTRACTOR in accordance with the terms set forth in the General Provisions. Progress payments shall be based on estimates prepared by the ENGINEER for the value of work performed and materials completed in place in accordance with the Contract Drawings and Specifications. Progress payments are subject to retainage requirements as set forth in the General Provisions.

## Article 5 - Contract Time

The CONTRACTOR agrees to commence work within ten (10) calendar days of the date specified in the OWNER'S Notice to Proceed. CONTRACTOR further agrees to complete said work within one hundred eighty (180) calendar days for submittals, concrete mix design, material procurement and delivery from the date of the Notice-To-Proceed for <u>PROCUREMENT</u> and ninety (90) calendar days for all construction activities from the date of the Notice-to-Proceed for <u>CONSTRUCTION</u>.

It is expressly understood and agreed that the stated Contract Time is reasonable for the completion of the Work, taking all factors into consideration. Furthermore, extensions of the Contract Time may only be permitted by execution of a formal modification to this Contract Agreement in accordance with the General Provisions and as approved by the OWNER.

#### Article 6 - Liquidated Damages

The CONTRACTOR and OWNER understand and agree that time is of the essence for completion of the Work and that the OWNER will suffer additional expense and financial loss if said Work is not completed within the authorized Contract Time. Furthermore, the CONTRACTOR and OWNER recognize and understand the difficulty, delay, and expense in establishing the exact amount of actual financial loss and additional expense. Accordingly, in place of requiring such proof, the CONTRACTOR expressly agrees to pay the OWNER as liquidated damages the non-penal sum of **one thousand seven hundred dollars (\$1,700)** per day for each calendar day required in excess of the authorized Contract Time.

Furthermore, the CONTRACTOR understands and agrees that;

- a. the OWNER has the right to deduct from any moneys due the CONTRACTOR, the amount of said liquidated damages;
- b. the OWNER has the right to recover the amount of said liquidated damages from the CONTRACTOR, SURETY or both.

## Article 7 - CONTRACTOR'S Representations

The CONTRACTOR understands and agrees that all representations made by the CONTRACTOR within the Proposal Form shall apply under this Agreement as if fully rewritten herein.

# Article 8 - CONTRACTOR'S Certifications

The CONTRACTOR understands and agrees that all certifications made by the CONTRACTOR within the Proposal shall apply under this Agreement as if fully rewritten herein. The CONTRACTOR further certifies the following;

# a. Certification of Eligibility (29 CFR Part 5.5)

- By Entering into this contract, the CONTRACTOR certifies that neither he or she nor any person or firm who has an interest in the CONTRACTOR'S firm is a person or firm ineligible to be awarded Government contracts by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1);
- ii. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of Section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1);
- iii. The penalty for making false statements is prescribed in the U.S. Criminal Code 18 U.S.C.

# b. Certification of Non-Segregated Facilities (41 CFR Part 60-1.8)

The federally-assisted construction CONTRACTOR certifies that it <u>does not</u> and will not maintain or provide for its employees any segregated facilities at any of its establishments and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Bidder agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, sex, or national origin because of written or oral policies or employee custom. The term does not include separate or single-user restrooms or necessary dressing or sleeping areas provided to assure privacy between the sexes. The Bidder agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding \$10,000 which are not exempt from the provisions of the Equal Opportunity Clause and that it will retain such certifications in its files.

## Article 9 - Miscellaneous

- a. CONTRACTOR understands that it shall be solely responsible for the means, methods, techniques, sequences and procedures of construction in connection with completion of the Work;
- b. CONTRACTOR understands and agrees that it shall not accomplish any work or furnish any materials that are not covered or authorized by the Contract Documents unless authorized in writing by the OWNER or ENGINEER;
- c. The rights of each party under this Agreement shall not be assigned or transferred to any other person, entity, firm or corporation without prior written consent of both parties;
- d. OWNER and CONTRACTOR each bind itself, their partners, successors, assigns and legal representatives to the other party in respect to all covenants, agreements, and obligations contained in the Contract Documents.

## Article 10 - OWNER'S Representative

The OWNER'S Representative, herein referred to as ENGINEER, is defined as follows:

Lochner 16105 W. 113<sup>th</sup> Street Suite 107 Lenexa, KS 66219 Said ENGINEER will act as the OWNER'S representative and shall assume all rights and authority assigned to the ENGINEER as stated within the Contract Documents in connection with the completion of the Project Work.

IN WITNESS WHEREOF, OWNER and CONTRACTOR have executed five (5) copies of this Agreement on the day and year first noted herein.

OWN	ER	CONTRACTOR	
Name:		Name: Build Tec Construction, La	C
Addres	SS:	Address: P.O. Box 355	_
		17250 State Route H	
		St. James, MO 65550	7
By:	Signature	By: Casly & D	_
	Title of Representative	President Title of Representative	
ATTE	ST:	ATTEST	
By:	Signature	By: Masen 2 Pm	
	Dignature	Vice President	
	Title	Title	

# POWER OF ATTORNEY HARCO NATIONAL INSURANCE COMPANY

INTERNATIONAL FIDELITY INSURANCE COMPANY

Member companies of IAT insurance Group, Headquartered: 4200 Six Forks Rd, Suite 1400, Raleigh, NC 27609

KNOW ALL MEN BY THESE PRESENTS: That HARCO NATIONAL INSURANCE COMPANY, a corporation organized and existing under the laws of the State of Illinois, and INTERNATIONAL FIDELITY INSURANCE COMPANY, a corporation organized and existing under the laws of the State of New Jersey, and having their principal offices located respectively in the cities of Rolling Meadows, Illinois and Newark, New Jersey, do hereby constitute and appoint

CASEY PARISOFF, KARI HOHN, KATHY L. FAGAN

## St. Louis, MO

their true and lawful attorney(s)-in-fact to execute, seal and deliver for and on its behalf as surety, any and all bonds and undertakings, contracts of indemnity and other writings obligatory in the nature thereof, which are or may be allowed, required or permitted by law, statute, rule, regulation, contract or otherwise, and the execution of such instrument(s) in pursuance of these presents, shall be as binding upon the said HARCO NATIONAL INSURANCE COMPANY and INTERNATIONAL FIDELITY INSURANCE COMPANY, as fully and amply, to all intents and purposes, as if the same had been duly executed and acknowledged by their regularly elected officers at their principal offices.

This Power of Attorney is executed, and may be revoked, pursuant to and by authority of the By-Laws of HARCO NATIONAL INSURANCE COMPANY and INTERNATIONAL FIDELITY INSURANCE COMPANY and is granted under and by authority of the following resolution adopted by the Board of Directors of INTERNATIONAL FIDELITY INSURANCE COMPANY at a meeting duly held on the 13th day of December, 2018 and by the Board of Directors of HARCO NATIONAL INSURANCE COMPANY at a meeting held on the 13th day of December, 2018.

"RESOLVED, that (1) the Chief Executive Officer, President, Executive Vice President, Senior Vice President, Vice President, or Secretary of the Corporation shall have the power to appoint, and to revoke the appointments of, Attorneys-in-Fact or agents with power and authority as defined or limited in their respective powers of attorney, and to execute on behalf of the Corporation and affix the Corporation's seal thereto, bonds, undertakings, recognizances, contracts of indemnity and other written obligations in the nature thereof or related thereto; and (2) any such Officers of the Corporation may appoint and revoke the appointments of joint-control custodians, agents for acceptance of process, and Attorneys-in-fact with authority to execute waivers and consents on behalf of the Corporation; and (3) the signature of any such Officer of the Corporation and the Corporation's seal may be affixed by facsimile to any power of attorney or certification given for the execution of any bond, undertaking, recognizance, contract of indemnity or other written obligation in the nature thereof or related thereto, such signature and seals when so used whether heretofore or hereafter, being hereby adopted by the Corporation as the original signature of such officer and the original seal of the Corporation, to be valid and binding upon the Corporation with the same force and effect as though manually affixed."

IN WITNESS WHEREOF, HARCO NATIONAL INSURANCE COMPANY and INTERNATIONAL FIDELITY INSURANCE COMPANY have each executed and attested these presents on this 31st day of December, 2022



STATE OF NEW JERSEY County of Essex

STATE OF ILLINOIS County of Cook



Kenneth Chapman Executive Vice President, Harco National Insurance Company and International Fidelity Insurance Company

On this 31st day of December, 2022 , before me came the individual who executed the preceding instrument, to me personally known, and, being by me duly sworn, said he is the therein described and authorized officer of HARCO NATIONAL INSURANCE COMPANY and INTERNATIONAL FIDELITY INSURANCE COMPANY; that the seals affixed to said instrument are the Corporate Seals of said Companies; that the said Corporate Seals and his signature were duly affixed by order of the Boards of Directors of said Companies.



IN TESTIMONY WHEREOF, I have hereunto set my hand affixed my Official Seal, at the City of Newark, New Jersey the day and year first above written.

Cathy Cruz a Notary Public of New Jersey My Commission Expires April 16, 2024

#### CERTIFICATION

I, the undersigned officer of HARCO NATIONAL INSURANCE COMPANY and INTERNATIONAL FIDELITY INSURANCE COMPANY do hereby certify that I have compared the foregoing copy of the Power of Attorney and affidavit, and the copy of the Sections of the By-Laws of said Companies as set forth in said Power of Attorney, with the originals on file in the home office of said companies, and that the same are correct transcripts thereof, and of the whole of the said originals, and that the said Power of Attorney has not been revoked and is now in full force and effect.

IN TESTIMONY WHEREOF, I have hereunto set my hand on this day,

Irene Martins, Assistant Secretary

1	CORD <sup>®</sup> CER	TI	FIC	ATE OF LIAE		NSURA	NCE	DATE (MM 08/10	/DD/YYYY) )/2023
	THIS CERTIFICATE IS ISSUED AS A MATT DOES NOT AFFIRMATIVELY OR NEGATIVI NSURANCE DOES NOT CONSTITUTE A CERTIFICATE HOLDER.	ELY	OF IN AMEN	Formation only and C ND, Extend or alter thi DT between the issuing	ONFERS NO R COVERAGE INSURER(S)	AFFORDED BY AFFORDED BY AUTHORIZED	THE CERTIFICATE HOLD THE POLICIES BELOW. REPRESENTATIVE OR	DER. THIS C THIS CERT PRODUCER	RTIFICATE IFICATE OF 2, AND THE
S	MPORTANT: If the certificate holder is SUBROGATION IS WAIVED, subject to t certificate does not confer rights to the ce	an the intifi	ADDI terms	TIONAL INSURED, the po and conditions of the po older in lieu of such endors	licy(ies) must blicy, certain sement(s).	have ADDITI policies may	ONAL INSURED provisi require an endorsemen	ons or be a t. A statem	endorsed. If ent on this
PRO	DDUCER				CONTACT CL	LENT CONTAG	CT CENTER	-	
FEI	DERATED MUTUAL INSURANCE COMPA	NY			PHONE (A/C, No. Ext)	: 888-333-4949	FAX (A/C, No): 50	7-446-4664	-
OW	VATONNA, MN 55060				E-MAIL ADDRESS: CI	LIENTCONTAC	TCENTER@FEDINS.CO	M	
					Proprietors, et	INSURERS A	FFORDING COVERAGE		NAIC #
					INSURER A:F	EDERATED M	UTUAL INSURANCE CO	MPANY	13935
NSU	URED			407-071-0	INSURER B:				
30	DECK 255				INSURER C:				
SA	INT JAMES, MO 65559-0355				INSURER D:				
					INSURER E:				
_					INSURER F:		and the second		1
co	VERAGES CERTI	IFIC	ATE N	UMBER: 50			REVISION NUMBER: 0	2	1.1.1.1
T N IS	HIS IS TO CERTIFY THAT THE POLICIES OF I IOTWITHSTANDING ANY REQUIREMENT. TER SSUED OR MAY PERTAIN, THE INSURANCE A UCH POLICIES, LIMITS SHOWN MAY HAVE BE	M O AFFC	RANCI R CON	E LISTED BELOW HAVE BEEN NDITION OF ANY CONTRACT BY THE POLICIES DESCRIBE CED BY PAID CLAIMS.	OR OTHER DO	E INSURED NAI	MED ABOVE FOR THE POL RESPECT TO WHICH THIS L THE TERMS, EXCLUSION	ICY PERIOD S CERTIFICA NS AND CON	NDICATED. TE MAY BE DITIONS OF
USR TR	TYPE OF INSURANCE	ADDL	SUBR WVD	POLICY NUMBER	MM/DD/YYYY)	(MM/DD/YYYY)	L	IMITS	
	X COMMERCIAL GENERAL LIABILITY						EACH OCCURRENCE	SES	\$1,000,000
							MED EXP (Any one person)	1	EXCLUDED
А		Ν	N	1825093	01/21/2023	01/21/2024	PERSONAL & ADV INJURY		\$1,000,000
	GENL AGGREGATE LIMIT APPLIES PER:						GENERAL AGGREGATE	-	\$2,000,000
l	X POLICY PRO- UECT LOC						PRODUCTS & COMP/OP AGO		\$2,000,000
	AUTOMOBILE LIABILITY						COMBINED SINGLE LIMIT		\$1,000,000
	XANYAUTO						BODILY INJURY (Per Person)	1.1	
А	OWNED AUTOS ONLY SCHEDULED	Ν	N	N 1825093	01/21/2023	01/21/2024	BODILY INJURY (Per Acciden	t)	
	HIRED AUTOS ONLY						PROPERTY DAMAGE (Per Accident)	-	
	X UMBRELLA LIAB X OCCUR				-		EACH OCCURRENCE		\$2,000,000
A	EXCESS LIAB CLAIMS-MADE	N	N	1825095	01/21/2023	01/21/2024	AGGREGATE		\$2,000,000
	DED RETENTION	14							
	WORKERS COMPENSATION						X PER STATUTE OTH	ER	
Δ	ANY PROPRIETOR/PARTNER/ EXECUTIVE	NUA	N	1925004	01/01/0002	01/01/0004	E.L EACH ACCIDENT		\$1,000,000
~	(Mandatory In NH)	NIA	AN	1825094	0112112023	01/21/2024	E.L DISEASE EA EMPLOYEE	1.1	\$1,000,000
	DESCRIPTION OF OPERATIONS below	_				_	E.L DISEASE POLICY LIMIT		\$1,000,000
ESC	CRIPTION OF OPERATIONS / LOCATIONS / VEHICLES	(ACO	RD 101.	Additional Remarks Schedule, may I	e attached if more	space is required)			_
CEI	RTIFICATE HOLDER				CANCELLAT	ION			
407 CIT 400 SAI	7-071-0 TY OF SALEM D N IRON ST LEM, MO 85560-1429			50 0	SHOULD AN BEFORE THE ACCORDANC	EXPIRATION	ABOVE DESCRIBED PO DATE THEREOF, NOTIC POLICY PROVISIONS.	e will be d	CANCELLED
					AUTHORIZED RE	EPRESENTATIVE	Neiholae R.	Lower	

ACORD 25 (2016/03)

© 1988-2015 ACORD CORPORATION. All rights reserved. The ACORD name and logo are registered marks of ACORD