



10-Unit T-Hangar Ruston Regional Airport
LAGC Plan Room - North

Project documents obtained from www.CentralBidding.com

10-Apr-2026 03:49:48 PM

**Proposal, Contract Documents And
Technical Specifications For**

RUSTON REGIONAL AIRPORT

10-UNIT T-HANGAR

FAA AIG No. 3-22-0082-027-2026

KSA Project No. 103712

March 2026

Prepared by:



**1111 Hawn Avenue
Shreveport, Louisiana 71107
Phone 318.221.7501
Louisiana State Reg. No. EF.476**

RUSTON REGIONAL AIRPORT

10-UNIT T-HANGAR

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CSPP

AC 150/5370-2G Operational Safety on Airports During Construction

DOCUMENT 00 00 03
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PROJECT: RUSTON REGIONAL AIRPORT – 10 UNIT T-HANGAR
Ruston, LA

Specification Divisions/Sections prepared under my responsible supervision:

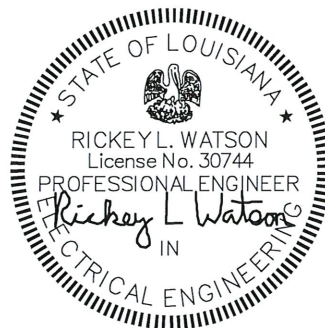
DIVISION 0 Contract Documents



Jonathan N. Farmer, PE
Civil Engineer - LA License # 37012

Specification Divisions/Sections prepared under my responsible supervision:

DIVISION 26 Electrical



03/27/2025

Rickey L. Watson, PE
Electrical Engineer - LA License # 30744

PROJECT: RUSTON REGIONAL AIRPORT – 10 UNIT T-HANGAR
Ruston, LA

Specification Divisions/Sections prepared under my responsible supervision:

DIVISION 1	General Requirements
DIVISION 2	Existing Conditions
DIVISION 7	Thermal & Moisture Protection
DIVISION 9	Finishes
DIVISION 10	Specialties
DIVISION 13	Special Construction
DIVISION 31	Earthwork
DIVISION 32	Exterior Improvements

John E. Selmer, AIA, NCARB, LEED AP BD+C, GGP, RRC
Architect - LA License # 5669

Specification Divisions/Sections prepared under my responsible supervision:

DIVISION 3	Concrete
DIVISION 13	Special Construction

Don Arrington, PE
Civil Engineer - LA License # 28210

DIVISION 0

CONTRACT DOCUMENTS

INVITATION FOR BID

SEALED BIDS for construction at the Ruston Regional Airport consisting of a 10-Unit T-Hangar, Airport Infrastructure Grant No. 3-22-0082-027-2026 will be received in the Purchasing Office of the City of Ruston, Louisiana, located at 2805 South Farmerville Street, Ruston, Louisiana 71270, until 2:00 p.m. CST on Tuesday, April 28, 2026. Bids will then be publicly opened and read aloud at the Purchasing Office. Bids received after the 2:00 p.m. deadline will be returned to the bidder unopened via certified mail. Received bids will be referred to the City of Ruston City Council for action and award.

A Pre-Bid Conference will be held on Wednesday, April 8, 2026, at 10:00 a.m. in the Airport Terminal Building, 125 Flightline Drive, Ruston, LA 71270. Representatives from the Owner and Engineer will be present to discuss the project. Although the meeting is not mandatory, bidders are encouraged to attend and participate in the conference.

Contract Documents including bid proposal forms, plan sheets, and specifications for the project may be viewed and downloaded free of charge at www.civcastusa.com. Addenda will be posted at www.civcastusa.com. You will be notified of addenda automatically, through email, if you downloaded your plans and specifications via [civcastusa.com](http://www.civcastusa.com). Please submit questions for the project 72 hours prior to bid opening through www.civcastusa.com in the Q&A portal.

Bids shall be received only on proposal forms furnished by the Engineer. In no event shall proposal forms be issued later than twenty-four (24) hours prior to the hour and date set for receiving proposals.

Bidders may elect to submit bids electronically via the internet. Electronic bids for the City of Ruston are available for submission at www.bidexpress.com. Bidders desiring to submit electronic bids must register with Bid Express. All bids submitted electronically shall include a digital signature as required by Louisiana State law. Bidders submitting bids electronically are not required to submit paper forms.

Bid proposals, amendments to bids, or requests for withdrawal of bids, which are received after the time specified for bid opening, shall not be considered for any cause whatsoever.

An acceptable bid bond, cashier's check or certified check payable to the City of Ruston, in an amount equal to five percent (5%) of the bid price, shall be submitted with each bid. The successful Bidder will be required to furnish and pay for satisfactory performance and payment bonds. Bidders are advised that Performance, Payment, and Maintenance Bond, each in the amount of 100 percent (100%) of the contract price, will be required.

On any bid submitted in the amount of \$50,000 or more, the Contractor shall certify that he is licensed under Louisiana Revised Statute 37:2150-2164 and show his license number on the bid and on the envelope. Bidders must be licensed in the following category: **Building Construction (or applicable sub classification)**. The licensee shall not be permitted to bid or perform any type or types of work not included in the classification under which his license was issued.

Title VI Solicitation Notice

As a condition of a grant award, the City of Ruston shall demonstrate that it complies with the provisions of Title VI of the Civil Rights Act of 1964 (42 U.S.C. §§ 2000d et seq) and implementing regulations (49 CFR part 21) including amendments thereto, the Airport and Airway Improvement Act of 1982 (49 U.S.C. § 47123), the Age Discrimination Act of 1975 (42 U.S.C. 6101 et seq.), Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. § 794 et seq.), the Americans with Disabilities Act of 1990 (42 U.S.C. § 12101, et seq.), U.S. Department of Transportation and Federal Aviation Administration (FAA) Assurances, and other relevant civil rights statutes, regulations, or authorities, including any amendments or updates thereto.

This may include, as applicable, providing a current Title VI Program Plan to the FAA for approval, in the format and according to the timeline required by the FAA, and other information about the communities that will be benefited and impacted by the project. A completed FAA Title VI Pre-Grant Award Checklist is required for every grant application, unless excused by the FAA. The City of Ruston shall affirmatively

ensure that when carrying out any project supported by this grant that it complies with all federal nondiscrimination and civil rights laws based on race, color, national origin, sex, creed, age, disability, genetic information, in consideration for federal financial assistance. The Department's and FAA's Office of Civil Rights may provide resources and technical assistance to recipients to ensure full and sustainable compliance with Federal civil rights requirements. Failure to comply with civil rights requirements will be considered a violation of the agreement or contract and be subject to any enforcement action as authorized by law.

Disadvantaged Business Enterprise

The requirements of 49 CFR Part 26 including any amendments thereto apply to this contract. It is the policy of the City of Ruston to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. The Owner encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

Federal Fair Labor Standards Act (Federal Minimum Wage)

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR Part 201, et seq, 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.

Trade Restriction Certification

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

- 1) 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 as published by the Office of the United States Trade Representative (USTR);
- 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 USTR; and
- 3) has not entered into any subcontract for any product to be used on the Federal project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR.

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 USC § 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 USTR; or
- 2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such USTR list; or
- 3) who incorporates in the public works project any product of a foreign country on such USTR 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 USTR, 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.

Prohibition of Covered Unmanned Aircraft Systems (UAS)

The Bidder or Offeror certifies that they are aware of and comply with relevant Federal statutes and regulations, including those from the Federal Aviation Administration (FAA), for operating unmanned aircraft systems (UAS) in accordance, and in compliance with all related requirements in the FAA Reauthorization Act of 2024 (Public Law 118-63), section 936 (49 U.S.C. § 44801 note).

Contractor warrants that all UAS operations will be conducted in full compliance with all applicable Federal Aviation Administration (FAA) regulations, including but not limited to 14 CFR Part 107, and any other applicable local, state, or Federal laws and regulations.

Sponsors and subgrant recipients cannot use AIP grant funds to enter into, extend, or renew a contract related to covered unmanned aircraft systems (UAS). This includes both procurement and operational contracts, as well as contracts with entities that operate such systems.

All Bidders and Proposers shall comply with the provisions of Buy American Preferences, Davis Bacon Requirements, Debarment and Suspension, Lobbying Federal Employees, and Recovered Materials.

Bids may be held by the City of Ruston for a period of forty-five (45) calendar days after the date and hour set for the opening.

The City of Ruston reserves the right to reject any or all Bids for just cause and reserves the right to waive any and all informalities.

C. Michelle Colvin, CPPB
Purchasing Director/Contract Administrator
City of Ruston
Telephone: (318) 251-8631
Email: MichelleColvin@rustonla.gov

Published in *The Ruston Daily Leader*

Advertise: March 25, 2026
April 3, 2026
April 8, 2026

INSTRUCTIONS TO BIDDERS

1. PROPOSAL FORMS. All proposals must be made on the forms provided in these contract documents. All proposals must be legibly written in ink, with total price given in words and figures. No alterations in proposals or in the printed forms will be permitted by erasures or interlineations. Each proposal shall be enclosed in a sealed envelope, addressed to the City of Ruston and identified on the outside of the envelope with the appropriate title of the project as indicated on the plans.

Proposals shall be strictly in accordance with the prescribed form. Any modifications thereof or deviations there from may be considered as sufficient cause for rejection.

Proposals carrying riders or qualifications to the proposal as submitted may be rejected as irregular.

2. PROPOSAL GUARANTEE. Each proposal shall, as a guarantee of good faith on the part of the bidder, be accompanied by either a cashier's check, or a certified check drawn on an acceptable bank, or an acceptable bidder's bond with an authorized surety company in an amount of not less than five percent (5%) of the total bid.

The proposed guarantee shall be made payable without conditions to the City of Ruston and the amount of the check or bond may be retained by and forfeited to said City of Ruston hereinafter referred to as "Owner" as liquidated damage if such proposal is accepted and the contract is awarded, and the bidder fails to enter into a contract in the form prescribed, with legally responsible sureties, within ten (10) calendar days after such award is made by the Owner.

3. ONLY ONE PROPOSAL. No bidder may submit more than one (1) proposal. Proposals under different names will not be received from one firm or association.
4. RESPONSIBILITY OF AGENT. Any person signing a proposal as the agent of another or of others, may be required to submit satisfactory evidence of authority to do so.

The title of the person executing the proposal or contract will be clearly indicated beneath his signature.

5. QUALIFICATIONS OF BIDDERS. Bidders may be required to submit satisfactory evidence that they have a practical knowledge and experience in the particular work bid upon, and that they have the necessary financial resources to complete the proposed work. Inexperience in the type or size of the job bid upon shall be sufficient cause for rejection of the bid. The opinion of the Engineer in this regard shall be final. In determining the lowest responsible bid, the following elements will be considered: Whether the bidder involved maintains a permanent place of business, has adequate plant equipment to do the work properly and expeditiously, has a suitable financial status to meet obligations incidental to the work and has appropriate technical experience.

Each bidder may be required to show that former work performed by him has been handled in such manner that there are not just or proper claims pending against such work. No bidder will be acceptable if he is engaged in other work which impairs his ability to finance this contract or provide proper equipment for the execution of same. Each bidder shall demonstrate his ability by meeting all requirements herein stipulated.

6. LOCAL CONDITIONS AFFECTING WORK. Each bidder must inform himself fully of the conditions relating to the construction of the project and the employment of the labor thereon. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of this contract. Insofar as possible the Contractor, in carrying out his work must employ such methods or means as will not cause any interruption of or interference with the work of any other contractor.

The Contractor to whom the work is awarded shall conduct his work in strict conformance with the state and parish laws and parish ordinances relative to labor, sanitary requirements and traffic safety regulations.

7. TAXES. All sales and use taxes, including such taxes as might lawfully be assessed against the Owner in the execution and performance of the proposed contract and work covered thereby, are to be paid by the Contractor for the work from monies obtained in satisfaction of this contract. It is to be understood by all bidders that the bid price or prices submitted shall include the total cost of all such taxes.
8. INTERPRETATION OF CONTRACT DOCUMENTS. If any person contemplating submitting a bid for the proposed contract is in doubt as to the true meaning of any parts of plans, specifications or other proposed contract documents, he may submit to the Engineer a written request for interpretation thereof. The person submitting the request will be responsible for its prompt delivery.

Any interpretation of the proposed documents will be made only by addendum duly issued and a copy of such addendum will be mailed or delivered to each person receiving a set of such documents. The Owner will not be responsible for any explanations or interpretations of the proposed documents.

9. TIME OF CONSTRUCTION. Bidder must agree to commence work within ten (10) days following the issuance of the "Notice to Proceed" issued by the Owner, and must agree to fully complete the project within **ONE HUNDRED TWENTY DAYS (120) CALENDAR DAYS.**
10. WITHDRAWAL OF BID. No bidder may withdraw his bid for a period of 60 days after the date and hour set for the opening herewith. A bidder may withdraw his proposal at any time prior to the expiration of the period during which the proposals may be submitted by written request of the bidder, which request must be signed in the same manner and by the same persons or person who signed the proposal.
11. ACCEPTANCE AND REJECTION OF BIDS. The Owner reserves the right to the bid which, in its judgment, is the lowest and best bid on and for the work covered by the proposal, to reject any or all bids, and to waive irregularities in bids.

The low bidder shall be determined and the contract for the project shall be awarded based upon the terms and conditions and the Rules and Regulations of the Owner and under the direction of the engineer or his authorized representative(s).

12. PROOF AND CARRIAGE OF INSURANCE. The Contractor shall submit a Certificate of Insurance showing proof of carriage of the insurance required under Section 70-11 and the Special Conditions of these contract documents.
13. DISPUTE RESOLUTION. Neither mediation nor arbitration will be acceptable as a means for settling claims, disputes, or other matters. The Agreement executed in accordance with the contract documents shall be governed by and construed in accordance with the laws of the State of Louisiana.

14. FORMS.

1. Forms to be completed and submitted with the bid are:
 - a. Bid Form
 - b. Bid Bond
 - c. Corporate Resolution or written evidence of the authority of the person signing the bid
2. Forms to be completed and submitted to Engineer within five (5) days of bid opening shall be:
 - a. Bidder's List Collection Form
 - b. Buy American Certification
3. Forms to be completed and submitted to Engineer within ten (10) days of receipt of written notification advising Contractor of award shall be:
 - a. AIG Contract Certification
 - b. Agreement
 - c. Public Contract Affidavit
 - d. Performance/Maintenance/Payment Bond
 - e. Attestations
 - f. Certificate of Insurance
 - g. Fostering Small Business Participation
 - h. Non-Certified Small Business Verification

LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: City of Ruston
2805 South Farmerville Street
Ruston, LA 71270

BID FOR: Ruston Regional Airport
10-Unit T-Hangar
FAA AIG No. 3-22-0082-027-2026

The undersigned bidder hereby declares and represents that she/he; a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by: KSA Engineers, Inc. 1111 Hawn Ave. Shreveport, LA 71107 and dated March 2026.

Bidders must acknowledge all addenda. The Bidder acknowledges receipt of the following ADDENDA: (Enter the number the Designer has assigned to each of the addenda that the Bidder is acknowledging) _____

TOTAL BASE BID: For all work required by the Bidding Documents (including any and all unit prices designated "Base Bid" * but not alternates) the sum of:

_____ Dollars (\$ _____)

ALTERNATES: For any and all work required by the Bidding Documents for Alternates including any and all unit prices designated as alternates in the unit price description.

Alternate No. 1 N/A _____ for the lump sum of:
Dollars (\$ _____)

Alternate No. 2 N/A _____ for the lump sum of:
Dollars (\$ _____)

Alternate No. 3 N/A _____ for the lump sum of:
Dollars (\$ _____)

NAME OF BIDDER: _____

ADDRESS OF BIDDER: _____

LOUISIANA CONTRACTOR'S LICENSE NUMBER: _____

NAME OF AUTHORIZED SIGNATORY OF BIDDER: _____

TITLE OF AUTHORIZED SIGNATORY OF BIDDER: _____

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER:** _____

DATE: _____

THE FOLLOWING ITEMS ARE TO BE INCLUDED WITH THE SUBMISSION OF THIS LOUISIANA UNIFORM PUBLIC WORK BID FORM:

* The Unit Price Form shall be used if the contract includes unit prices. Otherwise it is not required and need not be included with the form. The number of unit prices that may be included is not limited and additional sheets may be included if needed.

** **A CORPORATE RESOLUTION OR WRITTEN EVIDENCE** of the authority of the person signing the bid for the public work as prescribed by LA R.S. 38:2212(B)(5).

BID SECURITY in the form of a bid bond, certified check or cashier's check as prescribed by LA R.S. 38:2218(A) attached to and made a part of this bid.

BID BOND

Date: _____

KNOW ALL MEN BY THESE PRESENTS:

That _____ of _____,
as Principal, and _____, as Surety, are held and
firmly bound unto _____ (Obligee),
in the full and just sum of five (5%) percent of the total amount of this proposal, including all alternates,
lawful money of the United States, for payment of which sum, well and truly be made, we bind ourselves,
our heirs, executors, administrators, successors and assigns, jointly and severally firmly by these presents.

Surety represents that it is listed on the current U. S. Department of the Treasury Financial Management Service list of approved bonding companies as approved for an amount equal to or greater than the amount for which it obligates itself in this instrument or that it is a Louisiana domiciled insurance company with at least an A - rating in the latest printing of the A. M. Best's Key Rating Guide. If surety qualifies by virtue of its Best's listing, the Bond amount may not exceed ten percent of policyholders' surplus as shown in the latest A. M. Best's Key Rating Guide.

Surety further represents that it is licensed to do business in the State of Louisiana and that this Bond is signed by surety's agent or attorney-in-fact. This Bid Bond is accompanied by appropriate power of attorney.

THE CONDITION OF THIS OBLIGATION IS SUCH that, whereas said Principal is herewith submitting its proposal to the Obligee on a Contract for:

NOW, THEREFORE, if the said Contract be awarded to the Principal and the Principal shall, within such time as may be specified, enter into the Contract in writing and give a good and sufficient bond to secure the performance of the terms and conditions of the Contract with surety acceptable to the Obligee, then this obligation shall be void; otherwise this obligation shall become due and payable.

PRINCIPAL (BIDDER)

SURETY

BY: _____
AUTHORIZED OFFICER-OWNER-PARTNER

BY: _____
AGENT OR ATTORNEY-IN-FACT(SEAL)

AIG CONTRACT CERTIFICATION

The BIDDER (Proposer) shall complete the following statement by checking the appropriate spaces.

The BIDDER (Proposer) has ___ has not _____ participated in a previous contract subject to the equal opportunity clause prescribed by Executive Order 10925 or Executive Order 11114, or Executive Order 11246.

The BIDDER (Proposer) has ___ has not _____ submitted all compliance reports in connection with any such contract due under the applicable filing requirements; and that representations indicating submission of required compliance reports signed by proposed subcontractors will be obtained prior to award of subcontracts.

If the BIDDER (Proposer) has participated in a previous contract subject to the equal opportunity clause and has not submitted compliance reports due under applicable filing requirements, the Bidder (Proposer) shall submit a compliance report on Standard Form 100, "Employee Information Report EEO-1" prior to award of the contract.

Standard Form 100 is normally furnished contractors annually, based on a mailing list currently maintained by the Joint Reporting Committee. In the event a contractor has not received the form, he may obtain it by writing to the following address:

Joint Reporting Committee
1800 G Street
Washington, D.C. 20506

The bidder certifies, by submission of this bid or acceptance of this contract, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency. It further agrees that by submitting this bid that it will include this clause without modification in all lower tier transactions, solicitations, proposals, contracts, and subcontracts. Where the bidder or any lower tier participant is unable to certify to this statement, it shall attach an explanation to this proposal.

Certification Regarding Foreign Trade Restrictions (49 CFR PART 30)

The contractor or subcontractor, by submission of an offer and/or execution of a contract, certifies that it:

- a. is not owned or controlled by one or more citizens or nationals 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 contractor 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.
- 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.

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 a contractor or subcontractor who is unable to certify to the above. If the contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on said list for use on the project, the Federal Aviation Administration may direct, through the sponsor, cancellation of the contract at no cost to the Government.

Further, the contractor agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in each contract and in all lower tier subcontracts. The contractor may rely upon the certification of a prospective subcontractor unless it has knowledge that the

certification is erroneous. The contractor shall provide immediate written notice to the sponsor if the contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The subcontractor agrees to provide immediate written notice to the contractor, if at any time it learns that its certification was erroneous by reason of changed circumstances.

This certification is a material representation of fact upon which reliance was placed when making the award. If it is later determined that the contractor or subcontractor knowingly rendered an erroneous certification, the Federal Aviation Administration may direct, through the sponsor, cancellation of the contract or subcontract for default at no cost to the Government.

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.

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.

Respectfully submitted:

Signature

Title

License Number (If Applicable)

Address

(SEAL - If BID is by a Corporation)

ATTEST: _____

AGREEMENT

THIS AGREEMENT, made this _____ day of _____, 2026, by and between the City of Ruston hereinafter called "OWNER", and _____, doing business as (an individual), or (a partnership), or (a corporation), hereinafter called "CONTRACTOR".

WITNESSETH: That for and in consideration of the payments and agreements hereinafter mentioned:

1. The CONTRACTOR will commence and complete the construction of the "RUSTON REGIONAL AIRPORT – 10-UNIT T-HANGAR", AIG No. 3-22-0082-027-2026 in Ruston, Louisiana, and all extra work in connection therewith, under the terms as stated in the General Provisions and at his (or their) own proper cost and expense to furnish all materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete said construction, in accordance with the Invitation for Bid, General Provisions, Special Conditions, plans and other drawings and printed or written explanatory matter thereof, and the Specifications and addenda therefore, as prepared by KSA Engineers, Inc. together with the CONTRACTOR's written bid form, General Provisions, and the Performance/Maintenance/Payment Bonds hereto attached; all of which are made a part hereof and collectively evidence and constitute the entire CONTRACT.
2. The CONTRACTOR will commence the work required by the CONTRACT within ten (10) days after the date of the NOTICE TO PROCEED and will complete the same within **ONE HUNDRED TWENTY (120) CALENDAR DAYS**, unless the period for completion is extended otherwise by the CONTRACT.
3. The CONTRACTOR agrees to perform all of the work described in the CONTRACT and comply with the terms therein for the sum of \$ _____.
4. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the General Provisions such amounts as required by the CONTRACT.
5. The OWNER may, upon reasonable notice to the CONTRACTOR, examine the books, records and operations of the CONTRACTOR that relate to all items in this contract. Any claims arising from such examinations shall be submitted by the OWNER to the CONTRACTOR for immediate settlement.

6. This Agreement shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors and assigns.

IN WITNESS WHEREOF, the parties hereto have executed, or caused to be executed by their duly authorized officials, this Agreement in six (6) copies each of which shall be deemed an original on the date first above written.

(SEAL)

ATTEST:

NAME: _____
(Please Type)

TITLE: _____

(SEAL)

ATTEST:

NAME: _____
(Please Type)

TITLE: _____

OWNER:

CITY OF RUSTON

BY: _____

NAME: _____
(Please Type)

TITLE: _____

CONTRACTOR:

BY: _____

NAME: _____
(Please Type)

TITLE: _____

ADDRESS: _____

PUBLIC CONTRACT AFFIDAVIT
ATTESTING THAT PUBLIC CONTRACT WAS NOT SECURED
THROUGH EMPLOYMENT OR PAYMENT OF SOLICITOR

All architects, engineers, contractors, subcontractors, or any other person, corporation, firm, association, or other organization receiving value for services rendered in connection with this contract shall execute the following affidavit:

BEFORE ME, the undersigned Notary Public duly qualified and commissioned, came and appeared

_____, authorized representative of _____,

who does hereby state as follows, to-wit:

1. That I employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, in connection with the construction of the public building or project or in securing the public contract were in the regular course of their duties for me; and
2. That no part of the contract price received by me was paid or will be paid to any person, corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by me whose services in connection with the construction of the public building or project were in the regular course of the duties for me.
3. Architects and engineers are prohibited from owning a substantial financial interest, either directly or indirectly, in any corporation, firm, partnership, or other organization which supplies materials for the construction of a public building or project when the architect or engineer has performed architectural or engineering services, either directly or indirectly, in connection with the public building or project for which the materials are being supplied.

(a) For the purpose of this Section, a "substantial, financial interest" shall exclude any interest in stock being traded on the American Stock Exchange or the New York Stock Exchange.

THUS DONE AND PASSED before me, Notary, on this ____ day of _____, 2026.

Signature and Title

Notary Public

STATE OF LOUISIANA

PARISH OF LINCOLN

PERFORMANCE/MAINTENANCE/PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS:

That the undersigned contractor; herein the Principal _____
and his/her/their/its Surety _____ are held and firmly bound unto the City
of Ruston, State of Louisiana, in the penal sum of _____
_____ and Cents (\$ _____), which is
100% of the contract amount, to be paid to the City of Ruston, its successors or assigns, for the payment
of which said sum, well and truly to be made, we do hereby firmly bind ourselves, our heirs, executors,
administrators and successors, jointly and severally by these presents.

The condition of the above obligation is such that the Principal shall enter into a contract with said City
of Ruston for furnishing all labor, materials, equipment, rentals and other services and supplies specified in
said contract for the following:

Project Name: 10-UNIT T-HANGAR

RUSTON REGIONAL AIRPORT, RUSTON, LOUISIANA

Project Number: AIG No. 3-22-0082-027-2026

Now, therefore, if the said Principal shall well, properly, faithfully, and honestly discharge, do and
perform all and singular obligations and things of said contract, to be done and performed by said Principal,
according to said contract, then this obligation shall be void; otherwise, the same shall remain in full force
and effect.

The obligation of the Principal shall include, though it is expressly and specifically not limited to, the
maintenance and repair of any and all defects in workmanship or materials which may develop or occur in
the above referenced project, free of any and all cost to the City of Ruston, for a period of one (1) year from
the date of the final acceptance of the project. The limit for the maintenance portion of the obligation shall
be ten percent (10%) of the penal sum.

Provided further, that if said Principal fails to duly pay for any labor, materials, equipment, rentals, or
any other supplies or materials used or consumed by the Principal or his/her/their/its subcontractors in
performance of the work contracted to be done, the Surety will pay the same in any amount not exceeding
the amount of this obligation, together with interest as provided by law.

Provided further, that the Surety, for value received, hereby stipulates and agrees that no change,
extension of time, alteration, or addition to the terms of the contract, or the work to be performed thereunder,
or the specifications accompanying the same, shall in any way affect its obligations on this bond and it does
hereby waive notice of any such change, extension of time, alteration, or modification.

Provided further, that the Principal and Surety hereby stipulate and agree that this bond shall be in full
force and effect as of the effective date of the above referenced contract.

IN TESTIMONY WHEREOF, the said Principal has hereunto set his hand, the Surety has caused these presents to be executed in its name and its corporate seal to be hereunto affixed, by its attorney-in-fact; and the undersigned attorney-in-fact hereby attests that s/he is duly authorized on this date and under the conditions set forth herein so to do.

WITNESS:

CONTRACTOR

BY: _____
Signature

WITNESS:

Surety

BY: _____
Name of Attorney-in-Fact

Signature and Seal

Signed, sealed and acknowledged before me, the undersigned notary, duly commissioned and qualified in the presence of _____ and _____ competent witnesses on this the _____ day of _____, 2026.

Notary Public

RSN – 10-UNIT T-HANGAR
NAME OF PROJECT

FAA AIG NO. 3-22-0082-027-2026
PROJECT NUMBER

ATTESTATIONS

Appearer, as a Bidder on the above-entitled Public Works Project, does hereby attest that:

L.A. R.S. 38:2227 (PAST CRIMINAL CONVICTIONS OF BIDDERS)

- A. No sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten-percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes:
- | | |
|---------------------------------------|-----------------------------------|
| (a) Public Bribery (R.S. 14:118) | (c) Extortion (R.S. 14:66) |
| (b) Corrupt Influencing (R.S. 14:120) | (d) Money Laundering (R.S. 14:23) |
- B. Within the past five years from the project bid date, no sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten-percent (10%) ownership in the bidding entity names below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes, during the solicitation or execution of a contract or bid awarded pursuant to the provisions of Chapter 10 of Title 38 of the Louisiana Revised Statutes:
- | | |
|---|--|
| (a) Theft (R.S. 14:67) | (f) Bank fraud (R.S. 14:71.1) |
| (b) Identity Theft (R.S. 14:67.16) | (g) Forgery (R.S. 14:72) |
| (c) Theft of a Business Record
(R.S. 14:67.20) | (h) Contractors; Misapplication of
Payments (R.S. 14:202) |
| (d) False Accounting (R.S. 14:70) | (i) Malfeasance in Office (R.S. 14:134) |
| (e) Issuing Worthless Checks (R.S. 14:71) | |

L.A. R.S. 38:2212.10 Verification of Employees

- A. Appearer is registered and participates in a status verification system to verify that all employees in the state of Louisiana are legal citizens of the United States or are legal aliens.
- B. If awarded the contract, Appearer shall continue, during the term of the contract, to utilize a status verification system to verify the legal status of all new employees in the state of Louisiana.
- C. If awarded the contract, Appearer shall require all subcontractors to submit to it a sworn affidavit verifying compliance of Paragraphs (A) and (B) of this Subsection.

NAME OF BIDDER

NAME OF AUTHORIZED SIGNATORY OF BIDDER

DATE

TITLE OF AUTHORIZED SIGNATORY OF BIDDER

SIGNATURE OF AUTHORIZED
SIGNATORY OF BIDDER

DISADVANTAGED BUSINESS ENTERPRISE

Bid Specification

The requirements of 49 CFR part 26 apply to this contract. It is the policy of the Sponsor to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. The Sponsor encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

Bidders List: The Sponsor is required to obtain the following bidder information about all DBE and non-DBEs who bid as prime contractors and subcontractors on each DOT-assisted contract. The Bidder must submit the following information within five (5) days of bid opening on the forms provided herein (Bidders List Collection Form):

- Firm's name;
- Firm's address including zip code;
- Firm's status as a DBE or non-DBE;
- NAICS code applicable to each scope of work the firm sought to perform in its bid;
- Age of the firm; and
- Annual gross receipts of the firm.

Small Business Participation: The Sponsor has established a Small Business Element in accordance with 49 CFR Part 26 to facilitate competition by small business concerns, taking all reasonable steps to eliminate obstacles to their participation and to create a level playing field on which small businesses can compete fairly. While there is no specific numerical goal assigned to small business participation the prime contractor should make every effort to solicit small business concerns (as defined in 13 CFR Part 121) to participate as subcontractors, service providers, suppliers, etc.

The Sponsor has identified work categories conducive to small business participation on the form entitled Fostering Small Business Participation – List Defining Work Categories Conducive to Small Business Participation. Prime contractors are encouraged to solicit small business participation for the work items referenced.

The Bidder must submit the Small Business Participation information on the forms provided herein (Fostering Small Business Participation & Non-Certified Small Business Verification Form) when requested by the Sponsor.

Socially/Economically Disadvantaged Financial Institutions: The Sponsor encourages Contractors and Subcontractors to utilize the services of financial institutions owned and controlled by socially and economically disadvantaged individuals in the community. You can find a link to Minority-Owned Financial Institutions and their branches on the FDIC website: <https://www.fdic.gov/regulations/resources/minority/mdi.html> or the U. S. Department of Treasury – Bureau of the Fiscal Service <https://fiscal.treasury.gov/mbdp/>.

FOSTERING SMALL BUSINESS PARTICIPATION – LIST DEFINING WORK CATEGORIES CONDUCTIVE TO SMALL BUSINESS PARTICIPATION

Background 49 CFR §26.39

The Sponsor has established a Small Business Element in accordance with 49 CFR Part 26 to facilitate competition by small business concerns, taking all reasonable steps to eliminate obstacles to their participation and to create a level playing field on which small businesses can compete fairly. While there is no specific numerical goal assigned to small business participation the prime contractor should make every effort to solicit small business concerns (as defined in 13 CFR Part 121).

The Sponsor has identified the below work categories that are conducive to small business participation for the referenced project. As per the agreement, prime contractors are encouraged to solicit small business participation for the work items referenced below.

Project Information

Project No/Description _____

Identified Work Categories Conducive to Small Business

Work Category/Bid Line Item	NAICS Code	
Commercial or Institutional Building Construction	236220	
Poured Concrete Foundation and Structure Contractors	238110	
Electrical Contractors and Other Wiring Installation Contractors	238210	
General Freight Trucking	4841	

Fostering Small Business Participation

Background 49 CFR §26.39

The Sponsor has established a Small Business Element in accordance with 49 CFR Part 26 to facilitate competition by small business concerns, taking all reasonable steps to eliminate obstacles to their participation and to create a level playing field on which small businesses can compete fairly. While there is no specific numerical goal assigned to small business participation the prime contractor should make every effort to solicit small business concerns (as defined in 13 CFR Part 121) to participate as sub-contractors, service providers, suppliers, etc.

The Sponsor encourages small business participation, including DBE certified firms and SBA certified Small Disadvantaged Business (SBD), Women-Owned Small Business/Economically Disadvantaged Women-Owned Small Businesses (ED/WOSB), Veteran-Owned Small Business/Service-Disabled Veteran-Owned Small Business (SD/VOSB), 8(a) Small Business Development Program (8(a)), SBA Mentor-Protégé Program (SBA MP), and HUBZone Program (HUBZone).

DBE certified firms can be located through the State's UCP website and SBA certified firms can be located through the Small Business Search Tool (<https://beta-search.certify.sba.gov/advanced> and https://dsbs.sba.gov/search/dsp_dsbs.cfm).

Prime Contractor

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Small Business Firms to be Utilized

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Address _____ City _____ State _____ Zip _____

Is the firm currently certified? If yes, check the appropriate box(es) and provide proof of certification. If no, complete the non-certified small business verification form.

☐ DBE ☐ SBD ☐ ED/WOSB ☐ SD/VOSB ☐ 8(a) ☐ SBA MP ☐ HUBZone ☐ No, Verification Form Attached

NAICS Code	Description of Work to be Performed	Estimated Total Cost of Work

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Address _____ City _____ State _____ Zip _____

Is the firm currently certified? If yes, check the appropriate box(es) and provide proof of certification. If no, complete the non-certified small business verification form.

☐ DBE ☐ SBD ☐ ED/WOSB ☐ SD/VOSB ☐ 8(a) ☐ SBA MP ☐ HUBZone ☐ No, Verification Form Attached

NAICS Code	Description of Work to be Performed	Estimated Total Cost of Work

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Address _____ City _____ State _____ Zip _____

Is the firm currently certified? If yes, check the appropriate box(es) and provide proof of certification. If no, complete the non-certified small business verification form.

☐ DBE ☐ SBD ☐ ED/WOSB ☐ SD/VOSB ☐ 8(a) ☐ SBA MP ☐ HUBZone ☐ No, Verification Form Attached

NAICS Code	Description of Work to be Performed	Estimated Total Cost of Work

Prime Signature

Signature _____ Date _____

Print Name _____ Title _____

Firm Name _____

NON-CERTIFIED SMALL Business VERIFICATION

Background 49 CFR §26.39

Firms seeking to participate under the Sponsor's Small Business Element who are not certified under one of the pre-qualified certifications listed on the Fostering Small Business Participation Form but believe their firm meets the small business requirements per 13 CFR Part 121 should complete the attached form and provide the requested documentation. Firms meeting the requirements as verified by the Sponsor are eligible to participate in the Small Business Participation Plan.

Business Information

Firm Name _____ Contact Name _____

Email Address _____ Phone _____

Address _____ City _____ State _____ Zip _____

Business Profile

Primary Activities of your Firm	Associated NAICS Codes

Number of Employees

Full Time _____ Part-time _____ Total _____

Gross Receipts of Firm (Attach Tax Returns for the last five years)

Gross Receipts of Firm for last 5 years	Year _____	Total Receipts _____
	Year _____	Total Receipts _____
	Year _____	Total Receipts _____
	Year _____	Total Receipts _____
	Year _____	Total Receipts _____
	Average Total Receipts _____	

Gross Receipts of Affiliate Firms (Attach Tax Returns for the last five years)

Gross Receipts of Affiliate Firms for last 5 years	Year _____	Total Receipts _____
	Year _____	Total Receipts _____
	Year _____	Total Receipts _____
	Year _____	Total Receipts _____
	Year _____	Total Receipts _____
	Average Total Receipts _____	

Affiliates are defined in accordance with the Small Business Administration (SBA) definition.

Prime Signature

Signature _____ Date _____

Print Name _____ Title _____

Firm Name _____

Reviewer Certification (For use by Sponsor Only)

The Reviewer has determined that the above presented business:

- ☐ Meets the requirements of a Small Business and is eligible to participate under the Small Business Element
- ☐ Does not meet requirements of a Small Business and is not eligible to participate under the Small Business Element

Signature _____

Print Name _____ Date _____

Firm Name _____ Title _____

BIDDERS LIST

Prime Contractor		
Firm Name: _____	Certified DBE: ☐ Yes ☐ No	
Firm Address: _____	City: _____	State: _____ Zip Code: _____
Contact Name: _____	Email Address: _____	Phone: _____
NAICS Code(s) & Work Description associated with Bid Project	Age of Firm	Annual Gross Receipts
	☐ Less than 1 year ☐ 1 - 3 years ☐ 4 - 7 years ☐ 8 - 10 years ☐ More than 10 years	☐ Less than \$1 million ☐ \$1 - \$3 million ☐ \$3 - \$6 million ☐ \$6 - \$10 million ☐ Over \$10 million

Prime Contractor		
Firm Name: _____	Certified DBE: ☐ Yes ☐ No	
Firm Address: _____	City: _____	State: _____ Zip Code: _____
Contact Name: _____	Email Address: _____	Phone: _____
NAICS Code(s) & Work Description associated with Bid Project	Age of Firm	Annual Gross Receipts
	☐ Less than 1 year ☐ 1 - 3 years ☐ 4 - 7 years ☐ 8 - 10 years ☐ More than 10 years	☐ Less than \$1 million ☐ \$1 - \$3 million ☐ \$3 - \$6 million ☐ \$6 - \$10 million ☐ Over \$10 million

Prime Contractor		
Firm Name: _____	Certified DBE: ☐ Yes ☐ No	
Firm Address: _____	City: _____	State: _____ Zip Code: _____
Contact Name: _____	Email Address: _____	Phone: _____
NAICS Code(s) & Work Description associated with Bid Project	Age of Firm	Annual Gross Receipts
	☐ Less than 1 year ☐ 1 - 3 years ☐ 4 - 7 years ☐ 8 - 10 years ☐ More than 10 years	☐ Less than \$1 million ☐ \$1 - \$3 million ☐ \$3 - \$6 million ☐ \$6 - \$10 million ☐ Over \$10 million

Prime Contractor			
Firm Name: _____	Certified DBE: ☐ Yes ☐ No	City: _____ State: _____	Zip Code: _____
Firm Address: _____		Email Address: _____	Phone: _____
Contact Name: _____			
NAICS Code(s) & Work Description associated with Bid Project		Age of Firm	Annual Gross Receipts
		☐ Less than 1 year	☐ Less than \$1 million
		☐ 1 - 3 years	☐ \$1 - \$3 million
		☐ 4 - 7 years	☐ \$3 - \$6 million
		☐ 8 - 10 years	☐ \$6 - \$10 million
		☐ More than 10 years	☐ Over \$10 million

Prime Contractor			
Firm Name: _____	Certified DBE: ☐ Yes ☐ No	City: _____ State: _____	Zip Code: _____
Firm Address: _____		Email Address: _____	Phone: _____
Contact Name: _____			
NAICS Code(s) & Work Description associated with Bid Project		Age of Firm	Annual Gross Receipts
		☐ Less than 1 year	☐ Less than \$1 million
		☐ 1 - 3 years	☐ \$1 - \$3 million
		☐ 4 - 7 years	☐ \$3 - \$6 million
		☐ 8 - 10 years	☐ \$6 - \$10 million
		☐ More than 10 years	☐ Over \$10 million

Prime Contractor			
Firm Name: _____	Certified DBE: ☐ Yes ☐ No	City: _____ State: _____	Zip Code: _____
Firm Address: _____		Email Address: _____	Phone: _____
Contact Name: _____			
NAICS Code(s) & Work Description associated with Bid Project		Age of Firm	Annual Gross Receipts
		☐ Less than 1 year	☐ Less than \$1 million
		☐ 1 - 3 years	☐ \$1 - \$3 million
		☐ 4 - 7 years	☐ \$3 - \$6 million
		☐ 8 - 10 years	☐ \$6 - \$10 million
		☐ More than 10 years	☐ Over \$10 million

**MANDATORY FEDERAL
CONTRACT PROVISIONS**



Contract Provision Guidelines for Obligated Sponsors and Airport Improvement Program Projects (Issued on December 29, 2025)

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A1 ACCESS TO RECORDS AND REPORTS

2 CFR § 200.334

2 CFR § 200.337

FAA Order 5100.38

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the Owner, 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.

A2 BREACH OF CONTRACT TERMS

2 CFR Part 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.

Owner will provide 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. Owner reserves the right to withhold payments to 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. 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.

A3 BUY AMERICAN PREFERENCE

Title 49 U.S.C. § 50101

Executive Order 14005, *Ensuring the Future is Made in All of America by All of America's Workers*

Infrastructure Investment and Jobs Act (IIJA) (P.L. No. 117-58), Build America, Buy America (BABA)

The Contractor certifies that its bid/offer is in compliance with 49 U.S.C. § 50101, BABA and other related Made in America Laws,¹ U.S. statutes, guidance, and FAA policies, which provide that Federal funds may not be obligated unless all iron, steel and manufactured goods used in AIP funded projects are produced in the United States, unless the Federal Aviation Administration 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.

The bidder or offeror must complete and submit the certification of compliance with FAA's Buy American Preference, BABA and Made in America laws included herein **within five (5) days of the bid opening** with their bid or offer. ~~The Airport Sponsor/Owner will reject as nonresponsive any bid or offer that does not include a completed certification of compliance with FAA's Buy American Preference and BABA.~~

The bidder or offeror certifies that all constructions materials, defined to mean an article, material, or supply other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of: non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber; or drywall used in the project are manufactured in the U.S.

The bidder or offeror certifies procurement of certain rolling stock using FAA grant funds will prohibit airports from using Federal financial assistance to procure buses or rail car vehicle rolling stock from covered entities.

¹ Per Executive Order 14005 "Made in America Laws" means all statutes, regulations, rules, and Executive Orders relating to federal financial assistance awards or federal procurement, including those that refer to "Buy America" or "Buy American," that require, or provide a preference for, the purchase or acquisition of goods, products, or materials produced in the United States, including iron, steel, and manufactured products offered in the United States.

Certification of Compliance with FAA Buy American Preference – Equipment/Building 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 U.S.C. § 50101, and other Made in America Laws, U.S. statutes, guidance, and FAA policies by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (ü) or the letter “X”.

- ☐ Bidder or offeror hereby certifies that it will comply with 49 U.S.C. § 50101, BABA and other related U.S. statutes, guidance, and policies of the FAA by:
- a) Only installing steel and manufactured products produced in the United States;
 - b) Only installing construction materials defined as: an article, material, or supply – other than an item of primarily iron or steel; a manufactured product; cement and cementitious materials; aggregates such as stone, sand, or gravel; or aggregate binding agents or additives that are or consist primarily of non-ferrous metals; plastic and polymer-based products (including polyvinylchloride, composite building materials, and polymers used in fiber optic cables); glass (including optic glass); lumber or drywall that have been manufactured in the United States.
 - c) Installing manufactured products for which the Federal Aviation Administration (FAA) has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing; or
 - d) 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:

- a) To provide to the Airport Sponsor or FAA evidence that documents the source and origin of the steel and manufactured product.
 - b) To faithfully comply with providing U.S. domestic product.
 - c) To furnish U.S. domestic product for any waiver request that the FAA rejects.
 - d) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.
- ☐ The bidder or offeror hereby certifies it cannot comply with the 100 percent Buy American Preferences of 49 U.S.C. § 50101(a) but may qualify for a Type 3 waiver under 49 U.S.C. § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:
- a) To submit to the Airport Sponsor or FAA within 15 calendar days of being selected as the responsive bidder, a formal waiver request and required documentation that supports the type of waiver being requested.
 - b) 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.

- c) To faithfully comply with providing U.S. domestic products at or above the approved U.S. domestic content percentage as approved by the FAA.
- d) To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 2 Waiver (Nonavailability) - The iron, steel, manufactured goods or construction materials are not available in sufficient quantity or quality in the United States. The required documentation for the Nonavailability waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire
- b) Record of thorough market research, consideration where appropriate of qualifying alternate items, products, or materials including;
- c) A description of the market research activities and methods used to identify domestically manufactured items capable of satisfying the requirement, including the timing of the research and conclusions reached on the availability of sources.

Type 3 Waiver – The cost of the item components and subcomponents produced in the United States is more than 60 percent of the cost of all components and subcomponents of the “item”. The required documentation for a Type 3 waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire including;
- b) Listing of all product components and subcomponents that are not comprised of 100 percent 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).
- c) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
- d) Percentage of non-domestic component and subcomponent cost as compared to total “item” component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver (Unreasonable Costs) - Applying this provision for iron, steel, manufactured goods or construction materials, would increase the cost of the overall project by more than 25 percent. The required documentation for this waiver is:

- a) Completed Content Percentage Worksheet and Final Assembly Questionnaire from
- b) At minimum two comparable equal bidders and/or offerors;
- c) Receipt or record that demonstrates that supplier scouting called for in Executive Order 14005, indicates that no domestic source exists for the project and/or component;
- d) Completed waiver applications for each comparable bid and/or offer.

False Statements: Per 49 U.S.C. § 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.

Date

Signature

Company Name

Title

A4 CIVIL RIGHTS - GENERAL

49 U.S.C. § 47123

GENERAL CIVIL RIGHTS PROVISIONS

In all its activities within the scope of its airport program, the Contractor agrees to comply with pertinent statutes, Executive Orders, and such rules as identified in Title VI List of Pertinent Nondiscrimination Acts and Authorities to ensure that no person shall, on the grounds of race, color, national origin, creed, sex, age, or disability be excluded from participating in any activity conducted with or benefiting from Federal assistance.

This provision is in addition to that required by Title VI of the Civil Rights Act of 1964.

The above provision binds the Contractor and subcontractors from the bid solicitation period through the completion of the contract.

A5 CIVIL RIGHTS – TITLE VI ASSURANCE

49 U.S.C. § 47123

FAA Order 1400.11

Title VI List of Pertinent Nondiscrimination Acts and Authorities

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) including amendments thereto;
- 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 (Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance);
- 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. § 47123), as amended (prohibits discrimination based on race, creed, color, national origin, or sex);
- The Civil Rights Restoration Act of 1987 (P.L. 100-259) (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 (42 U.S.C. § 12101, *et seq.*) (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) as implemented by U.S. Department of Transportation regulations at 49 CFR Parts 37 and 38;
- 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.*).

Compliance with Nondiscrimination Requirements:

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. **Compliance with Regulations:** 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. **Nondiscrimination:** The Contractor, with regard to the work performed by it during the contract, will not discriminate on the grounds of race, color, national origin), creed, sex, age, or disability 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 including amendments thereto.
3. **Solicitations for Subcontracts, including Procurements of Materials and Equipment:** 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. **Information and Reports:** 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 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 Federal Aviation Administration, as appropriate, and will set forth what efforts it has made to obtain the information.
5. **Sanctions for Noncompliance:** In the event of a Contractor's noncompliance with the non-discrimination provisions of this contract, the Sponsor will impose such contract sanctions as it or the Federal Aviation Administration 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. **Incorporation of Provisions:** 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 Federal Aviation Administration 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.

A6 CLEAN AIR AND WATER POLLUTION CONTROL

2 CFR Part 200, Appendix II(G)

42 U.S.C. § 7401, et seq

33 U.S.C. § 1251, et seq

Contractor agrees to comply with all applicable standards, orders, and regulations issued pursuant to the Clean Air Act (42 U.S.C. §§ 7401-7671q) 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 (EPA) and the Federal Aviation Administration.

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

A7 CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS

2 CFR Part 200, Appendix II(E)

29 CFR § 5.5(b)

40 U.S.C. § 3702

40 U.S.C. § 3704

1. Overtime Requirements.

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. Violation; Liability for Unpaid Wages; Liquidated Damages.

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 \$29 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. Withholding for Unpaid Wages and Liquidated Damages.

The Federal Aviation Administration (FAA) 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 moneys 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. Subcontractors.

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.

A8 COPELAND “ANTI-KICKBACK” ACT

2 CFR Part 200, Appendix II(D)

29 CFR Parts 3 and 5

Contractor must comply with the requirements of the Copeland “Anti-Kickback” Act (18 USC 874 and 40 USC 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.

A9 DAVIS-BACON REQUIREMENTS

2 CFR Part 200, Appendix II(D)

29 CFR Part 5

49 USC § 47112(b)

40 USC §§ 3141-3144, 3146, and 3147

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 regulations implementing 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 § 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 in which work is performed. The wage determination (including any additional 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;

(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, U.S. Department of Labor, Washington, DC 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 30-day 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 withheld 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 the 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.

(i) Payrolls and basic records relating thereto shall be maintained by the Contractor during the 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 records which 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 Web site at <https://www.dol.gov/agencies/whd/government-contracts/construction/payroll-certification> 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) That 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) That 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) That 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, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, 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 Office of Apprenticeship Training, Employer and Labor Services 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 Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, 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 no 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.

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 §§ 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 compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR § 5.5.

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 1 through 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 USC § 1001.

A10 DEBARMENT AND SUSPENSION

2 CFR Part 180 (Subpart B)

2 CFR Part 200, Appendix II(H)

2 CFR Part 1200

DOT Order 4200.5

Executive Orders 12549 and 12689

CERTIFICATION OF OFFEROR/BIDDER REGARDING DEBARMENT

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.

CERTIFICATION OF LOWER TIER CONTRACTORS REGARDING DEBARMENT

The successful bidder, by administering each lower tier subcontract that exceeds \$25,000 as a “covered transaction”, must confirm 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>.
2. Collecting a certification statement similar to the Certification of Offeror /Bidder Regarding Debarment, above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract.

If the Federal Aviation Administration 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 may pursue any available remedies, including suspension and debarment of the non-compliant participant.

A11 DISADVANTAGED BUSINESS ENTERPRISE

49 CFR Part 26

49 U.S.C. § 47113

The requirements of 49 CFR Part 26 including any amendments thereto apply to this contract. It is the policy of the City of Ruston to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. The Owner encourages participation by all firms qualifying under this solicitation regardless of business size or ownership.

Contract Assurance (49 CFR § 26.13)

The Contractor, subrecipient 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, including any amendments thereto, 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 recipient 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.

Prompt Payment (49 CFR § 26.29)

The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 10 days from the receipt of each payment the prime contractor receives from the City or Ruston. The prime contractor agrees further to return retainage payments to each subcontractor within 10 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the [City of Ruston]. This clause applies to both DBE and non-DBE subcontractors.

Termination of DBE Subcontracts (49 CFR § 26.53(f))

The prime contractor must not terminate a DBE subcontractor listed in response to the advertisement for bids (or an approved substitute DBE firm) without prior written consent of the City of Ruston. This includes, but is not limited to, instances in which the prime contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm.

The prime contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the contractor obtains written consent from the City of Ruston. Unless the

City of Ruston consent is provided, the prime contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the listed DBE.

The City of Ruston may provide such written consent only if the City of Ruston agrees, for reasons stated in the concurrence document, that the prime contractor has good cause to terminate the DBE firm. For purposes of this paragraph, good cause includes the circumstances listed in 49 CFR § 26.53.

Before transmitting to the City of Ruston its request to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to the City of Ruston, of its intent to request to terminate and/or substitute, and the reason for the request.

The prime contractor must give the DBE five days to respond to the prime contractor's notice and advise the City of Ruston and the contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the City of Ruston should not approve the prime contractor's action. If required in a particular case as a matter of public necessity (e.g., safety), the City of Ruston may provide a response period shorter than five days.

In addition to post-award terminations, the provisions of this section apply to pre-award deletions of or substitutions for DBE firms put forward by offerors in negotiated procurements.

A12 DISTRACTED DRIVING

Executive Order 13513

DOT Order 3902.10

TEXTING WHEN DRIVING

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 this 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 \$15,000 that involve driving a motor vehicle in performance of work activities associated with the project.

A13 PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

2 CFR § 200, Appendix II(K)

2 CFR § 200.216

Contractor and Subcontractor agree to comply with mandatory standards and policies relating to use and procurement of certain telecommunications and video surveillance services or equipment in compliance with the National Defense Authorization Act P.L. 115-232, § 889(f)(1)).

A14 FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)

29 USC § 201, et seq

2 CFR § 200.430

All contracts and subcontracts that result from this solicitation incorporate by reference the provisions of 29 CFR Part 201, et seq, 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.

A15 LOBBYING AND INFLUENCING FEDERAL EMPLOYEES

31 USC § 1352 – Byrd Anti-Lobbying Amendment

2 CFR Part 200, Appendix II(I)

49 CFR Part 20, Appendix A

CERTIFICATION REGARDING LOBBYING

The Bidder or Offeror certifies by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

- (1) 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 employee 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, subgrants, 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 31 U.S.C. § 1352. 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 each such failure.

A16 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

29 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 employer must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The employer 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 (29 CFR Part 1910). The employer 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.

A17 PROCUREMENT OF RECOVERED MATERIALS

2 CFR § 200.323

2 CFR Part 200, Appendix II(J)

40 CFR Part 247

42 USC § 6901, et seq (Resource Conservation and Recovery Act (RCRA))

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:

- 1) The contract requires procurement of \$10,000 or more of a designated item during the fiscal year; or
- 2) 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 www.epa.gov/smm/comprehensive-procurement-guidelines-construction-products.

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.

A18 RIGHT TO INVENTIONS

2 CFR Part 200, Appendix II(F)

37 CFR Part 401

This clause is not applicable to construction, equipment, or professional service contracts unless the contract includes experimental, developmental, or research work.

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.

A19 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.

A20 TAX DELINQUENCY AND FELONY CONVICTIONS

Section 8113 of the Consolidated Appropriations Act, 2022 (P.L. 117-103) and similar provisions in subsequent appropriations acts.

DOT Order 4200.6 – Appropriations Act Requirements for Procurement and Non-Procurement Regarding Tax Delinquency and Felony Convictions

CERTIFICATION OF OFFEROR/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

The applicant 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 (ü) in the space following the applicable response. The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Certifications

- 1) The applicant 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 applicant represents that it is (☐) is not (☐) a corporation that was convicted of a criminal violation under any Federal law within the preceding 24 months.

Note

If an applicant responds in the affirmative to either of the above representations, the applicant 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 applicant therefore must provide information to the owner about its tax liability or conviction to the Owner, who will then notify the FAA Airports District Office, 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 USC § 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.

A21 TERMINATION OF CONTRACT

2 CFR Part 200, Appendix II(B)

FAA Advisory Circular 150/5370-10, Section 80-09

TERMINATION FOR CONVENIENCE (CONSTRUCTION & EQUIPMENT CONTRACTS)

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 that 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.

TERMINATION FOR CAUSE (CONSTRUCTION)

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

TERMINATION FOR CAUSE (EQUIPMENT)

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

1. Fails to begin 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; or
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 [10] 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 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.

A22 TRADE RESTRICTION CERTIFICATION

49 USC § 50104

49 CFR Part 30

By submission of an offer, the Offeror certifies that with respect to this solicitation and any resultant contract, the Offeror –

- 1) 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 as published by the Office of the United States Trade Representative (USTR);
- 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 USTR; and
- 3) has not entered into any subcontract for any product to be used on the Federal project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the USTR.

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 USC § 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 USTR; or
- 2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such USTR list; or
- 3) who incorporates in the public works project any product of a foreign country on such USTR 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 USTR, 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.

A23 VETERAN'S PREFERENCE

49 USC § 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 49 U.S.C. § 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.

A24 DOMESTIC PREFERENCES FOR PROCUREMENTS

2 CFR § 200.322

2 CFR Part 200, Appendix II(L)

CERTIFICATION REGARDING DOMESTIC PREFERENCES FOR PROCUREMENTS

The Bidder or Offeror certifies by signing and submitting this bid or proposal that, to the greatest extent practicable, the Bidder or Offeror has provided a preference for the purchase, acquisition, or use of goods, products, or materials produced in the United States (including, but not limited to, iron, aluminum, steel, cement, and other manufactured products) in compliance with 2 CFR § 200.322.

A25 PROHIBITION OF COVERED UNMANNED AIRCRAFT SYSTEMS (UAS)

FAA Reauthorization Act of 2024 (Public Law 118-63), Section 936

49 U.S.C. § 44801 note

The Bidder or Offeror certifies that they are aware of and comply with relevant Federal statutes and regulations, including those from the Federal Aviation Administration (FAA), for operating unmanned aircraft systems (UAS) in accordance, and in compliance with all related requirements in the FAA Reauthorization Act of 2024 (Public Law 118-63), section 936 (49 U.S.C. § 44801 note).

Contractor warrants that all UAS operations will be conducted in full compliance with all applicable Federal Aviation Administration (FAA) regulations, including but not limited to 14 CFR Part 107, and any other applicable local, state, or Federal laws and regulations.

Sponsors and subgrant recipients cannot use AIP grant funds to enter into, extend, or renew a contract related to covered unmanned aircraft systems (UAS). This includes both procurement and operational contracts, as well as contracts with entities that operate such systems.

**WAGE RATE
DETERMINATION**

"General Decision Number: LA20260019 01/02/2026

Superseded General Decision Number: LA20250019

State: Louisiana

Construction Type: Building

County: Lincoln County in Louisiana.

BUILDING CONSTRUCTION PROJECTS (does not include single family homes or apartments up to and including 4 stories).

Modification Number	Publication Date
0	01/02/2026

ASBE0053-001 09/02/2024

	Rates	Fringes
ASBESTOS WORKER/HEAT & FROST INSULATOR.....	\$ 32.66	9.86

ELEC0446-008 03/01/2025

	Rates	Fringes
ELECTRICIAN.....	\$ 29.55	2%+13.77

PLUM0141-009 08/01/2025

	Rates	Fringes
PLUMBER (Including HVAC Pipe Installation).....	\$ 31.00	15.35

ROOF0317-001 12/01/2022

	Rates	Fringes
ROOFER.....	\$ 23.04	9.34

SULA2012-004 09/22/2014

	Rates	Fringes
BRICKLAYER.....	\$ 20.00	0.00
CARPENTER.....	\$ 20.62	2.11

FIREPROOFER.....	\$ 9.00	0.00
LABORER: Common or General.....	\$ 11.50	0.00
OPERATOR:		
Backhoe/Excavator/Trackhoe.....	\$ 18.50	1.94
SHEET METAL WORKER (HVAC Duct Installation Only).....	\$ 22.77	9.86
TRUCK DRIVER: Dump Truck.....	\$ 14.50	2.68

WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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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 on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

Note: Executive Order 13658 generally applies to contracts subject to the Davis-Bacon Act that were awarded on or between January 1, 2015 and January 29, 2022, and that have not been renewed or extended on or after January 30, 2022. Executive Order 13658 does not apply to contracts subject only to the Davis-Bacon Related Acts regardless of when they were awarded. If a contract is subject to Executive Order 13658, the contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025. The applicable Executive Order minimum wage rate will be adjusted annually. Additional

information on contractor requirements and worker protections under Executive Order 13658 is available at www.dol.gov/whd/govcontracts.

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) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than "SU", "UAVG", "SA", or "SC" denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate 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. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024

in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the 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. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail 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 an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail 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 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:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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END OF GENERAL DECISION

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INSURANCE REQUIREMENTS

INSURANCE REQUIREMENTS

The Contractor will be required to maintain insurance of the types and amounts shown below throughout the duration of the project:

A. Type and Amount

<u>TYPE</u>	<u>AMOUNT</u>
1. Comprehensive General (Public) Liability - to include, but not limited to, the following:	<u>Bodily Injury:</u> \$250,000 per person \$500,000 per occurrence and
a) Premises/Operations	<u>Property Damage:</u>
b) Independent contractors	\$100,000 per occurrence or
c) Personal injury liability/contractual liability (insuring indemnity provision within this contract)	Combined or Single Limit for Bodily Injury and Property Damage: \$500,000 or
AND, where the exposure exists, coverage for:	Combined single limit coverage (or equivalent) for bodily injury and property damage – \$1 million per occurrence
d) Products/Completed operations	
e) Explosion, Collapse and Underground Property Damage	
2. Worker's Compensation and Employer's Liability (where required by State law)	Statutory \$100,000 per occurrence
3. Comprehensive Automobile – to include coverage for:	<u>Bodily Injury</u> \$250,000 \$500,000
a) Owned/Lease automobiles	Occurrence
b) Non-owned automobiles	and
c) Hired cars	Property Damage: \$100,000 per occurrence or
	Combined Single Limit for Bodily Injury and Property Damage: \$500,000

The procuring of such policy of insurance shall not be construed to be a limitation upon Contractor's liability. Contractor's obligations are, notwithstanding said policy of insurance, for the full and total amount of any damage, injury or loss caused by or attributable to its activities.

B. Other Insurance Requirements

Prior to Start of Work: Contractor shall furnish to Engineer certificates or copies of the policies, plainly and clearly evidencing required insurance and thereafter new certificates **prior to the expiration date of any prior certificate**. Contractor understands that it is

its sole responsibility to provide this necessary information and that failure to provide this information can be viewed as a breach of this contract.

Insurance required herein shall be issued by a company or companies of sound and adequate financial responsibility and authorized to do business in the State of Louisiana. All policies shall be subject to examination and approval by the District Attorney's office for their adequacy as to form, content, form of protection and providing company.

Insurance required by this contract for the City and Engineer as additional insured shall be primary insurance and not contributing with any other insurance available to City or Engineer, under any third part liability policy.

Contractor further agrees that with respect to the above required insurance, the City and Engineer shall:

1. Be named as additional insured/or an insured, as its interest may appear.
2. Be provided with a waiver of subrogation
3. Be provided with thirty (30) days advance notice, in writing, of cancellation or material change.

GENERAL PROVISIONS

Part 1 – General Contract Provisions

Section 10 Definition of Terms

When 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 defined as follows:

Paragraph Number	Term	Definition
10-01	AASHTO	The American Association of State Highway and Transportation Officials.
10-02	Access Road	The right-of-way, the roadway and all improvements constructed thereon connecting the airport to a public roadway.
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	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; airport buildings and facilities located in any of these areas, and a heliport.
10-05	Airport Improvement Program (AIP)	A grant-in-aid program, administered by the Federal Aviation Administration (FAA).
10-06	Air Operations Area (AOA)	The term air operations area (AOA) shall mean any area of the airport used or intended to be used for the landing, takeoff, or surface maneuvering of aircraft. An air operation 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.
10-07	Apron	Area where aircraft are parked, unloaded or loaded, fueled and/or serviced.
10-08	ASTM International (ASTM)	Formerly known as the American Society for Testing and Materials (ASTM).
10-09	Award	The Owner's notice to the successful bidder of the acceptance of the submitted bid.
10-10	Bidder	Any individual, partnership, firm, or corporation, acting directly or through a duly authorized representative, who submits a proposal for the work contemplated.

Paragraph Number	Term	Definition
10-11	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.
10-12	Calendar Day	Every day shown on the calendar.
10-13	Certificate of Analysis (COA)	The COA is the manufacturer's Certificate of Compliance (COC) including all applicable test results required by the specifications.
10-14	Certificate of Compliance (COC)	The manufacturer's certification stating that materials or assemblies furnished fully comply with the requirements of the contract. The certificate shall be signed by the manufacturer's authorized representative.
10-15	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 work within the scope of the contract and necessary to complete the project.
10-16	Contract	A written agreement between the Owner and the Contractor that establishes the obligations of the parties including but not limited to performance of work, furnishing of labor, equipment and materials and the basis of payment. The awarded contract includes but may not be limited to: Advertisement, Contract form, Proposal, Performance bond, payment bond, General provisions, certifications and representations, Technical Specifications, Plans, Supplemental Provisions, standards incorporated by reference and issued addenda.
10-17	Contract Item (Pay Item)	A specific unit of work for which a price is provided in the contract.
10-18	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.
10-19	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.
10-20	Contractors Quality Control (QC) Facilities	The Contractor's QC facilities in accordance with the Contractor Quality Control Program (CQCP).

Paragraph Number	Term	Definition
10-21	Contractor Quality Control Program (CQCP)	Details the methods and procedures that will be taken to assure that all materials and completed construction required by the contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors.
10-22	Control Strip	A demonstration by the Contractor that the materials, equipment, and construction processes results in a product meeting the requirements of the specification.
10-23	Construction Safety and Phasing Plan (CSPP)	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.
10-24	Drainage System	The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.
10-25	Engineer	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering, inspection, and/or observation of the contract work and acting directly or through an authorized representative.
10-26	Equipment	All machinery, together with the necessary supplies for upkeep and maintenance; and all tools and apparatus necessary for the proper construction and acceptable completion of the work.
10-27	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 Owner's Engineer or Resident Project Representative (RPR) to be necessary to complete the work within the intended scope of the contract as previously modified.
10-28	FAA	The Federal Aviation Administration. When used to designate a person, FAA shall mean the Administrator or their duly authorized representative.
10-29	Federal Specifications	The federal specifications and standards, commercial item descriptions, and supplements, amendments, and indices prepared and issued by the General Services Administration.

Paragraph Number	Term	Definition
10-30	Force Account	a. Contract Force Account - A method of payment that addresses extra work performed by the Contractor on a time and material basis. b. Owner Force Account - Work performed for the project by the Owner's employees.
10-31	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 and/or Resident Project Representative (RPR) 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 and/or RPR, 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.
10-32	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.
10-33	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% of the total amount of the award contract. All other items shall be considered minor contract items.
10-34	Materials	Any substance specified for use in the construction of the contract work.
10-35	Modification of Standards (MOS)	Any deviation from standard specifications applicable to material and construction methods in accordance with FAA Order 5300.1.
10-36	Notice to Proceed (NTP)	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.
10-37	Owner	The term “Owner” shall mean the party of the first part or the contracting agency signatory to the contract. Where the term “Owner” is capitalized in this document, it shall mean airport Sponsor only. The Owner for this project is the City of Ruston .

Paragraph Number	Term	Definition
10-38	Passenger Facility Charge (PFC)	Per 14 Code of Federal Regulations (CFR) Part 158 and 49 United States Code (USC) § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls.
10-39	Pavement Structure	The combined surface course, base course(s), and subbase course(s), if any, considered as a single unit.
10-40	Payment bond	The approved form of security furnished by the Contractor and their own 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.
10-41	Performance bond	The approved form of security furnished by the Contractor and their own surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.
10-42	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. Plans may also be referred to as 'contract drawings.'
10-43	Project	The agreed scope of work for accomplishing specific airport development with respect to a particular airport.
10-44	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.
10-45	Proposal guaranty	The security furnished with a proposal to guarantee that the bidder will enter into a contract if their own proposal is accepted by the Owner.
10-46	Quality Assurance (QA)	Owner's responsibility to assure that construction work completed complies with specifications for payment.
10-47	Quality Control (QC)	Contractor's responsibility to control material(s) and construction processes to complete construction in accordance with project specifications.
10-48	Quality Assurance (QA) Inspector	An authorized representative of the Engineer and/or Resident Project Representative (RPR) assigned to make all necessary inspections, observations, tests, and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

Paragraph Number	Term	Definition
10-49	Quality Assurance (QA) Laboratory	The official quality assurance testing laboratories of the Owner or such other laboratories as may be designated by the Engineer or RPR. May also be referred to as Engineer's, Owner's, or QA Laboratory.
10-50	Resident Project Representative (RPR)	The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for all necessary inspections, observations, tests, and/or observations of tests of the contract work performed or being performed, or of the materials furnished or being furnished by the Contractor, and acting directly or through an authorized representative.
10-51	Runway	The area on the airport prepared for the landing and takeoff of aircraft.
10-52	Runway Safety Area (RSA)	A defined surface surrounding the runway prepared or suitable for reducing the risk of damage to aircraft. See the construction safety and phasing plan (CSPP) for limits of the RSA.
10-53	Safety Plan Compliance Document (SPCD)	Details how the Contractor will comply with the CSPP.
10-54	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.
10-55	Sponsor	A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.
10-56	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; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.
10-57	Subgrade	The soil that forms the pavement foundation.
10-58	Superintendent	The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the RPR, and who shall supervise and direct the construction.

Paragraph Number	Term	Definition
10-59	Supplemental Agreement	A written agreement between the Contractor and the Owner that establishes the basis of payment and contract time adjustment, if any, for the work affected by the supplemental agreement. A supplemental agreement is required if: (1) in scope work would increase or decrease the total amount of the awarded contract by more than 25%; (2) in scope work would increase or decrease the total of any major contract item by more than 25%; (3) work that is not within the scope of the originally awarded contract; or (4) adding or deleting of a major contract item.
10-60	Surety	The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.
10-61	Taxilane	A taxiway designed for low speed movement of aircraft between aircraft parking areas and terminal areas.
10-62	Taxiway	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, aircraft parking areas, and terminal areas.
10-63	Taxiway/Taxilane Safety Area (TSA)	A defined surface alongside the taxiway prepared or suitable for reducing the risk of damage to an aircraft. See the construction safety and phasing plan (CSPP) for limits of the TSA.
10-64	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.
10-65	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 six (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 as working days.

END OF SECTION 10

Section 20 Proposal Requirements and Conditions

20-01 Advertisement (Notice to Bidders). The Invitation to Bidders may be found on sheet C-1 of these specifications.

~~**20-02 Qualification of bidders.** Each bidder shall submit evidence of competency and evidence of financial responsibility to perform the work to the Owner at the time of bid opening.~~

~~Evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, and a list of equipment and a list of key personnel that would be available for the work.~~

~~Each bidder shall furnish the Owner satisfactory evidence of their financial responsibility. Evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether their financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.~~

~~Unless otherwise specified, a bidder may submit evidence that they are prequalified with the State Highway Division and are on the current "bidder's list" of the state in which the proposed work is located. Evidence of State Highway Division prequalification may be submitted as evidence of financial responsibility in lieu of the certified statements or reports specified above.~~

20-03 Contents of proposal forms. The Owner's proposal forms state the location and description of the proposed construction; the place, date, and time of opening of the proposals; and the estimated quantities of the various items of work to be performed and materials to be furnished for which unit bid prices are asked. The proposal form states the time in which the work must be completed, and the amount of the proposal guaranty that must accompany the proposal. The Owner will accept only those Proposals properly executed on physical forms or electronic forms provided by the Owner. Bidder actions that may cause the Owner to deem a proposal irregular are given in paragraph 20-09 *Irregular proposals*.

Mobilization is limited to 10 percent of the total project cost.

A prebid conference is required on this project to discuss as a minimum, the following items: material requirements; submittals; Quality Control/Quality Assurance requirements; the construction safety and phasing plan including airport access and staging areas; and unique airfield paving construction requirements. The Pre-Bid Conference will be held on Wednesday, April 8, 2026 at 10:00 a.m. in the Airport Terminal Building, 125 Flightline Drive, Ruston, LA 71270.

20-04 Issuance of proposal forms. The Owner reserves the right to refuse to issue a proposal form to a prospective bidder if the bidder is 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. Documented record of Contractor default under previous contracts with the Owner.

d. Documented record of unsatisfactory work on previous contracts with the Owner.

20-05 Interpretation of estimated proposal quantities. An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder 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 provided in the Section 40, paragraph 40-02, Alteration of Work and Quantities, without in any way invalidating the unit bid prices.

20-06 Examination of plans, specifications, and site. The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves to the character, quality, and quantities of work to be performed, materials to be furnished, and 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 to the conditions to be encountered in performing the work and the requirements of the proposed contract, plans, and specifications.

Boring logs and other records of subsurface investigations and tests are available for inspection of bidders. It is understood and agreed that such subsurface information, whether included in the plans, 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 each bidder is solely responsible for all assumptions, deductions, or conclusions which the bidder may make or obtain from their own examination of the boring logs and other records of subsurface investigations and tests that are furnished by the Owner.

20-07 Preparation of proposal. The bidder shall submit their proposal on the forms furnished by the Owner. All blank spaces in the proposal forms, unless explicitly stated otherwise, must be correctly filled in where indicated for each and every item for which a quantity is given. The bidder shall state the price (written in ink or typed) both in words and numerals which they propose for each pay item furnished in the proposal. In case of conflict between words and numerals, the words, unless obviously incorrect, shall govern.

The bidder shall correctly sign the proposal in ink. If the proposal is made by an individual, their name and post office address must be shown. If made by a partnership, the name and post office address of each member of the partnership must be shown. If made by a corporation, the person signing the proposal shall give the name of the state where the corporation was chartered and the name, titles, and business address of the president, secretary, and the treasurer. Anyone signing a proposal as an agent shall file evidence of their authority to do so and that the signature is binding upon the firm or corporation.

20-08 Responsive and responsible bidder. A responsive bid conforms to all significant terms and conditions contained in the Owner's invitation for bid. It is the Owner's responsibility to decide if the exceptions taken by a bidder to the solicitation are material or not and the extent of deviation it is willing to accept.

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 2 CFR § 200.318(h). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

20-09 Irregular proposals. Proposals shall be considered irregular for the following reasons:

a. If the proposal is on a form other than that furnished by the Owner, or if the Owner's form is altered, or if any part of the proposal form is detached.

b. If there are unauthorized additions, conditional or alternate pay items, or irregularities of any kind that make the proposal incomplete, indefinite, or otherwise ambiguous.

c. If the proposal does not contain a unit price for each pay item listed in the proposal, except in the case of authorized alternate pay items, for which the bidder is not required to furnish a unit price.

d. If the proposal contains unit prices that are obviously unbalanced.

e. If the proposal is not accompanied by the proposal guaranty specified by the Owner.

f. If the applicable Disadvantaged Business Enterprise information is incomplete.

The Owner reserves the right to reject any irregular proposal and the right to waive technicalities if such waiver is in the best interest of the Owner and conforms to local laws and ordinances pertaining to the letting of construction contracts.

20-10 Bid guarantee. Each separate proposal shall be accompanied by a bid bond, certified check, or other specified acceptable collateral, in the amount specified in the proposal form. Such bond, check, or collateral, shall be made payable to the Owner.

20-11 Delivery of proposal. Each proposal submitted shall be placed in a sealed envelope plainly marked with the project number, location of airport, and name and business address of the bidder on the outside. When sent by mail, preferably registered, the sealed proposal, marked as indicated above, should be enclosed in an additional envelope. No proposal will be considered unless received at the place specified in the advertisement or as modified by Addendum before the time specified for opening all bids. Proposals received after the bid opening time shall be returned to the bidder unopened.

20-12 Withdrawal or revision of proposals. A bidder may withdraw or revise (by withdrawal of one proposal and submission of another) a proposal provided that the bidder's request for withdrawal is received by the Owner in writing or by email before the time specified for opening bids. Revised proposals must be received at the place specified in the advertisement before the time specified for opening all bids.

20-13 Public opening of proposals. Proposals shall be opened, and read, publicly at the time and place specified in the advertisement. Bidders, their authorized agents, and other interested persons are invited to attend. Proposals that have been withdrawn (by written or telegraphic request) or received after the time specified for opening bids shall be returned to the bidder unopened.

20-14 Disqualification of bidders. A bidder shall be considered disqualified for any of the following reasons:

a. Submitting more than one proposal from the same partnership, firm, or corporation under the same or different name.

b. Evidence of collusion among bidders. Bidders participating in such collusion shall be disqualified as bidders for any future work of the Owner until any such participating bidder has been reinstated by the Owner as a qualified bidder.

c. If the bidder is considered to be in "default" for any reason specified in paragraph 20-04, *Issuance of Proposal Forms*, of this section.

20-15 Discrepancies and Omissions. A Bidder who discovers discrepancies or omissions with the project bid documents shall immediately notify the Owner's Engineer of the matter. A bidder that has doubt as to the true meaning of a project requirement may submit to the Owner's Engineer a written request for interpretation no later than 3 days prior to bid opening.

Any interpretation of the project bid documents by the Owner's Engineer will be by written addendum issued by the Owner. The Owner will not consider any instructions, clarifications or interpretations of the bidding documents in any manner other than written addendum.

END OF SECTION 20

Section 30 Award and Execution of Contract

30-01 Consideration of proposals. After the proposals are publicly opened and read, they will be compared on the basis of the summation of the products obtained by multiplying the estimated quantities shown in the proposal by the unit bid prices. If a bidder's proposal contains a discrepancy between unit bid prices written in words and unit bid prices written in numbers, the unit bid price written in words shall govern.

Until the award of a contract is made, the Owner reserves the right to reject a bidder's proposal for any of the following reasons:

a. If the proposal is irregular as specified in Section 20, paragraph 20-09, *Irregular Proposals*.

b. If the bidder is disqualified for any of the reasons specified Section 20, paragraph 20-14, *Disqualification of Bidders*.

In addition, until the award of a contract is made, the Owner reserves the right to reject any or all proposals, waive technicalities, if such waiver is in the best interest of the Owner and is in conformance with applicable state and local laws or regulations pertaining to the letting of construction contracts; advertise for new proposals; or proceed with the work otherwise. All such actions shall promote the Owner's best interests.

30-02 Award of contract. The award of a contract, if it is to be awarded, shall be made within **sixty (60)** calendar days of the date specified for publicly opening proposals, unless otherwise specified herein.

If the Owner elects to proceed with an award of contract, the Owner will make award to the responsible bidder whose bid, conforming with all the material terms and conditions of the bid documents, is the lowest in price.

30-03 Cancellation of award. The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with paragraph 30-07 *Approval of Contract*.

30-04 Return of proposal guaranty. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the paragraph 30-01, *Consideration of Proposals*. Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in paragraph 30-05, *Requirements of Contract Bonds*.

30-05 Requirements of contract bonds. At the time of the execution of the contract, the successful bidder shall furnish the Owner a surety bond or bonds that have been fully executed by the bidder and the surety guaranteeing the performance of the work and the payment of all legal debts that may be incurred by reason of the Contractor's performance of the work. The surety and the form of the bond or bonds shall be acceptable to the Owner. Unless otherwise specified in this subsection, the surety bond or bonds shall be in a sum equal to the full amount of the contract.

30-06 Execution of contract. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in paragraph 30-05, *Requirements of Contract Bonds*, of this section, within 15 calendar days from the date mailed or otherwise delivered to the successful bidder.

30-07 Approval of contract. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance

with local laws or ordinances, and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

30-08 Failure to execute contract. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the period specified in paragraph 30-06, *Execution of Contract*, of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidated damages to the Owner.

END OF SECTION 30

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 the right to make such changes in quantities and work as may be necessary or desirable to complete, in a satisfactory manner, the original intended work. Unless otherwise specified in the Contract, the Owner's Engineer or RPR shall be and is hereby authorized to make, in writing, such in-scope alterations in the work and variation of quantities as may be necessary to complete the work, provided such action does not represent a significant change in the character of the work.

For purpose of this section, a significant change in character of work means: any change that is outside the current contract scope of work; any change (increase or decrease) in the total contract cost by more than 25%; or any change in the total cost of a major contract item by more than 25%.

Work alterations and quantity variances that do not meet the definition of significant change in character of work shall not invalidate the contract nor release the surety. Contractor agrees to accept payment for such work alterations and quantity variances in accordance with Section 90, paragraph 90-03, *Compensation for Altered Quantities*.

Should the value of altered work or quantity variance meet the criteria for significant change in character of work, such altered work and quantity variance shall be covered by a supplemental agreement. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds. 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.

40-03 Omitted items. The Owner, the Owner's Engineer or the RPR may provide written notice to the Contractor to omit from the work any contract item that does not meet the definition of major contract item. 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 non-performed, 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 Section 90, paragraph 90-04, *Payment for Omitted Items*.

40-04 Extra work. Should acceptable completion of the contract require the Contractor to perform an item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, Owner may issue a Change Order to cover the necessary extra work. Change orders for 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 RPR's opinion, is necessary for completion of the extra work.

When determined by the RPR to be in the Owner's best interest, the RPR may order the Contractor to proceed with extra work as provided in Section 90, paragraph 90-05, *Payment for Extra Work*. 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 defined in Section 10, paragraph 10-59, *Supplemental Agreement*.

If extra work is essential to maintaining the project critical path, RPR may order the Contractor to commence the extra work under a Time and Material contract method. Once sufficient detail is available to establish the level of effort necessary for the extra work, the Owner shall initiate a change order or supplemental agreement to cover the extra work.

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 equipment and personnel, is the most important consideration. The Contractor shall maintain traffic in the manner detailed in the Construction Safety and Phasing Plan (CSPP).

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to their own operations and the operations of all subcontractors as specified in Section 80, paragraph 80-04, *Limitation of Operations*. 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 Section 70, paragraph 70-15, *Contractor's Responsibility for Utility Service and Facilities of Others*.

b. With respect to their own operations and the operations of all 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 in accordance with the construction safety and phasing plan (CSPP) and the safety plan compliance document (SPCD).

c. When the contract requires the maintenance of 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 the road, street, or highway open to all traffic and shall provide maintenance as may be required to accommodate traffic. The Contractor, at their expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (<http://mutcd.fhwa.dot.gov/>), unless otherwise specified. 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.

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 Resident Project Representative (RPR) shall be notified prior to disturbing such structure. The disposition of existing structures so encountered shall be immediately determined by the RPR in accordance with the provisions of the contract.

Except as provided in Section 40, paragraph 40-07, *Rights in and Use of Materials Found in the Work*, 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 used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used 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 embankment, the Contractor may at their own option either:

- a. Use such material in another contract item, providing such use is approved by the RPR 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 RPR; or
- c. Use such material for the Contractor's 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., the Contractor shall request the RPR's approval in advance of such use.

Should the RPR 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 their 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 use of such material used in the work or removed from the site.

Should the RPR 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 their own 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 cleanup. 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. The Contractor 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 the property Owner.

END OF SECTION 40

Section 50 Control of Work

50-01 Authority of the Resident Project Representative (RPR). The RPR has final authority regarding the interpretation of project specification requirements. The RPR shall determine acceptability of the quality of materials furnished, method of performance of work performed, and the manner and rate of performance of the work. The RPR does not have the authority to accept work that does not conform to 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 RPR 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 their opinion, result in a finished product having a level of safety, economy, durability, and workmanship acceptable to the Owner, the RPR will advise the Owner of their determination that the affected work be accepted and remain in place. The RPR will document the 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. Changes in the contract price must be covered by contract change order or supplemental agreement as applicable.

If the RPR 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 RPR's written orders.

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 RPR's responsibility to insist on strict compliance with the requirements of the contract, plans, and specifications during the Contractor's execution of the work, when, in the RPR's opinion, such compliance is essential to provide an acceptable finished portion of the work.

The term "reasonably close conformity" is also intended to provide the RPR with the authority, after consultation with the Sponsor and FAA, to use sound engineering judgment in their determinations to accept work that is not in strict conformity, but will provide a finished product equal to or better than that required by the requirements of the contract, plans and specifications.

The RPR 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. If electronic files are provided and used on the project and there is a conflict between the electronic files and hard copy plans, the hard copy plans shall govern. 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 advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If any paragraphs

contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

From time to time, discrepancies within cited testing standards occur due to the timing of the change, edits, and/or replacement of the standards. If the Contractor discovers any apparent discrepancy within standard test methods, the Contractor shall immediately ask the RPR for an interpretation and decision, and such decision shall be final.

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, Contractor shall immediately notify the Owner or the designated representative in writing requesting their written interpretation and decision.

50-04 List of Special Provisions. Special Provisions may be found on page IR-1 & 2 of these specifications.

50-05 Cooperation of Contractor. The Contractor shall be supplied with **two** hard copies or an electronic PDF of the plans and specifications. The Contractor shall have available on the construction site at all times one hardcopy each of the plans and specifications. Additional hard 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 shall cooperate with the RPR and their 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 their 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 RPR or their authorized representative.

50-06 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 the work 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 their own contract and shall protect and hold harmless the Owner from any and all damages or claims that may arise because of inconvenience, delays, or loss experienced because of the presence and operations of other Contractors working within the limits of the same project.

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

50-07 Construction layout and stakes. The Engineer/RPR shall establish necessary horizontal and vertical control. The establishment of Survey Control and/or reestablishment of survey control shall be by a State Licensed Land Surveyor. Contractor is responsible for preserving integrity of horizontal and vertical controls established by Engineer/RPR. In case of negligence on the part of the Contractor or their employees, resulting in the destruction of any horizontal and vertical control, the resulting costs will be deducted as a liquidated damage against the Contractor.

Prior to the start of construction, the Contractor will check all control points for horizontal and vertical accuracy and certify in writing to the RPR that the Contractor concurs with survey control established for the project. All lines, grades and measurements from control points necessary for the proper execution and control of the work on this project will be provided to the RPR. The Contractor is responsible to establish all layout required for the construction of the project.

Copies of survey notes will be provided to the RPR for each area of construction and for each placement of material as specified to allow the RPR to make periodic checks for conformance with plan grades, alignments and grade tolerances required by the applicable material specifications. Surveys will be provided to the RPR prior to commencing work items that cover or disturb the survey staking. Survey(s) and notes shall be provided in the following format(s): **AutoCAD along with a point file (ascii format).**

Laser, GPS, String line, or other automatic control shall be checked with temporary control as necessary. 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.

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

50-08 Authority and duties of Quality Assurance (QA) inspectors. QA inspectors shall be authorized to inspect all work done and all material furnished. Such QA inspection may extend to all or any part of the work and to the preparation, fabrication, or manufacture of the materials to be used. QA inspectors are not authorized to revoke, alter, or waive any provision of the contract. QA inspectors are not authorized to issue instructions contrary to the plans and specifications or to act as foreman for the Contractor.

QA Inspectors are authorized to notify the Contractor or their 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 RPR for a decision.

50-09 Inspection of the work. All materials and each part or detail of the work shall be subject to inspection. The RPR 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 RPR 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 removing, and the replacing of the covering or making good of the parts removed will be at the Contractor's expense.

Provide advance written notice to the RPR of work the Contractor plans to perform each week and each day. Any work done or materials used without written notice and allowing opportunity for inspection by the RPR may be ordered removed and replaced at the Contractor's expense.

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 RPR as provided in paragraph 50-02, *Conformity with Plans and Specifications*.

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 Section 70, paragraph 70-14, *Contractor's Responsibility for Work*.

No removal work made under provision of this paragraph shall be done without lines and grades having been established by the RPR. Work done contrary to the instructions of the RPR, work done beyond the lines shown on the plans or as established by the RPR, 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 with any order of the RPR made under the provisions of this subsection, the RPR will have authority to cause unacceptable work to be remedied or removed and replaced; and unauthorized work to be removed and recover the resulting costs as a liquidated damage against 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, at their own expense, shall be responsible for the repair to equal or better than preconstruction conditions of any damage caused by the Contractor's equipment and personnel.

50-12 Maintenance during construction. The Contractor shall maintain the work during construction and until the work is accepted. 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 paragraph 50-12, *Maintenance during Construction*, the RPR 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 RPR'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 recovered as a liquidated damage against the Contractor.

50-14 Partial acceptance. If at any time during the execution of the project the Contractor substantially completes a usable unit or portion of the work, the occupancy of which will benefit the Owner, the Contractor may request the RPR to make final inspection of that unit. If the RPR finds upon inspection that the unit has been satisfactorily completed in compliance with the contract, the RPR may accept it as being complete, 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 RPR and Owner will make an inspection. If all construction provided for and contemplated by the contract is found to be complete in accordance with the contract, plans, and specifications, such inspection shall constitute the final inspection. The RPR 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 RPR will notify the Contractor and the Contractor shall correct the unsatisfactory work. 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 RPR 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 for work or materials not clearly provided for in the contract, plans, or specifications or previously authorized as extra work, the Contractor shall notify the RPR in writing of their intention to claim such additional compensation before the Contractor begins the work on which the Contractor bases the claim. If such notification is not given or the RPR 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 RPR 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 a written claim to the RPR 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.

END OF SECTION 50

Section 60 Control of Materials

60-01 Source of supply and quality requirements. The materials used in 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 documentation to the RPR as to the origin, composition, and manufacture of all materials to be used in the work. Documentation shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

At the RPR's option, materials may be approved at the source of supply before delivery. 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 meets the requirements of the specifications; and is listed in AC 150/5345-53, *Airport Lighting Equipment Certification Program and Addendum*, that is in effect on the date of advertisement.

60-02 Samples, tests, and cited specifications. All materials used in the work shall be inspected, tested, and approved by the RPR before incorporation in the work unless otherwise designated. Any work in which untested materials are used without approval or written permission of the RPR 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 RPR, shall be removed at the Contractor's expense.

Unless otherwise designated, quality assurance tests will be made by and at the expense of the Owner in accordance with the cited standard methods of ASTM, American Association of State Highway and Transportation Officials (AASHTO), federal specifications, Commercial Item Descriptions, and all other cited methods, which are current on the date of advertisement for bids.

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the RPR. 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 their request after review and approval of the RPR.

A copy of all Contractor QC test data shall be provided to the RPR 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 RPR 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/analysis (COC/COA). The RPR may permit the use, prior to sampling and testing, of certain materials or assemblies when accompanied by manufacturer's COC 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. The COA is the manufacturer's COC and includes all applicable test results.

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 RPR.

When a material or assembly is specified by “brand name or equal” and the Contractor elects to furnish the specified “or equal,” 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.

The RPR shall be the sole judge as to whether the proposed “or equal” is suitable for use in the work.

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

60-04 Plant inspection. The RPR or their 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 acceptance of the material or assembly.

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

- a. The RPR shall have the cooperation and assistance of the Contractor and the producer with whom the Contractor has contracted for materials.
- b. The RPR 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 RPR, the Contractor shall arrange for adequate office or working space that may be reasonably needed for conducting plant inspections. Place office or working space in a convenient location 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 RPR 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/ Resident Project Representative (RPR) field office. An Engineer/RPR field office is not required.

60-06 Storage of materials. Materials shall be stored 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 to facilitate their prompt inspection. The Contractor shall coordinate the storage of all materials with the RPR. 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 and/or CSPP, the storage of materials and the location of the Contractor’s plant and parked equipment or vehicles shall be as directed by the RPR. 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 RPR 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 their 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 RPR.

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 RPR has approved its use in the work.

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

All costs of handling, transportation from the specified location to the site of work, storage, and installing Owner-furnished 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 Owner-furnished 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. The Contractor 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 their 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 the Contractor or the Contractor's 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 execution 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, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold 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 execution 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) must be shown on the plans and is indicated as follows: **City of Ruston Electric and Utilities**.

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 RPR.

Should the Owner of 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 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 RPR, 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 Participation. The United States Government has agreed to reimburse the Owner for some portion of the contract costs. The contract work is subject to the inspection and approval of duly authorized representatives of the FAA Administrator. No requirement of this contract shall be construed as making the United States 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's worksite and facilities shall comply with applicable federal, state, and local requirements for health, safety and sanitary provisions.

70-07 Public convenience and safety. The Contractor shall control their operations and those of their 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 their own operations and those of their own subcontractors and all suppliers in accordance with Section 40, paragraph 40-05, *Maintenance of Traffic*, and shall limit such operations for the convenience and safety of the traveling public as specified in Section 80, paragraph 80-04, *Limitation of Operations*.

The Contractor shall remove or control debris and rubbish resulting from its work operations at frequent intervals, and upon the order of the RPR. If the RPR determines the existence of Contractor debris in the work site represents a hazard to airport operations and the Contractor is unable to respond in a prompt and reasonable manner, the RPR reserves the right to assign the task of debris removal to a third party and recover the resulting costs as a liquidated damage against the Contractor.

70-08 Construction Safety and Phasing Plan (CSPP). The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP is on sheet(s) **3** of the project plans.

70-09 Use of explosives. The use of explosives is not permitted on this project.

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/RPR 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 execution of the work, resulting from any act, omission, neglect, or misconduct in manner or method of executing the work, or at any time due to defective work or materials, and said responsibility shall not be released until the project has 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 non-execution thereof by the Contractor, the Contractor shall restore, at their 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 the Contractor shall make good such damage or injury in an acceptable manner.

70-11 Responsibility for damage claims. The Contractor shall indemnify and hold harmless the Engineer/RPR and the Owner and their officers, agents, 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 "Workmen's Compensation Act," or any other law, ordinance, order, or decree. Money due the Contractor under and by virtue of their own contract considered necessary by the Owner for such purpose may be retained for the use of the Owner or, in case no money is due, their own surety may be held until such suits, actions, or claims for injuries or damages 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 or 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 for 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. If it is 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 must be specified below and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the project plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

N/A.

Upon completion of any portion of work listed above, such portion shall be accepted by the Owner in accordance with Section 50, paragraph 50-14, *Partial Acceptance*.

No portion of the work may be opened by the Contractor until directed by the Owner in writing. Should it become necessary to open a portion of the work to traffic on a temporary or intermittent basis, such openings shall be made when, in the opinion of the RPR, 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 their expense.

The Contractor shall make their 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.

The Contractor must conform to safety standards contained AC 150/5370-2 and the approved CSPP.

Contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

70-14 Contractor’s responsibility for work. Until the RPR’s final written acceptance of the entire completed work, excepting only those portions of the work accepted in accordance with Section 50, paragraph 50-14, *Partial Acceptance*, 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 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 whatever, 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 their own 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, seeding, and sodding furnished under the 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 paragraph 70-04, *Restoration of Surfaces Disturbed by Others*, the Contractor shall cooperate with the owner of any public or private utility service, FAA or NOAA, or a utility service of another government 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 their 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/or in the contract documents.

N/A.

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 the 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 their plan of operations. Such notification shall be in writing addressed to "The Person to Contact" as provided in this paragraph and paragraph 70-04, *Restoration of Surfaces Disturbed By Others*. A copy of each notification shall be given to the RPR.

In addition to the general written notification provided, it shall be the responsibility of the Contractor to keep such individual Owners advised of changes in their plan of operations that would affect such Owners.

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their 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 RPR.

The Contractor's failure to give the two days' notice 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 hand excavation methods within 3 feet (1 m) 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, the Contractor shall immediately notify the proper authority and the RPR 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 RPR 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 their operations whether 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 their own surety.

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 by this contract, there shall be no liability upon the Engineer, RPR, their

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 their surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill their 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. The Contractor shall take necessary precautions to prevent pollution of streams, lakes, ponds, and reservoirs with fuels, oils, asphalts, 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 their operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the RPR. The RPR will immediately investigate the Contractor's finding and the Owner will direct the Contractor to either resume 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 change order or supplemental agreement as provided in Section 40, paragraph 40-04, *Extra Work*, and Section 90, paragraph 90-05, *Payment for Extra Work*. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with Section 80, paragraph 80-07, *Determination and Extension of Contract Time*.

70-21 Insurance Requirements. Insurance Requirements may be found on page SP-1 of these specifications.

END OF SECTION 70

Section 80 Execution 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 other designated, qualified representative who is duly authorized to receive and execute orders of the Resident Project Representative (RPR).

The Contractor shall perform, with his organization, an amount of work equal to at least **25** percent of the total contract cost.

Should the Contractor elect to assign their 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.

The Contractor shall provide copies of all subcontracts to the RPR 14 days prior to being utilized on the project. As a minimum, the information shall include the following:

- Subcontractor's legal company name.
- Subcontractor's legal company address, including County name.
- Principal contact person's name, telephone and fax number.
- Complete narrative description, and dollar value of the work to be performed by the subcontractor.
- Copies of required insurance certificates in accordance with the specifications.
- Minority/ non-minority status.

80-02 Notice to proceed (NTP). The Owners notice to proceed will state the date on which contract time commences. The Contractor is expected to commence project operations within **10** days of the NTP date. The Contractor shall notify the RPR at least 24 hours in advance of the time contract operations begins. The Contractor shall not commence any actual operations prior to the date on which the notice to proceed is issued by the Owner.

80-03 Execution and progress. Unless otherwise specified, the Contractor shall submit their coordinated construction schedule showing all work activities for the RPR's review and acceptance at least 10 days prior to the start of work. The Contractor's progress schedule, once accepted by the RPR, will represent the Contractor's baseline plan to accomplish the project in accordance with the terms and conditions of the Contract. The RPR will compare actual Contractor progress against the baseline schedule to determine that status of the Contractor's performance. 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 RPR's request, submit a revised schedule for completion of the work within the contract time and modify their operations to provide such additional materials, equipment, and labor necessary to meet the revised schedule. Should the execution of the work be discontinued for any reason, the Contractor shall notify the RPR at least 24 hours in advance of resuming operations.

The Contractor shall not commence any actual construction prior to the date on which the NTP is issued by the Owner.

The project schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or other format, or as otherwise specified. It shall include information on the sequence of work activities, milestone dates, and activity duration. The schedule shall show all work items identified in the project proposal for each work area and shall include the project start date and end date.

The Contractor shall maintain the work schedule and provide an update and analysis of the progress schedule on a twice monthly basis, or as otherwise specified in the contract. Submission of the work schedule shall not relieve the Contractor of overall responsibility for scheduling, sequencing, and coordinating all work to comply with the requirements of the contract.

80-04 Limitation of operations. The Contractor shall control their operations and the operations of their subcontractors and all suppliers to provide for the free and unobstructed movement of aircraft in the air operations areas (AOA) of the airport.

When the work requires the Contractor to conduct their operations within an AOA of the airport, the work shall be coordinated with airport operations (through the RPR) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the RPR and until the necessary temporary marking, signage and associated lighting is in place as provided in Section 70, paragraph 70-08, *Construction Safety and Phasing Plan (CSPP)*.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain constant communications as specified; immediately obey all instructions to vacate the AOA; and immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until satisfactory conditions are provided. The areas of the AOA identified in the Construction Safety Phasing Plan (CSPP) and as listed below, 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:

N/A

The Contractor shall be required to conform to safety standards contained in AC 150/5370-2, Operational Safety on Airports During Construction and the approved CSPP.

80-04.1 Operational safety on airport during construction. All Contractors' operations shall be conducted in accordance with the approved project Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD) and the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction. The CSPP included within the contract documents conveys minimum requirements for operational safety on the airport during construction activities. The Contractor shall prepare and submit a SPCD that details how it proposes to comply with the requirements presented within the CSPP.

The Contractor shall implement all necessary safety plan measures prior to commencement of any work activity. The Contractor shall conduct routine checks 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 CSPP and SPCD and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP and SPCD unless approved in writing by the Owner. The necessary coordination actions to review Contractor proposed modifications to an approved CSPP or approved SPCD can require a significant amount of time.

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 or operational safety requirements and, in the opinion of the RPR, does not perform his work in a proper and skillful manner or is intemperate or disorderly shall, at the written request of the RPR, be removed immediately by the Contractor or subcontractor employing such person, and shall not be employed again in any portion of the work without approval of the RPR.

Should the Contractor fail to remove such person or persons, or fail to furnish suitable and sufficient personnel for the proper execution of the work, the RPR 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 not cause injury to previously completed work, adjacent property, or existing airport facilities due to 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 otherwise authorized by the RPR. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the RPR 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 RPR 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 RPR 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 paragraph.

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 the Owner may deem necessary, due to unsuitable weather, or other conditions considered unfavorable for the execution of the work, or for such time 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 written order to suspend work to the effective date of the written order to resume the work. Claims for such compensation shall be filed with the RPR within the time period stated in the RPR's order to resume work. The Contractor shall submit with their own claim information substantiating the amount shown on the claim. The RPR 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 or for any other delay provided for in the contract, plans, or specifications.

If it becomes 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. The Contractor 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 days shall be stated in the proposal and contract and shall be known as the Contract Time.

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

80-07.1 Contract time based on calendar days. 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 non-work 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.

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 paragraph 80-07, *Determination and Extension of Contract Time*) the sum specified in the contract and proposal as liquidated damages (LD) will be deducted from any money due or to become due the Contractor or their own 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 their contract.

Schedule	Liquidated Damages Cost	Allowed Construction Time
Base Bid	\$1,000 per calendar day	120 calendar days

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, will in no way operate as a waiver on the part of the Owner of any of its rights under the contract.

80-09 Default and termination of contract. The Contractor shall be considered in default of their 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 and/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 execution 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 the Contractor 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 Owner consider the Contractor in default of the contract for any reason above, the Owner 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 RPR 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 execution 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 RPR 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 execution 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 and 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 RPR.

Termination of the contract or a portion thereof shall neither relieve the Contractor of their responsibilities for the completed work nor shall it relieve their 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 RPR 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 work in accordance with the approved CSPP and SPCD.

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 RPR, or their authorized representatives, using United States Customary Units of Measurement.

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 RPR.

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.

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.

When requested by the Contractor and approved by the RPR 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 RPR and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Measurement and Payment Terms

Term	Description
Excavation and Embankment Volume	In computing volumes of excavation, the average end area method will be used unless otherwise specified.
Measurement and Proportion by Weight	The term “ton” will mean the short ton consisting of 2,000 pounds (907 kg) avoirdupois. All materials that are measured or proportioned by weights shall be weighed on accurate, independently certified scales by competent, qualified personnel at locations designated by the RPR. 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 RPR directs, and each truck shall bear a plainly legible identification mark.

Term	Description
Measurement by Volume	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 for the materials hauled, 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.
Asphalt Material	Asphalt materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts. 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 asphalt material has been lost from the car or the distributor, wasted, or otherwise not incorporated in the work. When asphalt materials are shipped by truck or transport, net certified weights by volume, subject to correction for loss or foaming, will be used for computing quantities.
Cement	Cement will be measured by the ton (kg) or hundredweight (km).
Structure	Structures will be measured according to neat lines shown on the plans or as altered to fit field conditions.
Timber	Timber will be measured by the thousand feet board measure (MFBM) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.
Plates and Sheets	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 inch.
Miscellaneous Items	When standard manufactured items are specified such as fence, wire, plates, rolled shapes, pipe conduit, etc., and these items are identified by gauge, 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.

Term	Description
Scales	Scales must be tested for accuracy and serviced before use. 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. Platform scales shall be installed and maintained with the platform level and rigid bulkheads at each end. Scales shall be accurate within 0.5% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the RPR 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 0.1% of the nominal rated capacity of the scale, but not less than one pound (454 grams). The use of spring balances will not be permitted. In the event inspection reveals the scales have been “overweighing” (indicating more than correct weight) they will be immediately adjusted. All materials received subsequent to the last previous correct weighting-accuracy test will be reduced by the percentage of error in excess of 0.5%. In the event inspection reveals the scales have been under-weighing (indicating less than correct weight), they shall be immediately adjusted. No additional payment to the Contractor will be allowed for materials previously weighed and recorded. Beams, dials, platforms, and other scale equipment shall be so arranged that the operator and the RPR can safely and conveniently view them. Scale installations shall have available ten standard 50-pound (2.3 km) weights for testing the weighing equipment or suitable weights and devices for other approved equipment. 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.
Rental Equipment	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 in connection with extra work will be measured as agreed in the change order or supplemental agreement authorizing such work as provided in paragraph 90-05 <i>Payment for Extra Work</i>.
Pay Quantities	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 RPR. 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 execution thereof, subject to the provisions of Section 70, paragraph 70-18, *No Waiver of Legal Rights*.

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 Section 40, paragraph 40-02, *Alteration of Work and Quantities*, 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 their own unbalanced allocation of overhead and profit among the contract items, or from any other cause.

90-04 Payment for omitted items. As specified in Section 40, paragraph 40-03, *Omitted Items*, the RPR 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 RPR 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 RPR's order to omit or non-perform such contract item.

Acceptable materials ordered by the Contractor or delivered on the work prior to the date of the RPR'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 RPR'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 work. Extra work, performed in accordance with Section 40, paragraph 40-04, *Extra Work*, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

90-06 Partial payments. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the RPR, of the value of the work performed and materials complete and 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 paragraph 90-07, *Payment for Materials on Hand*. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

a. From the total of the amount determined to be payable on a partial payment, five (5) percent of such total amount will be deducted and retained by the Owner for protection of the Owner's interests. Unless otherwise instructed by the Owner, the amount retained by the Owner will be in effect until the final payment is made except as follows:

(1) Contractor may request release of retainage on work that has been partially accepted by the Owner in accordance with Section 50-14. Contractor must provide a certified invoice to the RPR that supports the value of retainage held by the Owner for partially accepted work.

(2) In lieu of retainage, the Contractor may exercise at its option the establishment of an escrow account per paragraph 90-08.

b. The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 days after the Contractor has received a partial payment. Contractor must provide the Owner evidence of

prompt and full payment of retainage held by the prime Contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

c. When at least 95% of the work has been completed to the satisfaction of the RPR, the RPR shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done. The Owner may retain 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 RPR 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 paragraph 90-09, *Acceptance and Final Payment*.

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 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 RPR at or on an approved site.

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

c. The Contractor has furnished the RPR 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 stored or stockpiled.

e. The Contractor has furnished the Owner evidence that the material 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 their 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 paragraph.

90-08 Payment of withheld funds. At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in paragraph 90-06 *Partial Payments*, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to 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 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 Section 50, paragraph 50-15, *Final Acceptance*, the RPR will prepare the final estimate of the items of work actually performed. The Contractor shall approve the RPR's final estimate or advise the RPR of the Contractor's 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 RPR 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 RPR's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the RPR's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in accordance with Section 50, paragraph 50-16, *Claims for Adjustment and Disputes*.

After the Contractor has approved, or approved under protest, the RPR's final estimate, and after the RPR's receipt of the project closeout documentation required in paragraph 90-11, *Contractor Final Project Documentation*, 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 Section 50, paragraph 50-16, *Claims for Adjustments and Disputes*, or under the provisions of this paragraph, 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.

a. 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, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one year from the date of final acceptance of the work, except as noted. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession.

c. 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 Owner real or personal property, when that damage is the result of the Contractor's failure to conform to contract requirements; or any defect of equipment, material, workmanship, or design furnished by the Contractor.

d. 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 one year from the date of repair or replacement.

e. The Owner will notify the Contractor, in writing, within seven (7) days after the discovery of any failure, defect, or damage.

f. If the Contractor fails to remedy any failure, defect, or damage within 14 days 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.

g. 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.

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

90-11 Contractor Final Project Documentation. 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 RPR approves the Contractor's final 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 cleanup in accordance with Section 40, paragraph 40-08, *Final Cleanup*.

d. Complete all punch list items identified during the Final Inspection.

e. Provide complete release of all claims for labor and material arising out of the Contract.

f. Provide a certified statement signed by the subcontractors, indicating actual amounts paid to the Disadvantaged Business Enterprise (DBE) subcontractors and/or suppliers associated with the project.

g. When applicable per state requirements, return copies of sales tax completion forms.

h. Manufacturer's certifications for all items incorporated in the work.

i. All required record drawings, as-built drawings or as-constructed drawings.

j. Project Operation and Maintenance (O&M) Manual(s).

k. Security for Construction Warranty.

l. Equipment commissioning documentation submitted, if required.

END OF SECTION 90

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DIVISION I
GENERAL REQUIREMENTS

SECTION 01 11 00
SUMMARY OF WORK

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
 - 1. Work covered by the Contract Documents.
 - 2. Work phases.
 - 3. Work under other contracts.
 - 4. Use of premises.
 - 5. Owner's occupancy requirements.
 - 6. Specification formats and conventions.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: Ten Unit T-Hangar, Ruston Regional Airport, Ruston, LA.
 - 1. Project Location: City of Ruston (refer to Vicinity Map and Aerial Photograph on Contract Documents).
- B. Engineer: KSA, 1111 Hawn Ave., Shreveport, Louisiana 71107.
- C. Certain items of work included herewith are set forth to call attention to items which may or may not be fully described in other sections of the specifications.
 - 1. Minimal selective demolition of asphaltic paving as indicated.
 - 2. Construction of one 11,550 sq.ft. single story, pre-engineered metal building subdivided into 10 nested-T hangar unit and two support spaces. Exterior walls and roof to be pre-finished corrugated metal panels. Each hangar unit will have a motor-operated vertical bi-fold door with integral swinging man door.
 - 3. Sitework includes new concrete apron surfaces abutting the building and new electrical.
 - 4. Removal of debris and turning over to the Owner a complete operating facility.
 - 5. Construction and connecting of utilities and paying of fees, permits, and inspection of services in these connections.
 - 6. Grading (rough and finish) and earthwork related to the building foundation.
 - 7. Top soiling, fertilizing, seeding and mulching of areas affected by construction activities.
 - 8. Work included in paragraphs included herewith and in any section of specifications shall not in any way limit responsibility of Contractor to perform all work and furnish all materials required by the contract documents.
- C. Project will be constructed under a single prime contract.

1.3 WORK UNDER OTHER CONTRACTS

- A. General: Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract. Coordinate the Work of this Contract with work performed under separate contracts.

1.4 USE OF PREMISES

- A. General: Contractor shall have limited use of premises for construction operations, including use of Project site, during construction period (this to be further discussed at the Pre-Bid conference).
- B. Existing Airport Facility:
 - 1. Contractor to consult with Airport Manager and Engineer and agree upon procedure of all construction operations, to cause minimum interference with existing airport operations, which must be fully maintained at all times.

2. Maintain access to adjacent buildings throughout the construction period. Repair damage caused to existing paving and ground areas by construction operations. Take all precautions necessary to protect the airport and its occupants during the construction period.
- C. Use of Site: Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
 1. Limits: Confine constructions operations to areas defined on the project drawings.
 - a. Limit site disturbance, including earthwork and clearing of vegetation, to 40 feet (12.2 m) beyond building perimeter; 10 feet (3 m) beyond surface walkways, patios, surface parking, and utilities less than 12 inches (300 mm) in diameter; 15 feet (4.5 m) beyond primary roadway curbs and main utility branch trenches; and 25 feet (7.6 m) beyond constructed areas with permeable surfaces (such as pervious paving areas, stormwater detention facilities, and playing fields) that require additional staging areas in order to limit compaction in the constructed area.
 2. Owner Occupancy: Allow for Owner occupancy of adjacent site.
 3. Driveways and Entrances: Keep driveways and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
 - a. Schedule deliveries to minimize use of driveways and entrances.
 - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.5 WORK RESTRICTIONS

- A. Nonsmoking Building: Smoking is not permitted within the building or within 25 feet (8 m) of entrances, operable windows, or outdoor air intakes.

1.6 SPECIFICATION FORMATS AND CONVENTIONS

- B. Specification Format: The Specifications are organized into Divisions and Sections using the 48-division format and CSI/CSC's "MasterFormat" numbering system (MasterFormat 2004).
 1. Division 01: Sections in Division 01 govern the execution of the Work of all Sections in the Specifications.
- C. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
 1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates.
 2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
 - a. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 11 00

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes general administrative procedures for submittal and review of Contractor-proposed product option and substitutions.

1.2 REQUIREMENT FOR OPEN SPECIFICATIONS

- A. There is no intent in this project that the specification for any material is intended to be "closed" or restricted and open competition is expected and required.
- B. The name of a certain brand, make, manufacturer, or definite specifications is to denote the quality standard of the article desired, but does not restrict bidders to the specific brand, make, manufacturer, or specification named. It is to set forth and convey to prospective bidders the general style, type character, and quality of article desired.
- C. When in specifications or contract documents a particular brand, make of material, device, or equipment is shown or specified, such brand, make of material, device, or equipment shall be regarded merely as a standard.
- D. When in specifications or contract documents an architect or engineer specifies a particular brand, make of material, device, or equipment, or equal thereto, he shall adequately identify said product by including minimally, the model or catalog number of the product

1.3 SUBSTITUTIONS

- A. Architect will consider formal request for substitution of products in place of those mentioned by name or as standard in the Contract Documents. Substitution requests must be received prior to bid opening in accordance with the Instructions to Bidders Document. The substitution request shall contain complete data on the proposed substitute (including cost data), and Contractor shall submit samples for comparison and tests as may be requested by Architect.
- B. If a potential supplier wishes to submit for prior approval a particular product other than a product specified in the contract documents, he shall do so no later than seven (7) working days prior to the opening of bids. Within three days, exclusive of holidays and weekends, after such submission, the prime design professional shall furnish to both the public entity and the potential supplier written approval or denial of the product submitted.
- C. Substitution requests must be submitted on the form provided at the end of this Section.
- D. Document specified product and proposed substitution with complete data, including:
 - 1. Product identification, including name and address of manufacturer.
 - 2. Product description, performance and test data, and reference standards.
 - 3. Sample, if requested.
 - 4. Description of any anticipated effect that acceptance of proposed substitution will have on Progress Schedule, construction methods, or other items of Work.
 - 5. Description of any differences between specified product and proposed substitution.
 - 6. Difference in cost between specified product and proposed substitution.
- E. By making request for substitutions, the Contractor:
 - 1. Represents that he has personally investigated the proposed substitute product and determined that it is equal or superior in all respects to that specified;
 - 2. Represents that he will provide the same or greater warranty for the substitution that he would for that specified;
 - 3. Will coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects;
 - 4. Certifies that the cost data presented is complete and includes all related cost under this

Contract but excludes costs under separate contracts, and excludes the Architect's redesign cost and waives all claims for additional costs related to the substitution which subsequently become apparent; and

5. Agrees to replace the substituted materials which prove to be defective or otherwise unsatisfactory for the service intended within the warranty period with material or equipment originally specified at no additional cost to the Owner.
- F. Substitutions will not be considered if:
1. They are indicated or implied on Shop Drawings or other submittals without submittal of a substitution request.
 2. Approval will require substantial revision of Contract Documents without additional compensation to Architect.
- G. The Architect has sole authority to determine acceptability of proposed substitution, and will issue acceptance or rejection by notation on the shop drawing review stamp or in other written form.

END OF SECTION 01 25 00

(Substitution Request Form follows – 2 pages)

DOCUMENT 01 25 19
SUBSTITUTION REQUEST FORM

DATE: _____

TO: _____

ATTENTION: _____

PROJECT: _____

We submit for your consideration the following product as a substitution for the specified product:

Section No. Paragraph Specified Product

Proposed Substitution: _____

Reason for Substitution: _____

Product Data:

Attach complete technical data for both the specified product and the proposed substitution. Include information on changes to Contract Documents that the proposed substitution will require for its proper installation.

Samples:

___ Attached ___ Will be furnished upon request

Does the substitution affect dimensions shown on Drawings?

___ No ___ Yes (explain) _____

Effects of proposed substitution on other Work:

Differences between proposed substitution and specified Product:

Manufacturer's warranties of the proposed substitution are:

☐ Same ☐ Different (explain) _____

Maintenance service and spare parts are available for proposed substitution from:

Previous installations where proposed substitution may be seen:

Project: _____	Project: _____
Owner: _____	Owner: _____
Architect: _____	Architect: _____
Date Installed: _____	Date Installed: _____

Cost savings to be realized by Owner, if proposed substitution is approved:

Change to Contract Time, if proposed substitution is approved:

☐ No Change ☐ Add _____ days ☐ Deduct _____ days

Submittal constitutes a representation that Contractor has read and agrees to the provisions of Section 01 2500.

Submitted by Contractor:

Signature

Firm

For Use by Architect:

Based on the information supplied by the Contractor, the Architect has reviewed the proposed substitution on the basis of design concept of the Work and conformance with information given in Contract Documents.

☐ Approved ☐ Approved as Noted ☐ Rejected

Submit Additional Information: _____

By: _____ Date: _____

END OF REQUEST FORM 01 25 19

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
 - 1. Coordination Drawings.
 - 2. Project meetings.
 - 3. Requests for Interpretation (RFIs).
- B. See Division 01 Section "Execution" for procedures for coordinating general installation and field-engineering services, including establishment of benchmarks and control points.

1.2 DEFINITIONS

- A. RFI: Request from Contractor seeking interpretation or clarification of the Contract Documents.

1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, which depend on each other for proper installation, connection, and operation.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
 - 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
 - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Contractor's Construction Schedule.
 - 2. Preparation of the Schedule of Values.
 - 3. Installation and removal of temporary facilities and controls.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Preinstallation conferences.
 - 7. Project closeout activities.
 - 8. Startup and adjustment of systems.
 - 9. Project closeout activities.

1.4 SUBMITTALS

- A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.
 - 1. Content: Project-specific information, drawn accurately to scale. Do not base Coordination Drawings on reproductions of the Contract Documents or standard printed data. Include the following information, as applicable:
 - a. Indicate functional and spatial relationships of components of architectural, structural, civil, mechanical, and electrical systems.
 - b. Indicate dimensions shown on the Contract Drawings and make specific note of dimensions that appear to be in conflict with submitted equipment and minimum clearance requirements. Provide alternate sketches to Architect for resolution of such conflicts. Minor dimension changes and difficult installations will not be considered changes to the Contract.
 - 2. Sheet Size: At least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
 - 3. Number of Copies: Submit two hard copies and one electronic copy (Adobe Portable Document Format, pdf) of each submittal. Architect will return one hard copy.
 - 4. Refer to individual Sections for Coordination Drawing requirements for Work in those Sections.

1.5 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
 - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
 - 2. Agenda: Prepare the meeting agenda. Distribute the agenda to all invited attendees.
 - 3. Minutes: Record significant discussions and agreements achieved. Distribute the meeting minutes to everyone concerned, including Owner and Architect, within three days of the meeting.
- B. Preconstruction Conference: Schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect, but no later than 15 days after execution of the Agreement. Hold the conference at Project site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.
 - 1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.
 - 2. Agenda: Discuss items of significance that could affect progress, including the following:
 - a. Tentative construction schedule.
 - b. Phasing.
 - c. Critical work sequencing and long-lead items.
 - d. Designation of key personnel and their duties.
 - e. Procedures for processing field decisions and Change Orders.
 - f. Procedures for RFIs.
 - g. Procedures for testing and inspecting.
 - h. Procedures for processing Applications for Payment.
 - i. Distribution of the Contract Documents.
 - j. Submittal procedures.
 - k. Preparation of Record Documents.
 - l. Use of the premises.
 - m. Work restrictions.
 - n. Owner's occupancy requirements.
 - o. Responsibility for temporary facilities and controls.
 - p. Construction waste management and recycling.

- q. Parking availability.
 - r. Office, work, and storage areas.
 - s. Equipment deliveries and priorities.
 - t. First aid.
 - u. Security.
 - v. Progress cleaning.
 - w. Working hours.
3. Minutes: Architect will record and distribute meeting minutes.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.
1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Architect of scheduled meeting dates.
 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
 - a. The Contract Documents.
 - b. Options.
 - c. Related RFIs.
 - d. Related Change Orders.
 - e. Purchases.
 - f. Deliveries.
 - g. Submittals.
 - h. Review of mockups.
 - i. Possible conflicts.
 - j. Compatibility problems.
 - k. Time schedules.
 - l. Weather limitations.
 - m. Manufacturer's written recommendations.
 - n. Warranty requirements.
 - o. Compatibility of materials.
 - p. Acceptability of substrates.
 - q. Temporary facilities and controls.
 - r. Space and access limitations.
 - s. Regulations of authorities having jurisdiction.
 - t. Testing and inspecting requirements.
 - u. Installation procedures.
 - v. Coordination with other work.
 - w. Required performance results.
 - x. Protection of adjacent work.
 - y. Protection of construction and personnel.
 3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
 4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.
- D. Progress Meetings: Conduct progress meetings at regular intervals. Coordinate dates of meetings with preparation of payment requests.
1. Attendees: In addition to representatives of Owner and Architect, each contractor, subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to status of Project.
 - a. Contractor's Construction Schedule: Review progress since the last meeting. Determine whether each activity is on time, ahead of schedule, or behind schedule, in relation to Contractor's Construction Schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.
 - 1) Review schedule for next period.
 - b. Review present and future needs of each entity present, including the following:
 - 1) Interface requirements.
 - 2) Sequence of operations.
 - 3) Status of submittals.
 - 4) Deliveries.
 - 5) Off-site fabrication.
 - 6) Access.
 - 7) Site utilization.
 - 8) Temporary facilities and controls.
 - 9) Work hours.
 - 10) Hazards and risks.
 - 11) Progress cleaning.
 - 12) Quality and work standards.
 - 13) Status of correction of deficient items.
 - 14) Field observations.
 - 15) RFIs.
 - 16) Status of proposal requests.
 - 17) Pending changes.
 - 18) Status of Change Orders.
 - 19) Pending claims and disputes.
 - 20) Documentation of information for payment requests.
3. Minutes: Architect will record and distribute to Contractor the meeting minutes.
4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.
 - a. Schedule Updating: Revise Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue revised schedule concurrently with the report of each meeting.

1.6 REQUESTS FOR INTERPRETATION (RFIs)

- A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, and if not possible to request interpretation at Project meeting, prepare and submit an RFI in the form specified.
 1. RFIs shall originate with Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
 1. Project name.
 2. Date.
 3. Name of Contractor.
 4. Name of Architect.
 5. RFI number, numbered sequentially.
 6. Specification Section number and title and related paragraphs, as appropriate.
 7. Drawing number and detail references, as appropriate.
 8. Field dimensions and conditions, as appropriate.

9. Contractor's suggested solution(s). If Contractor's solution(s) impact the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
 10. Contractor's signature.
 11. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
- C. Hard-Copy RFIs: Form to be supplied by the Architect.
1. Identify each page of attachments with the RFI number and sequential page number.
- D. Architect's Action: Architect will review each RFI, determine action required, and return it. Allow seven working days for Architect's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day.
1. The following RFIs will be returned without action:
 - a. Requests for approval of submittals.
 - b. Requests for approval of substitutions.
 - c. Requests for coordination information already indicated in the Contract Documents.
 - d. Requests for adjustments in the Contract Time or the Contract Sum.
 - e. Requests for interpretation of Architect's actions on submittals.
 - f. Incomplete RFIs or RFIs with numerous errors.
 2. Architect's action may include a request for additional information, in which case Architect's time for response will start again.
 3. Architect's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according to Division 01 Section "Contract Modification Procedures."
 - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Architect in writing within 10 days of receipt of the RFI response.
- E. On receipt of Architect's action, update the RFI log and immediately distribute the RFI response to affected parties. Review response and notify Architect within seven days if Contractor disagrees with response.
- F. RFI Log: Prepare, maintain, and submit a tabular log of RFIs organized by the RFI number. Submit log weekly. Include the following:
1. Project name.
 2. Name and address of Contractor.
 3. Name and address of Architect.
 4. RFI number including RFIs that were dropped and not submitted.
 5. RFI description.
 6. Date the RFI was submitted.
 7. Date Architect's response was received.
 8. Identification of related Minor Change in the Work, Construction Change Directive, and Proposal Request, as appropriate.
 9. Identification of related Field Order, Work Change Directive, and Proposal Request, as appropriate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 31 00

SECTION 01 32 16
CONSTRUCTION PROGRESS SCHEDULES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes construction progress scheduling.

1.2 FORMAT

- A. Prepare Progress Schedule as a horizontal bar chart with separate bar for each major portion of Work or operation, identifying first work day of each week.
- B. Sequence of Listings: The chronological order of the start of each item of Work.
- C. Scale and Spacing: To provide space for notations and revisions.
- D. Sheet Size: Multiples of 8-1/2 x 11 inches.

1.3 CONTENT

- A. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction.
- B. Identify each item by specification Section number.
- C. Identify work of related activities and other logically grouped activities.
- D. Provide sub-schedules for each phase of Work identified in Section 01 11 00.
- E. Provide sub-schedules to define critical portions of the entire Progress Schedule.
- F. Show accumulated percentage of completion of each item, and total percentage of Work completed, as of the first day of each month.
- G. Provide separate schedule of submittal dates for Shop Drawings, Product Data, and Samples, including:
 - 1. Dates reviewed submittals will be required from Architect.
 - 2. Decision data for selection of finishes.
 - 3. Delivery dates for critical path items and materials.
- H. Coordinate content with Schedule of Values specified in Section 01 29 00.
- I. Revisions:
 - 1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
 - 2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
- J. Provide narrative report to define problem areas, anticipated delays, and impact on Progress Schedule. Report corrective action taken, or proposed, and its effect.

1.4 SUBMITTAL

- A. Submit initial Progress Schedule within 15 days after date of Notice to Proceed. After review, resubmit required revised data within 10 days.

- B. Submit revised Progress Schedule with each Application for Payment.
- C. Submit six 6 copies, and one electronic copy in Adobe PDF format.

1.5 DISTRIBUTION

- A. Distribute copies of approved Progress Schedule to project site file, Subcontractors, suppliers, and other concerned parties.
- B. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in Progress Schedule.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION 01 32 16

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.2 DEFINITIONS

- A. Action Submittals: Written and graphic information that requires Architect's responsive action.
- B. Informational Submittals: Written information that does not require Architect's responsive action. Submittals may be rejected for not complying with requirements.

1.3 SUBMITTAL PROCEDURES

- A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.
 - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
 - 2. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.
 - a. Architect reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- B. Submittals Schedule: Comply with requirements in Division 01 Section "Construction Progress Documentation" for list of submittals and time requirements for scheduled performance of related construction activities.
- C. Processing Time: Allow enough time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architect's receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
 - 1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
 - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
 - 3. Resubmittal Review: Allow 15 days for review of each resubmittal.
- D. Identification: Place a permanent label or title block on each submittal for identification.
 - 1. Indicate name of firm or entity that prepared each submittal on label or title block.
 - 2. Provide a space approximately 6 by 8 inches (150 by 200 mm) on label or beside title block to record Contractor's review and approval markings and action taken by Architect.
 - 3. Include the following information on label for processing and recording action taken:
 - a. Project name.
 - b. Date.
 - c. Name and address of Architect.
 - d. Name and address of Contractor.
 - e. Name and address of subcontractor.
 - f. Name and address of supplier.
 - g. Name of manufacturer.
 - h. Submittal number or other unique identifier, including revision identifier.

- 1) Submittal number shall use Specification Section number followed by a decimal point and then a sequential number (e.g., 061000.01). Resubmittals shall include an alphabetic suffix after another decimal point (e.g., 061000.01.A).
 - i. Number and title of appropriate Specification Section.
 - j. Drawing number and detail references, as appropriate.
 - k. Location(s) where product is to be installed, as appropriate.
 - l. Other necessary identification.
- E. Deviations: Highlight, encircle, or otherwise specifically identify deviations from the Contract Documents on submittals.
- F. Additional Copies: Unless additional copies are required for final submittal, and unless Architect observes noncompliance with provisions in the Contract Documents, initial submittal may serve as final submittal.
1. Additional copies submitted for maintenance manuals will not be marked with action taken and will be returned.
- G. Transmittal: Package each submittal individually and appropriately for transmittal and handling. Transmit each submittal using a transmittal form. Architect will return submittals, without review, received from sources other than Contractor.
1. Transmittal Form: Use AIA Document G810 or other form as may be approved by the Architect.
- H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.
1. Note date and content of previous submittal.
 2. Note date and content of revision in label or title block and clearly indicate extent of revision.
 3. Resubmit submittals until they are marked "No Exception Taken"
- I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.
- J. Use for Construction: Use only final submittals with mark indicating "No Exceptions Taken".

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS

- A. General: Prepare and submit Action Submittals required by individual Specification Sections.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
 2. Mark each copy of each submittal to show which products and options are applicable.
 3. Include the following information, as applicable:
 - a. Manufacturer's written recommendations.
 - b. Manufacturer's product specifications.
 - c. Manufacturer's installation instructions.
 - d. Manufacturer's catalog cuts.
 - e. Wiring diagrams showing factory-installed wiring.
 - f. Printed performance curves.
 - g. Operational range diagrams.
 - h. Compliance with specified referenced standards.
 - i. Testing by recognized testing agency.
 4. Number of Copies: Submit two hard copies and one electronic copy of Product Data, unless otherwise indicated. Architect will return one hard copy, with option to return an electronic copy. Mark up and retain one returned copy as a Project Record Document.

- C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.
1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
 - a. Dimensions.
 - b. Identification of products.
 - c. Fabrication and installation drawings.
 - d. Roughing-in and setting diagrams.
 - e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
 - f. Shopwork manufacturing instructions.
 - g. Templates and patterns.
 - h. Schedules.
 - i. Notation of coordination requirements.
 - j. Notation of dimensions established by field measurement.
 - k. Relationship to adjoining construction clearly indicated.
 - l. Seal and signature of professional engineer if specified.
 - m. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.
 2. Sheet Size: Except for templates, patterns, and similar full-size drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches (215 by 280 mm) but no larger than 30 by 40 inches (750 by 1000 mm).
 3. Number of Copies: Submit two opaque (bond) copies of each submittal. Architect will return one copy.
- D. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
 2. Identification: Attach label on unexposed side of Samples that includes the following:
 - a. Generic description of Sample.
 - b. Product name and name of manufacturer.
 - c. Sample source.
 - d. Number and title of appropriate Specification Section.
 3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
 4. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.
 - a. Number of Samples: Submit one full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Architect will return submittal with options selected.
 5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
 - a. Number of Samples: Submit two sets of Samples. Architect will retain one Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a Project Record Sample.
- E. Product Schedule or List: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location.
1. Number of Copies: Submit two hard copies and one electronic copy of each product schedule or list, unless otherwise indicated. Architect will return one hard copy with option to return an electronic copy.

- F. Submittals Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
- G. Application for Payment: Comply with requirements specified in Division 01 Section "Payment Procedures."
- H. Schedule of Values: Comply with requirements specified in Division 01 Section "Payment Procedures."
- I. Subcontract List: Prepare a written summary identifying individuals or firms proposed for each portion of the Work, including those who are to furnish products or equipment fabricated to a special design.
 - 1. Number of Copies: Submit one hard copy and one electronic copy of the subcontractor list, unless otherwise indicated. Architect will only return a copy if requested by the Contractor.

2.2 INFORMATIONAL SUBMITTALS

- A. General: Prepare and submit Informational Submittals required by other Specification Sections.
 - 1. Number of Copies: Submit two hard copies and one electronic copy of each submittal, unless otherwise indicated. Architect will not return copies.
 - 2. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
 - 3. Test and Inspection Reports: Comply with requirements specified in Division 01 Section "Quality Requirements."
- B. Coordination Drawings: Comply with requirements specified in Division 01 Section "Project Management and Coordination."
- C. Contractor's Construction Schedule: Comply with requirements specified in Division 01 Section "Construction Progress Documentation."
- D. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.
- E. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- F. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- G. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- H. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- I. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- J. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.

- K. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- L. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- M. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
- N. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- O. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
- P. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Division 01 Section "Operation and Maintenance Data."
- Q. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- R. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.
- S. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
 - 1. Statement on condition of substrates and their acceptability for installation of product.
 - 2. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
 - 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.
- T. Insurance Certificates and Bonds: Prepare written information indicating current status of insurance or bonding coverage. Include name of entity covered by insurance or bond, limits of coverage, amounts of deductibles, if any, and term of the coverage.
- U. Construction Photographs: Comply with requirements specified in Division 01 Section "Photographic Documentation."
- V. Material Safety Data Sheets (MSDSs): Submit information directly to Owner; do not submit to Architect.
 - 1. Architect will not review submittals that include MSDSs and will return them for resubmittal.

2.3 DELEGATED DESIGN

- A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.
 - 1. If criteria indicated are not sufficient to perform services or certification required, submit a written request for additional information to Architect.
- B. Delegated-Design Submittal: In addition to Shop Drawings, Product Data, and other required submittals, submit three copies of a statement, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.
 - 1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

PART 3 - EXECUTION

3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.
- B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

3.2 ARCHITECT'S ACTION

- A. General: Architect will not review submittals that do not bear Contractor's approval stamp and will return them without action.
- B. Action Submittals: Architect will review each submittal, make marks to indicate corrections or modifications required, and return it. Architect will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action taken, as follows:
- C. Informational Submittals: Architect will review each submittal and will not return it, or will return it if it does not comply with requirements. Architect will forward each submittal to appropriate party.
- D. Partial submittals are not acceptable, will be considered nonresponsive, and will be returned without review.
- E. Submittals not required by the Contract Documents may not be reviewed and may be discarded.

END OF SECTION 01 33 00

SECTION 01 40 00
QUALITY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. References.
 - 2. Quality assurance and control of installation.
 - 3. Manufacturer's field services and reports.
 - 4. Design data and calculations.
 - 5. Test reports and certifications.
 - 6. Manufacturer's installation instructions.

1.2 REFERENCES

- A. For products or workmanship specified by reference to association, trade, or industry standards, complies with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
- C. Conform to edition of reference standard in effect as of January 2019.
- D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.3 QUALITY ASSURANCE AND CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request a clarification from Architect before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.4 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, or startup of equipment, as applicable, and to initiate instructions when necessary.
- B. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

- C. Submit report to Architect within 10 days of observation.

1.5 DESIGN DATA AND CALCULATIONS

- A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide design data and calculations.
- B. Accuracy of design data and calculations is the responsibility of the Construction Manager.
- C. When so specified, prepare design data and calculations under the direction of a professional engineer licensed in the state in which the Project is located. Affix engineer's seal to submittals.
- D. Submit six (6) copies, and one electronic copy in Adobe PDF format of each design data and calculation.

1.6 TEST REPORTS AND CERTIFICATIONS

- A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide test reports and manufacturers' certifications.
- B. Indicate that material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Submittals may be recent or previous test results on material or Product, but must be acceptable to Architect.
- D. Submit six (6) copies of each report.

1.7 MANUFACTURER'S INSTALLATION INSTRUCTIONS

- A. When Contract Documents require that Products be installed in accordance with manufacturer's instructions:
 - 1. Submit manufacturer's most recent printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, as applicable.
 - a. Submit in quantities specified for Product Data.
 - b. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
 - c. Identify conflicts between manufacturers' instructions and requirements of Contract Documents.
 - 2. Perform installation of Products to comply with requirements of manufacturer's instructions.
 - 3. If installation cannot be performed in accordance with manufacturer's instructions, notify Architect and await instructions.
 - 4. Submit six (6) copies of each instruction.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

END OF SECTION 01 40 00

SECTION 01 50 00
TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.2 DEFINITIONS

- A. Permanent Enclosure: As determined by Architect, permanent or temporary roofing is complete, insulated, and weathertight; exterior walls are insulated and weathertight; and all openings are closed with permanent construction or substantial temporary closures.
- B. Owner: Springhill Airport.

1.3 USE CHARGES

- A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum. Allow other entities to use temporary services and facilities without cost, including, but not limited to, User Agency's construction forces, Architect, testing agencies, and authorities having jurisdiction.
- B. Water Service: Contractor to furnish at their own expense. Coordinate with User Agency for connection of services if a temporary meter will be installed for water access. Exception to be provided in the case of emergency use of User Agency's water source.
- C. Electric Power Service: Contractor to furnish at their own expense. Coordinate with User Agency for connection of services if a temporary meter will be installed for electrical access.

1.4 SUBMITTALS

- A. Site Plan: Show temporary facilities, utility hookups, staging areas, and parking areas for construction personnel.

1.5 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

1.6 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Pavement: Comply with Division 2

- B. Portable Chain-Link Fencing: Minimum 2-inch (50-mm), 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet (1.8 m) high with galvanized steel pipe posts; minimum 2-3/8-inch- (60-mm-) OD line posts and 2-7/8-inch- (73-mm-) OD corner and pull posts, with 1-5/8-inch- (42-mm-) OD top and bottom rails. .
- C. Lumber and Plywood: Comply with requirements in Division 06 Section "Rough Carpentry."
- D. Insulation: Unfaced mineral-fiber blanket, manufactured from glass, slag wool, or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.

2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Storage and Fabrication Sheds: Provide sheds sized, furnished, and equipped to accommodate materials and equipment for construction operations.

2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Owner authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
 - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.
 - 2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
 - 3. Permanent HVAC System: If Owner authorizes use of permanent HVAC system for temporary use during construction, provide filter with MERV of 8 at each return air grille in system and remove at end of construction.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
 - 1. Locate facilities to limit site disturbance as specified in Division 01 Section "Summary."
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
 - 1. Arrange with utility company, Owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
- C. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed

installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.

- D. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
 - 1. Install electric power service underground, unless otherwise indicated.
 - 2. Connect temporary service to Owner's existing power source, as directed by Owner.
- E. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
 - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.

3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
 - 1. Provide incombustible construction for offices, shops, and sheds located within construction area or within 30 feet (9 m) of building lines. Comply with NFPA 241.
 - 2. Maintain support facilities until near Substantial Completion. Remove before Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Owner.
- B. Temporary Roads and Paved Areas: Construct and maintain temporary roads and paved areas adequate for construction operations. Locate temporary roads and paved areas within construction limits indicated on Drawings.
 - 1. Provide dust-control treatment that is nonpolluting and nontracking. Reapply treatment as required to minimize dust.
- C. Parking: Provide temporary parking areas for construction personnel.
- D. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
 - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
 - 2. Remove snow and ice as required to minimize accumulations.
- E. Project Identification and Temporary Signs: Provide Project identification and other signs as indicated on Drawings. Install signs where indicated to inform public and individuals seeking entrance to Project. Unauthorized signs are not permitted.
 - 1. Provide temporary, directional signs for construction personnel and visitors.
 - 2. Maintain and touchup signs so they are legible at all times.
- F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction. Comply with Division 01 Section "Execution" for progress cleaning requirements.
- G. Lifts and Hoists: Provide facilities necessary for hoisting materials and personnel.
 - 1. Truck cranes and similar devices used for hoisting materials are considered "tools and equipment" and not temporary facilities.

3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Temporary Erosion and Sedimentation Control: Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and airborne dust to adjacent properties and walkways, according to requirements of authorities having jurisdiction.

- C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of stormwater from heavy rains.
- D. Pest Control: Engage pest-control service to recommend practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Obtain extended warranty for Owner. Perform control operations lawfully, using environmentally safe materials.
- E. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
- F. Barricades, Warning Signs, and Lights: Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.
- G. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
 - 1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
- H. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
 - 1. Prohibit smoking in construction areas.
 - 2. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
 - 3. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.
 - 4. Provide temporary standpipes and hoses for fire protection. Hang hoses with a warning sign stating that hoses are for fire-protection purposes only and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
 - 1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
 - 1. Materials and facilities that constitute temporary facilities are property of Contractor. Owner reserves right to take possession of Project identification signs.
 - 2. At Substantial Completion, clean and renovate permanent facilities used during construction period. Comply with final cleaning requirements specified in Division 01 Section "Closeout Procedures."

END OF SECTION 01 50 00

SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; product substitutions; and comparable products.

1.2 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature, that is current as of date of the Contract Documents.
 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are not considered new products.
 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of other named manufacturers.

1.3 SUBMITTALS

- A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
1. Substitution Request Form: Use CSI Form 13.1A.
 2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:
 - a. Statement indicating why specified material or product cannot be provided.
 - b. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
 - c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 - d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
 - e. Samples, where applicable or requested.
 - f. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
 - g. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
 - h. Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

- i. Detailed comparison of Contractor's Construction Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating lack of availability or delays in delivery.
 - j. Cost information, including a proposal of change, if any, in the Contract Sum.
 - k. Contractor's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.
 - l. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
 - 3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within 7 days of receipt of a request for substitution. Architect will notify Contractor of acceptance or rejection of proposed substitution within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Acceptance: Change Order.
 - b. Use product specified if Architect cannot make a decision on use of a proposed substitution within time allocated.
- B. Comparable Product Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.
- 1. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within one week of receipt of a comparable product request. Architect will notify Contractor of approval or rejection of proposed comparable product request within 15 days of receipt of request, or 7 days of receipt of additional information or documentation, whichever is later.
 - a. Form of Approval: As specified in Division 01 Section "Submittal Procedures."
 - b. Use product specified if Architect cannot make a decision on use of a comparable product request within time allocated.
- C. Basis-of-Design Product Specification Submittal: Comply with requirements in Division 01 Section "Submittal Procedures." Show compliance with requirements.
- 1.4 QUALITY ASSURANCE
- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
- 1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING
- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
- 1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 - 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 - 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 - 4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
- C. Storage:
- 1. Store products to allow for inspection and measurement of quantity or counting of units.
 - 2. Store materials in a manner that will not endanger Project structure.

3. Store products that are subject to damage by the elements, under cover in a weathertight enclosure above ground, with ventilation adequate to prevent condensation.
4. Store cementitious products and materials on elevated platforms.
5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
7. Protect stored products from damage and liquids from freezing.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
 1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
 2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
 3. Refer to Divisions 2 through 16 Sections for specific content requirements and particular requirements for submitting special warranties.
- C. Submittal Time: Comply with requirements in Division 01 Section "Closeout Procedures."

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
 1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Owner reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
 4. Where products are accompanied by the term "as selected," Architect will make selection.
 5. Where products are accompanied by the term "match sample," sample to be matched is Architect's.
 6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
- B. Product Selection Procedures:
 1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements.
 2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements.
 3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.
 4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.

5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
7. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product or system. Comply with provisions in Part 2 "Product Substitutions" Article for consideration of an unnamed product or system.
8. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product by the other named manufacturers.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.
 - a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
 - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
 - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Architect will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

- A. Timing: Architect will consider requests for substitution if received within the requirements of these documents and **during the bidding process only**.
- B. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
 1. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
 2. Requested substitution does not require extensive revisions to the Contract Documents.
 3. Requested substitution is consistent with the Contract Documents and will produce indicated results.
 4. Substitution request is fully documented and properly submitted.
 5. Requested substitution will not adversely affect Contractor's Construction Schedule.
 6. Requested substitution has received necessary approvals of authorities having jurisdiction.
 7. Requested substitution is compatible with other portions of the Work.
 8. Requested substitution has been coordinated with other portions of the Work.
 9. Requested substitution provides specified warranty.

2.3 COMPARABLE PRODUCTS

- A. Conditions: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:
1. Evidence that the proposed product does not require extensive revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
 2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
 3. Evidence that proposed product provides specified warranty.
 4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners, if requested.
 5. Samples, if requested.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 60 00

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
1. Inspection procedures.
 2. Warranties.
 3. Final cleaning.

1.2 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the Work is not complete.
 2. Advise Owner of pending insurance changeover requirements.
 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 5. Prepare and submit Project Record Documents, operation and maintenance manuals, Final Completion construction photographs, damage or settlement surveys, property surveys, and similar final record information.
 6. Deliver tools, spare parts, extra materials, and similar items to location designated by Owner. Label with manufacturer's name and model number where applicable.
 7. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
 8. Complete startup testing of systems.
 9. Submit test/adjust/balance records.
 10. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
 11. Advise Owner of changeover in heat and other utilities.
 12. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 13. Complete final cleaning requirements, including touchup painting.
 14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
- B. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by Architect, that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
 2. Results of completed inspection will form the basis of requirements for Final Completion.

1.3 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
1. Submit a final Application for Payment according to Division 01 Section "Payment Procedures."

2. Submit certified copy of Architect's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Architect. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Submit pest-control final inspection report and warranty.
 5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
- B. Inspection: Submit a written request for final inspection for acceptance. On receipt of request, Architect will either proceed with inspection or notify Contractor of unfulfilled requirements. Architect will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.
1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.
- C. Repeat Inspections will be required when the Work fails to pass the requested Substantial Complete Inspection and/or the requested Final Inspection. Repeat Inspections will be performed at the Contractor's expense. The Contractor shall be billed for the Architect's time for the site visit(s), inspection(s), and related administrative work based on the Architect's current hourly rate schedule. An amount equal to the amount due the Architect shall be deducted from the Contractor's final Application for Payment and remitted to the Architect by the Owner.

1.4 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

- A. Preparation: Submit three copies of list. Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.
1. Organize list of spaces in sequential order, starting with exterior areas first and proceeding from lowest floor to highest floor.
 2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.

1.5 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Architect for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
1. Bind warranties and bonds in heavy-duty, 3-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
 2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a portion of Project:
 - a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Remove snow and ice to provide safe access to building.
 - f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - h. Sweep concrete floors broom clean in unoccupied spaces.
 - i. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - j. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - k. Remove labels that are not permanent.
 - l. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
 - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
 - m. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
 - n. Replace parts subject to unusual operating conditions.
 - o. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - p. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
 - q. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - r. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 77 00

SECTION 01 77 30
EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:
 - 1. Construction layout.
 - 2. Field engineering and surveying.
 - 3. General installation of products.
 - 4. Progress cleaning.
 - 5. Starting and adjusting.
 - 6. Protection of installed construction.
 - 7. Correction of the Work.

1.2 SUBMITTALS

- A. Certificates: Submit certificate signed by land surveyor certifying that location and elevation of improvements comply with requirements.

1.3 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Existing Conditions: The existence and location of site improvements, utilities, and other construction indicated as existing are not guaranteed. Before beginning work, investigate and verify the existence and location of mechanical and electrical systems and other construction affecting the Work.
 - 1. Before construction, verify the location and points of connection of utility services.
- B. Existing Utilities: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
 - 1. Before construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.
 - 2. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- C. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
 - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
 - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

- A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.
- B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- D. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to Architect. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents.

3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Architect promptly.
- B. General: Engage a land surveyor to lay out the Work using accepted surveying practices.
 1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
 3. Inform installers of lines and levels to which they must comply.
 4. Check the location, level and plumb, of every major element as the Work progresses.
 5. Notify Architect when deviations from required lines and levels exceed allowable tolerances.
 6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by Architect.

3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.
 - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
 - 1. Make vertical work plumb and make horizontal work level.
 - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
 - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
 - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by Architect.
 - 2. Allow for building movement, including thermal expansion and contraction.
 - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
 - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
 - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F (27 deg C).
 - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.

- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
 - 1. Remove liquid spills promptly.
 - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.7 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section "Quality Requirements."

3.8 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

3.9 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section "Cutting and Patching."
 - 1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.

- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 77 30

SECTION 01 77 31
CUTTING AND PATCHING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of selected portions of a building or structure.
 - 2. Demolition and removal of selected site elements.
 - 3. Repair procedures for selective demolition operations.
 - 4. Procedural requirements for cutting and patching.
- B. Use specified cutting and patching procedures when cutting or patching is required for any of the following activities:
 - 1. Fitting the parts of the work together.
 - 2. Modifying existing construction.
 - 3. Repairing existing work to remain.
 - 4. Installing ill-timed work.
 - 5. Removing and replacing defective and nonconforming work.
 - 6. Removing samples of work for testing.
 - 7. Making openings in elements of work for penetrations, such as for piping, conduit, duct, and the like.
 - 8. Uncovering work for observation.
 - 9. Repairing damage.

1.3 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
- C. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Architect's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.4 PROJECT CONDITIONS

- A. Owner assumes no responsibility for condition of areas to be selectively demolished.
 - 1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

- B. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
- C. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1.5 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Comply with requirements specified in other Sections of these Specifications.
- B. Patching Materials: Identical to the materials of the work to be cut, unless indicated as specific materials specified in other sections.
 - 1. For exposed materials for closing up openings, use materials identical to those of the adjacent construction; concealed materials are not required to be identical.
 - 2. If identical materials are not available or cannot be used, use materials that provide best visual match; obtain approval of the architect.
 - 3. Use materials that perform equally as well as, or better than, the material cut.
 - 4. If necessary, determine composition of existing materials to be patched by testing.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
 - 1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
 - 2. Take precautions to avoid damage to unanticipated utilities and structural elements. If such elements are encountered, report nature and extent to the architect and request instructions as to how to proceed.
 - 3. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

- D. Existing Services: Where existing services are required to be removed, relocated, or abandoned, bypass such services before cutting to avoid interruption of services to occupied areas.

3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
 - 1. Cut existing construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
 - 2. Where new work is inserted into or through the work that is cut, fit the patched work tightly to the new work.
 - 3. Repair substrate prior to patching finish.
- B. Concealed Work: Uncover the concealed work, cut and patch, and patch the covering work.
- C. Concrete and Masonry: Use saws or drills which produce a neat cut; remove in small sections.
- D. Insulation: Replace insulation whenever it is cut in order to modify the element it is insulating.
- E. Slabs on Grade: Use methods that will not crack or disturb adjacent slabs or partitions.
- F. Operational Elements: Maintain capacity to perform in the manner intended, including energy performance; do not cut or patch in any manner that would increase maintenance requirement, decrease life expectancy, or decrease safety.
- G. Safety-Related Elements: Do not cut or patch in a manner that would result in decreased safety.
- H. Fire/Smoke Barriers: Do not cut more than absolutely necessary.
 - 1. Cut penetration holes to sizes required for penetration seal assemblies required.
 - 2. Patch all oversize holes and cuts made in error.
 - 3. Perform patching in a manner which complies in all respects with the original construction; if not possible, report nature of difficulty to the architect and request instructions.
- I. Protect that part of the project which is exposed during cutting and patching operations from adverse weather.
- J. Cover openings made whenever they are not in use.
- K. Cutting: Cut existing construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
 - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
 - 2. Existing Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
 - 3. Concrete/Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
 - 4. Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.

5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
 6. Proceed with patching after construction operations requiring cutting are complete.
- L. Temporary Enclosures: Provide temporary enclosures for protection of existing building and construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures. Coordinate enclosure with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
- M. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.
 2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
 - a. For continuous surfaces, extend refinish to nearest intersection, with a neat transition to adjacent surfaces.
 - b. For assemblies: Refinish entire unit.
 - c. Painted piping, conduit, and duct: Clean and repaint.
 3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
 - a. Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.
 4. Ceilings: Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.
 5. Remove and replace work which is patched in a visually unacceptable manner.

END OF SECTION 01 77 31

SECTION 01 77 83
PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.

1.2 CLOSEOUT SUBMITTALS

- A. Record Drawings: Comply with the following:

1. Number of Copies: Submit one set of marked-up record prints.
2. Number of Copies: Submit copies of record Drawings as follows:
 - a. Initial Submittal: Submit one paper copy set and PDF electronic files of marked-up record prints and one set of plots from corrected record digital data files. Architect will indicate whether general scope of changes, additional information recorded, and quality of drafting are acceptable.
 - b. Final Submittal: Submit two paper copy sets and PDF electronic files of marked-up record prints, one set(s) of record digital data files, and three set(s) of record digital data file plots. Plot each drawing file, whether or not changes and additional information were recorded.

- B. Record Specifications: Submit one paper copy and annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

- C. Record Product Data: Submit one paper copy and annotated PDF electronic files and directories of each submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

- A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.
 - a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
 - b. Record data as soon as possible after obtaining it.
 - c. Record and check the markup before enclosing concealed installations.

2. Mark the Contract Drawings and Shop Drawings completely and accurately. Utilize personnel proficient at recording graphic information in production of marked-up record prints.
 3. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.
 4. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.
- B. Record Digital Data Files: Immediately before inspection for Certificate of Substantial Completion, review marked-up record prints with Architect. When authorized, prepare a full set of corrected digital data files of the Contract Drawings, as follows:
1. Format: Same digital data software program, version, and operating system as the original Contract Drawings.
 2. Format: Annotated PDF electronic file with comment function enabled.
 3. Incorporate changes and additional information previously marked on record prints. Delete, redraw, and add details and notations where applicable.
 4. Refer instances of uncertainty to Architect for resolution.
 5. Architect will furnish Contractor one set of digital data files of the Contract Drawings for use in recording information.
- C. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.
1. Record Prints: Organize record prints and newly prepared record Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
 2. Format: Annotated PDF electronic file with comment function enabled.
 3. Record Digital Data Files: Organize digital data information into separate electronic files that correspond to each sheet of the Contract Drawings. Name each file with the sheet identification. Include identification in each digital data file.
 4. Identification: As follows:
 - a. Project name.
 - b. Date.
 - c. Designation "PROJECT RECORD DRAWINGS."
 - d. Name of Architect.
 - e. Name of Contractor.

2.2 RECORD SPECIFICATIONS

- A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.
1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
 3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
 4. Note related Change Orders, record Product Data, and record Drawings where applicable.
- B. Format: Submit record Specifications as annotated PDF electronic file and paper copy.

2.3 RECORD PRODUCT DATA

- A. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
 2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
 3. Note related Change Orders, record Specifications, and record Drawings where applicable.
- B. Format: Submit record Product Data as annotated PDF electronic file and paper copy scanned.

2.4 MISCELLANEOUS RECORD SUBMITTALS

- A. Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference.
- B. Format: Submit miscellaneous record submittals as PDF electronic file and paper copy scanned.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

- A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and modifications to project record documents as they occur; do not wait until the end of Project.
- B. Maintenance of Record Documents and Samples: Store record documents and Samples in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Architect's reference during normal working hours.

END OF SECTION 01 77 83

DIVISION 2
EXISTING CONDITIONS

SECTION 02 30 00
GEOTECHNICAL DATA

PART 1 - GENERAL

1.01 EXISTING CONDITIONS

A. General:

1. Soil and subsurface investigations were conducted at the site by an independent testing laboratory and a report prepared which contained logs of borings made.
2. This report was obtained by Owner, for the Architect's design use only.
3. A copy of report follows this section for informational purposes only.

B. Interpretations:

1. Soil investigation data is available only for information and convenience of bidders, and is not warranted to indicate actual conditions.
2. The Owner and Design Builder do not assume responsibility for variations in kind, depth, quantity and conditions of soils; they disclaim any responsibility for accuracy, true location, and extent of soils investigation that has been prepared by others; and they further disclaim responsibility for interpretation of that data by bidders as in projecting soil bearing values, rock profiles, soil stability, and presence, level, and extent of underground water.
3. Soil investigation data is not a part of the Contract Documents.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

3.01 BIDDER INVESTIGATION

- A. Bidder shall visit the site and acquaint himself with site conditions.
- B. Bidder shall, at his expense and prior to bidding, make all soil surveys and investigations he considers necessary.
- C. Obtain authorization of Owner, through Architect, prior to the start of additional boring or subsurface investigations.

END OF DOCUMENT 02 30 00

**REPORT OF SUBSURFACE EXPLORATION
& GEOTECHNICAL EVALUATION
RUSTON REGIONAL AIRPORT HANGER & TAXILANE
RUSTON, LOUISIANA**

PROJECT NUMBER: DRGeoES 23090G

DATE: NOVEMBER 21, 2023

PREPARED FOR:
KSA, Inc.

PREPARED BY:



11/21/23

DAVE RAMBARAN, P.E.



*P.O. Box 8812 • Shreveport, LA 71148 •
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November 21, 2023

KSA, Inc.
1111 Hawn Avenue
Shreveport, LA 71107

Attention: Mr. Jonathan Farmer, P.E.
Regional Manager

Re: Report of Subsurface Exploration & Geotechnical Services
Ruston Regional Airport Hangar & Taxi Lane
Ruston, LA
Project Number DRGeoES 23090G

Dear Mr. Farmer:

Dave Rambaran Geosciences, LLC (DRGeoES) has completed the authorized geotechnical engineering evaluation for the above referenced project. Our services were performed in substantial accordance with our Proposal Number 23090G, dated September 1, 2023.

The purpose of our evaluation was to determine the general subsurface conditions at the above proposed locations of the Ruston Airport for shallow foundation consideration. The recommendations addressed in this report are based on a physical reconnaissance of the site, performed on October 4, 2023, observation and classification of samples obtained from test borings conducted at the site. Confirmation of the anticipated subsurface conditions during construction is an essential part of geotechnical services; DRGeoES shall be retained to perform the confirmation of our recommendations during construction or provide additional borings and recommendations.

We appreciate the opportunity to provide consultation services for the proposed development. If you have any questions regarding the information in this report or need any additional information, please call us.

Respectfully Submitted,
DRGeoES, LLC

Dave Rambaran, P.E.
Geotechnical Engineer

Varun Kumar Nagelli
Geotechnical Staff



P.O. Box 8812 •Shreveport, LA 71148•Ph: (318) 780-8292/ DaveRambaran@DRGeosciences.com

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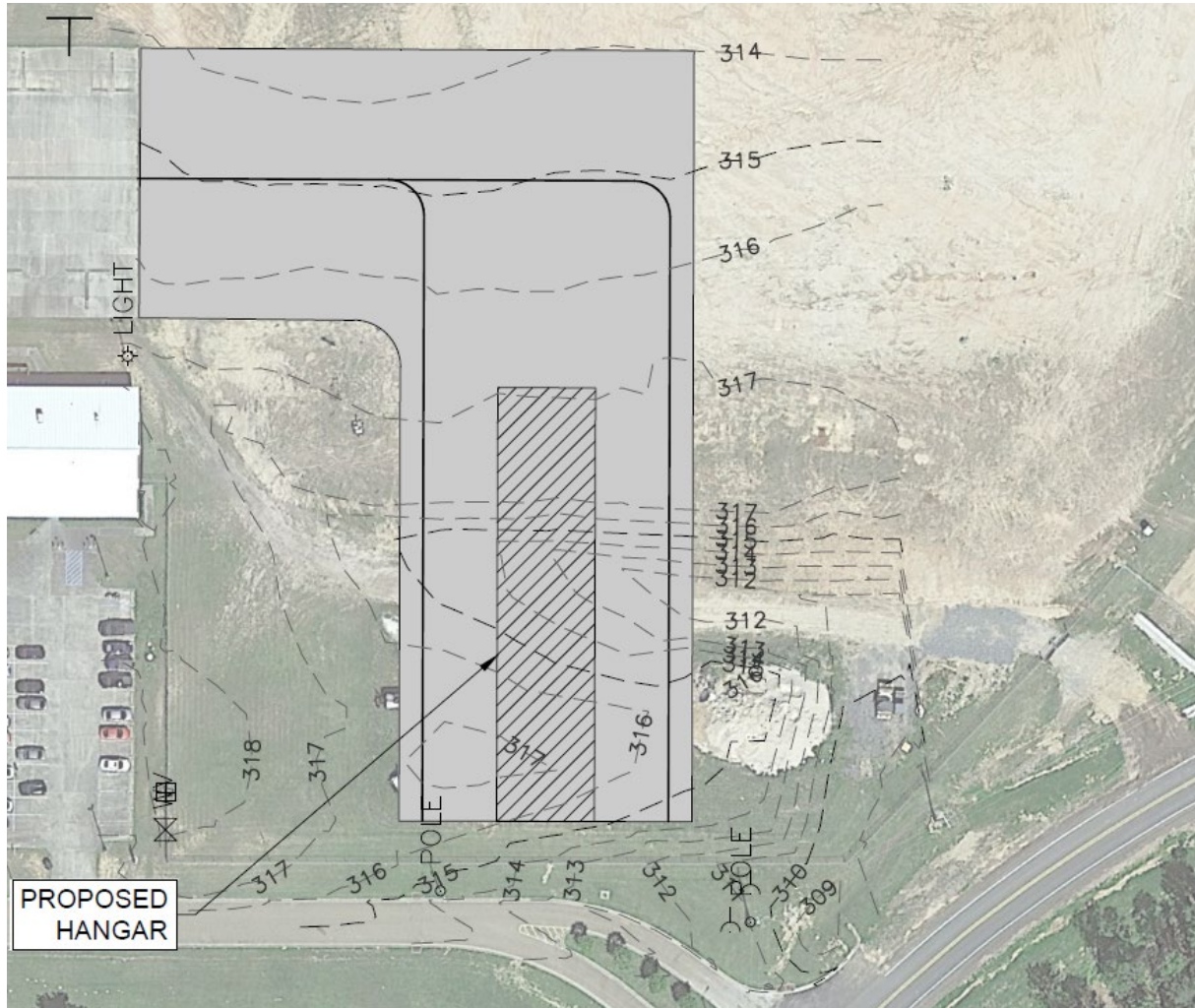
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APPENDIX

1.0 PROJECT AND SITE DESCRIPTION

The proposed development is located at Ruston Regional Airport in Ruston, LA (as shown below in Figure I). The structures are estimated to be airplane hangar and associated TaxiLane. Generally, the structures will be constructed near grade of the Runway and adjacent structures. No other information was provided. As observed, a gully runs through the site and is up to 6 feet deep. Also, the slopes of the gully are unstable and easily eroded.

FIGURE I



The general geotechnical recommendations presented in this report are based on the available project information and the subsurface materials described in this report. If any of the noted information is incorrect, we should be informed in writing so that we may amend the recommendations presented in this report, if appropriate and desired by the client. DRGeoES will not be responsible for the implementation of report recommendations when we are not notified of changes in the project and engaged to monitor construction.

2.0 SCOPE OF SERVICES

The purpose of the geotechnical exploration was to determine the general subsurface conditions and to gather data on which to base a general geotechnical evaluation for the structures with respect to the proposed construction. The information gathered during the geotechnical exploration was evaluated to determine the bearing capacities and CBR logs for the proposed development. The results of the field and laboratory work presented within this report are as follows:

- Summary of existing surface conditions.
- A description of the subsurface conditions encountered at the soil test boring locations.
- Presentation of laboratory test results.
- Site preparation considerations including material types to be expected at the site, and treatment of unsuitable soils, if encountered.
- Recommendations to be used for foundation design that includes appropriate foundation types, bearing pressures and potential vertical rise (PVR) depths if appropriate.
- Field DCP, CBR testing on the subgrade was performed. Correlated CBR logs are provided from the pavement borings.
- A description of the current groundwater conditions as observed in the boreholes during drilling at completion of the drilling. Long-term monitoring is not included in this proposal.

The scope of services did not include an environmental assessment for determining the presence or absence of hazardous or toxic materials in the soil, surface water, groundwater, or air on, below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

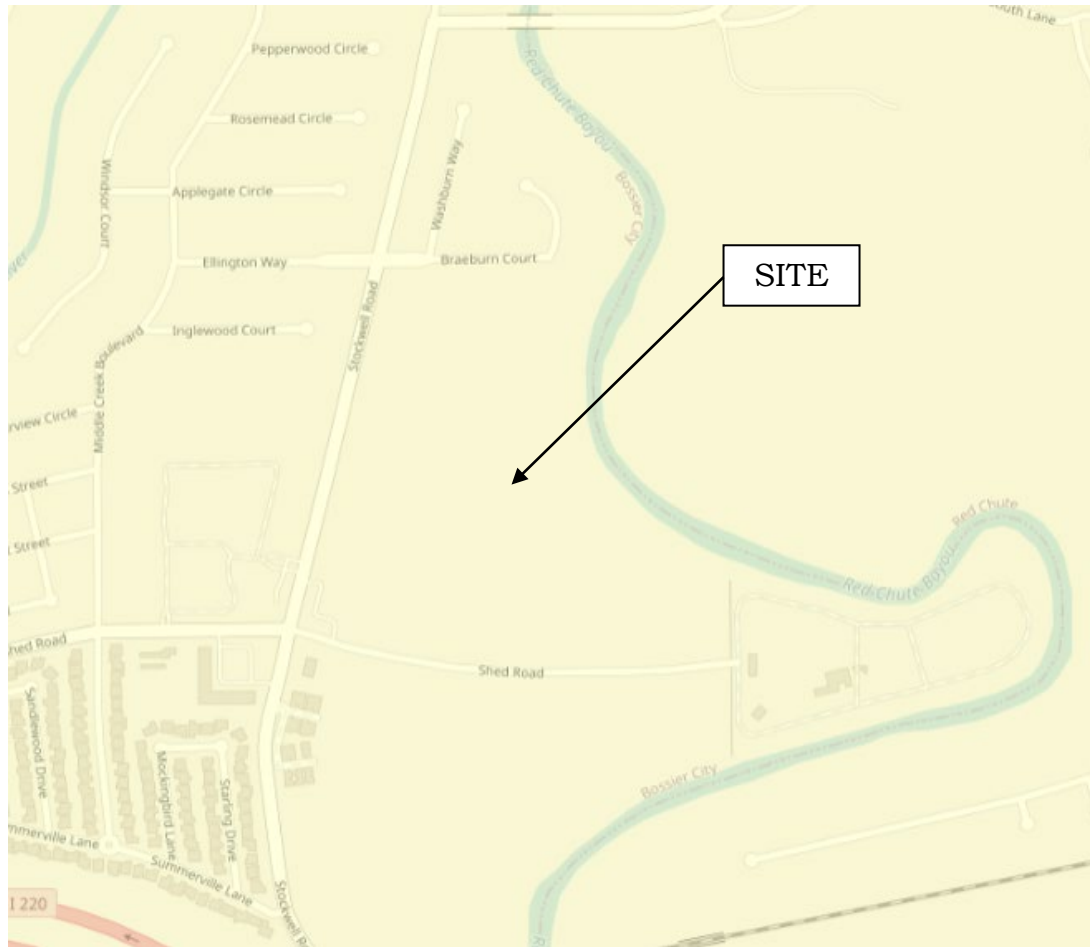
3.0 SITE GEOLOGY

According to the “Generalized Geologic Map of Louisiana,” the site is underlain by Natural Levees (Holocene geologic age, Record ID: LAQnl;0). Natural Levees are comprised of gray to brown silt, silty clay, some very fine sand, reddish brown along the Red River. Major lithologic constituents of clay and silt; Minor lithologic constituents of sand.

States Geological Survey, 1998, Digital Overlay of the Geologic Map of Louisiana: U.S. Geological Survey, Biological Resources Division, National Wetlands Research Center, Product Id USGS-NWRC 1984-02-0001, <http://www.nwrc.usgs.gov/>.

The scope of our work did not include a geologic investigation to address any faults, large scale subsidence, or macro geologic features not specifically addressed in this report or the agreement between DRGeoES and the client.

FIGURE II



4.0 LABORATORY ANALYSIS & FIELD TESTING

The laboratory analysis provided consists of moisture profiles of the natural moisture content, #200 washes, and Atterberg limits tests determinations. The results of the laboratory analysis are presented on the boring logs in the Appendix of this report. A detailed description of the general tests that may be performed is attached in the Appendix. The tests that were performed are listed below.

- Description of Soils (Visual-Manual Procedure) (ASTM D2488)
- Natural Moisture Content (ASTM D2216)
- Atterberg Limits (ASTM D4318)
- Wash #200 Test (ASTM D422)
- DCP Field Test (ASTM D6915 & MDOT 93-05)
- Standard Test Method for Field Vane Shear Test (ASTM D4767-04, ASTM D2573-08)

5.0 SUBSURFACE CONDITIONS

5.1 INFORMATION

General site information was provided by the client with boring quantity and locations. Access and boring locations were provided by the client. The boring locations were estimated from known features at the site and are approximate. Four borings were drilled and sampled continuously to a depth of 10 feet and then at 5 feet intervals to a termination depth of 15 feet and 25 feet in the Hanger area. Six borings were drilled and sampled continuously to a depth of 10 feet in the taxi lane area. All the borings were drilled in accessible locations as shown in site layout. (See the appendix for site layout map)

At each boring location, soil samples were retrieved at standard sampling intervals using general sampling methods accepted in our area in general accordance with ASTM. The project engineer prepared Boring Logs summarizing the subsurface conditions at the boring location. The Boring Logs are attached to this report.

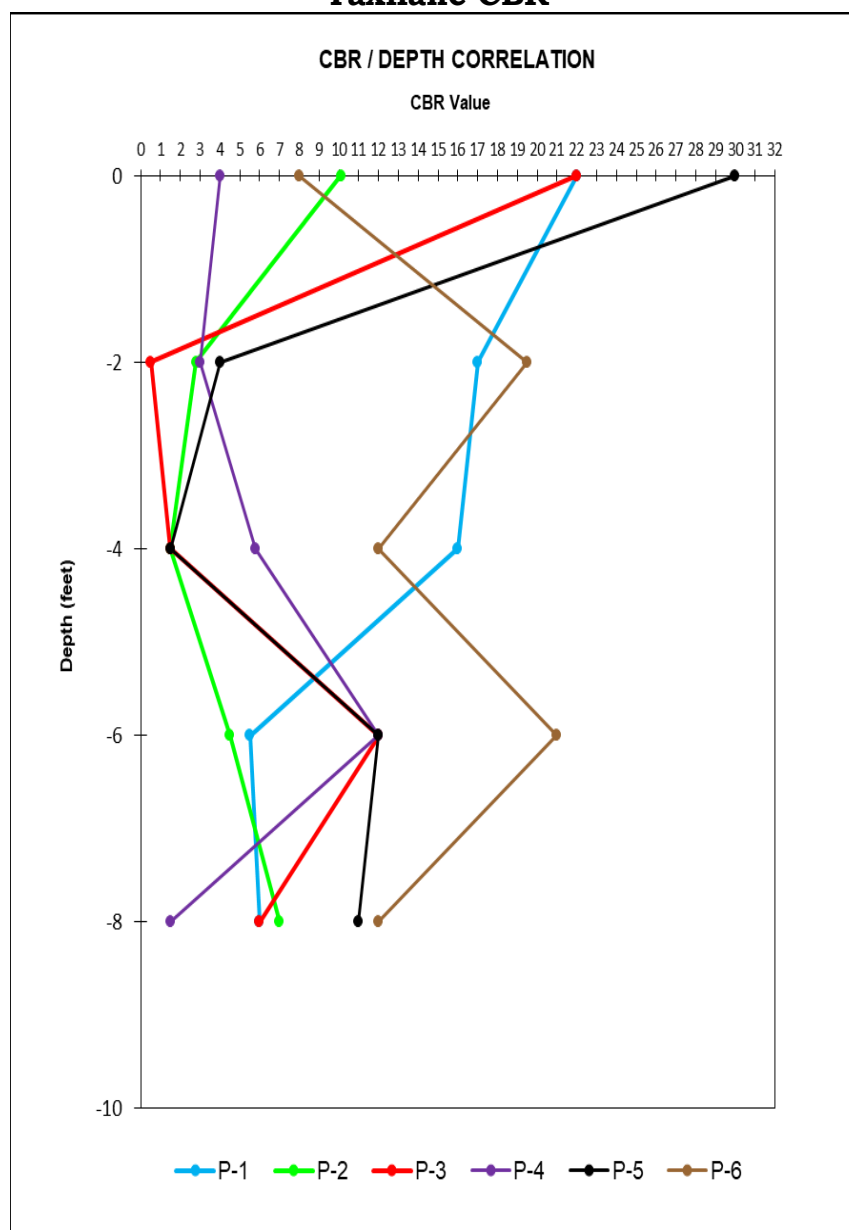
5.2 CONDITIONS

The subsurface conditions at the site were evaluated based on the borings performed at the site. The following conditions and subsequent recommendations are based on the information from the borings obtained during the field investigation. Anomalous conditions may occur due to the geologic conditions at the site. It will be necessary to verify the conditions during site grading and prior to foundation installation - **DRGeoES offers construction materials testing and inspection services and shall be retained to perform these services during construction.**

Table I - Generalized Soil Profile

Stratum No.	Approximate Depth Range (feet)		Soil Description
	From	To	
I	0	3	Sandy Silty Clay (CL-ML); FIRM to VERY STIFF Clayey Sand (SC); MEDIUM DENSE Silty Sand (SM); MEDIUM DENSE to LOOSE Sandy Clay (CL); STIFF to FIRM
II	3	6	Silty Sand (SM); MEDIUM DENSE to LOOSE Sandy Clay (CL); STIFF to FIRM Fat Clay (CH); FIRM to VERY STIFF
III	6	10	Sandy Clay (CL); STIFF to VERY STIFF Clayey Sand (SC); MEDIUM DENSE to LOOSE Fat Clay (CH); FIRM to VERY STIFF
IV	10	23	Sandy Clay (CL); VERY STIFF to STIFF Clayey Sand (SC); MEDIUM DENSE Silty Sand (SM); LOOSE
V	23	25	Silty Sand (SM); LOOSE

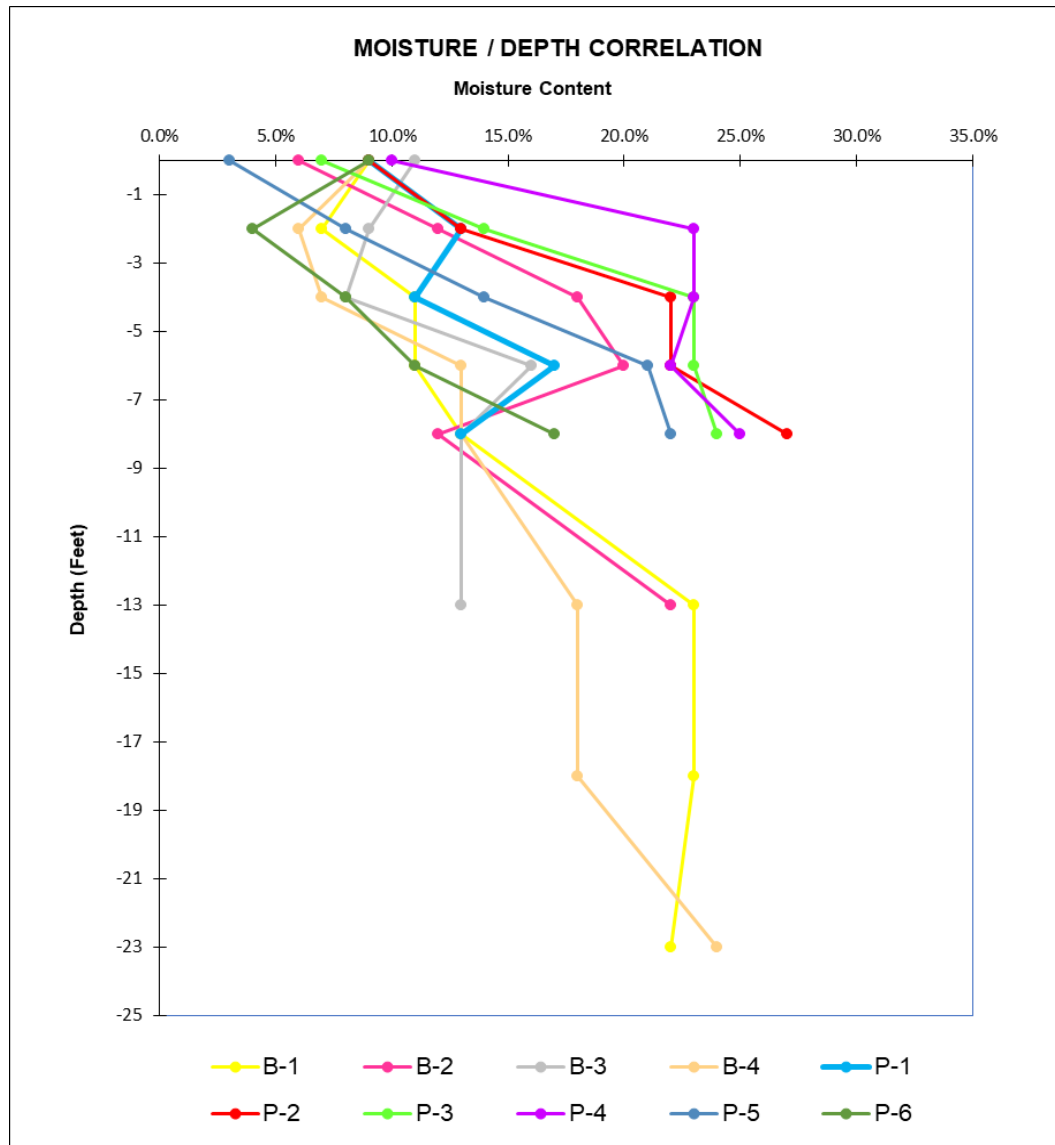
FIGURE III
Taxilane CBR



5.3 GROUNDWATER

Groundwater was not encountered at the time of drilling. A moisture profile was estimated using the natural moisture content of the soil samples obtained from the borings. The natural moisture content is observed to be increasing from the surface and decreasing at an approximate depth of 6 feet. The subsurface groundwater level is subject to change with variation in climate condition. Future construction activities may also alter the surface and/or subsurface drainage patterns of this site. Therefore, groundwater conditions should be explored at the start of construction by others. The time of year and quantity of precipitation should be considered when using this information.

FIGURE IV



6.0 SITE GRADING CONSIDERATIONS

The means, methods and sequence of construction including site preparation shall be the responsibility of the project contractor who shall specialize in this type of construction. However, general geotechnical related considerations are given herein for general guidance.

A site grading plan was not provided at the time this report was prepared. However, based on the adjacent structures we estimate the final grade elevation to be approximately 317 feet. At the gully area on the site over excavation shall be required up to 4 feet and undercut under the building shall be up to 4 feet. Fill in the gully area shall be up to 11 feet.

Based on information obtained from the borings, Sandy Clay and Clayey Sand and fat clay in 2 for the pavement borings were encountered at the site. Undercutting shall be necessary for soil supported floor slab. We recommend a minimum of 4 feet of select fill will be required under the soil supported floor slab. We recommend a minimum undercut of 4 feet under the structure and 5 feet outside the footprint of the structure. The select fill material shall be placed over a stable, and compacted subgrade.

The exposed subgrade shall be scarified to a minimum of 12 inches, proof-rolled or recompacted to 100% of standards proctor below 4 feet of finished grade and 98% in the upper 4 feet of finish grade. The footprint shall be checked for soft zones and these zones shall be removed and replaced with select fill. Subgrade and select fill placement must be monitored by the geotechnical engineer. The exposed subgrade shall be checked by the geotechnical engineer's representative prior to construction. Any area found to be unacceptable shall be removed and replaced.

6.1 SITE PREPARATION

We recommend vegetation, topsoil, or any other deleterious materials be removed including existing structures and utilities. Pre-existing structures may be encountered, fill and deleterious materials may also be encountered. Unsuitable materials should be removed prior to construction. Voids resulting from removal of organic material or unsuitable soils should be backfilled as soon as possible in accordance with the recommendations for fill placement contained herein. The geotechnical engineer shall be retained for observation during construction.

After stripping is completed, all areas that require fill or that will support structures should be carefully proof rolled with a heavy, rubber-tired vehicle (tandem axel loaded dump truck) prior to fill placement or building construction. The proof rolling will help densify the near surface soils and identify unstable subgrade areas. The project geotechnical engineer should observe the proof rolling operations. **Also, the geotechnical engineer may waive proof-rolling based on the condition and saturation of the site during construction.**

If the site becomes saturated, due to the sensitive nature of the silty clay material, we recommend no equipment should be allowed to travel directly on the exposed subgrade once the area is cleared. The structural fill can be pushed into place using a light-weight bulldozer (i.e., Caterpillar D3 - <18-20,000 pounds). We recommend backfilling this area with fill material as recommended below. The bulldozer or other equipment should not travel directly on the newly exposed subgrade.

The bulldozer should work from the first lift and not impact the subgrade. The bulldozer should maintain at least 12 inches of material between it and the undisturbed subgrade at all times, excluding the final leveling of each lift. A non-vibratory roller should be used to compact the remaining lifts if unstable conditions are encountered. It is important to note that traffic on the pad should be confined to only the necessary equipment needed to be on the pad. The contractor may forgo the proof-rolling provided that the geotechnical engineer or his representative is present to perform field verification of the subgrade, compaction testing, and the fill material is verified to be compacted to the recommended 98 percent standard Proctor (ASTM D-698). However, if the rutting and pumping of the subgrade is apparent then the geotechnical engineer should be contacted to provide additional recommendations. The site contractor shall be monitored by the geotechnical engineer.

6.2 UNDERCUTTING/STABILIZATION

Instability may exist during construction, depending on climatic conditions. Loose and very soft and/or unstable surficial silty or clayey soils may be encountered across the project site during wet weather or high-water table levels. Very soft and/or unstable materials also may be present in unexplored areas of the site. Soft and/or unstable soils identified should be undercut, replaced, and recompacted in lifts or stabilized. Where unstable soils are encountered, they should be removed and replaced with select fill.

6.3 EXCAVATION CONSIDERATIONS

We anticipate stripping and excavation on this site. A fill should be placed in accordance with section 6.5 of this report. Groundwater may be encountered during the excavation depending on the time of year and precipitation. Levels will depend on the rainfall amounts prior to and during construction.

6.4 SUBGRADE EVALUATION

The geotechnical engineer shall be retained to evaluate the subgrade of the site after the initial site preparation is completed. All unsuitable material identified during the subgrade evaluation shall be removed prior to the placement of fill or construction of buildings. Areas that require fill placement must be stable and the stability must be confirmed by the geotechnical engineer. The first lift of fill placed on the approved subgrade should not exceed 8 to 12 inches loose measure and should be compacted to the specifications provided in the following section.

6.5 STRUCTURAL FILL

We recommend that the structural fill at the site be composed of material with a Plasticity Index (PI) between 8 and 18, and a Liquid Limit (LL) less

than 40. Also, the material should be classified as lean clay, sandy clay (CL) or clayey sand (SC) with at least 30 percent passing the #200 sieve. Approved onsite excavated material may be reused for fill if approved by the Geotechnical Engineer. Any fill to be placed at the site should be approved by the geotechnical engineer.

The structural fill should be compacted as shown in Table II of the Standard Proctor maximum dry density and within -2 to +2% of the optimum moisture as determined by ASTM D-698. The specifications should state that both density and moisture requirements should be met. The lifts should not exceed 8 to 12 inches thick, depending on the compaction equipment used. Density and moisture tests should be performed on each lift prior to placement of subsequent lifts.

Table II

Location or Area	Standard Proctor Density ASTM D698	Testing Frequency 1 per lift per
Structures and Walkways upper 4 ft	98%	1,000 sf
Structures 4 ft below final grade	100%	1,000 sf
Trenches	95%	75 lf
Building Subgrades upper 4 ft	98%	1,000 sf
Building Subgrade 4 ft below final grade	100%	1,000 sf

6.6 UTILITY TRENCH BACKFILL

All utility trenches in building areas must be backfilled and compacted in the manner specified above for structural fill. It may be necessary to reduce the lift thickness to 4 to 6 inches to achieve compaction using hand-operated equipment. Due to the potential of moisture migration through the utility trenches, we recommend that all trenches be filled and compacted on the day they are opened. Future moisture migration through the trenches should be prevented by protecting and sealing the trenches. The backfill should be sandy clays or lean clays placed and compacted in accordance with the recommendations in the "Site Preparation" section of this report. Utility trench fill placement shall be monitored and confirmed by the geotechnical engineer.

6.7 LANDSCAPING AND DRAINAGE CONSIDERATIONS

The potential for soil moisture fluctuations within building area subgrades should be minimized in order to reduce the potential of subgrade movement. Site grading should include positive drainage away from buildings and pavements. Ponding water adjacent to buildings and pavements will result in

soil moisture increases and subsequent degradation and/or heave of the soils. Trees can develop large root systems which can draw water from subgrade soils, resulting in subsequent shrinkage of the soils. Frequent irrigation of landscaping poses a risk of saturating and softening soils below foundations, which could result in settlement or heave and premature failure.

6.8 WET WEATHER CONSTRUCTION

Cooler temperatures and shorter days during the winter season significantly reduce the capacity to dry out wet clayey soils. Additionally, excessive movement of construction equipment across the site during wet weather will result in ruts, which will collect rainwater, prolonging the time required to dry the subgrade soils.

During rainy periods, additional effort will be required to properly prepare the site and establish/maintain an acceptable subgrade. The difficulty will increase in areas where clay or silty soils are exposed at the subgrade elevation. Grading contractors typically postpone grading operations during wet weather to wait for conditions that are more favorable. Contractors can typically disk or aerate the upper soils to promote drying during intermittent periods of favorable weather. When deadlines restrict postponement of grading operations, additional measures, such as undercutting and replacing saturated soils or chemical stabilization, can be utilized to facilitate placement of additional fill material.

Very loose and very soft/or unstable surficial silty or clayey soils may be encountered across the project site during wet weather or high-water table levels. Very soft and/or unstable materials also may be present in unexplored areas of the site. Soft and/or unstable soils should be undercut and recompacted in lifts or stabilized. The project geotechnical engineer should observe these operations.

These design recommendations have been developed on the basis of the previously described project characteristics and subsurface conditions encountered. If there are any changes in the project criteria, the geotechnical engineer should be retained to perform a review to determine if any modifications to the recommendations will be required. The findings of such a review should be presented in a supplemental report. If additional investigation is needed during construction, the geotechnical engineer should be retained to perform the additional services.

6.9 CHEMICAL TREATMENT

Cement may be considered to treat overly saturated soils for this site in lieu of removal and replacement. A minimum of 4 to 10 percent by weight may be necessary to stabilize the saturated soils. Cement stabilization should be

conducted in general accordance with Section 303 of the “Louisiana Standard Specifications for Roads and Bridges” (LaDOTD) 2016 edition and Type I Portland cement should be used. After chemical treatment, the first layer of structural fill should be placed in a relatively uniform horizontal lift on the stripped subgrade. The geotechnical engineer shall be retained to observe these operations.

The subgrade or stabilized soil should be compacted to at least 98 percent of the Standard Proctor maximum dry density, as determined by ASTM Designation D698, and should be compacted within the range of 1 percentage points below to 3 percentage points above the optimum moisture content value. The compacted treated soil shall be tested by a representative of the geotechnical engineer. After soil treatment, the first layer of structural fill should be placed in a relatively uniform horizontal lift on the stripped and proof-rolled subgrade.

6.10 SOIL SHRINK SWELL POTENTIAL

Boring P-1 and P-2 encountered fat clay at shallow depths. Poor drainage and water infiltration to the foundation soils for an extended period of time can be detrimental to the floor slab and foundation. Excessive wetting of soil (due to accumulation of water), or excessive drying (**due to presence of large trees and plant beds immediately adjacent to the building, etc.**) could possibly result in greater PVR values than those estimated herein, as the moisture variations could occur down to deeper depths; or the moisture variations can be greater than those inherently assumed by the methods mentioned above. We recommend that the moisture-related problems be corrected immediately as they can be detrimental to the foundation and floor slab.

Excessive movement can be minimized if customary measures are taken to minimize moisture variations beneath the structure, in order to preclude loss of shear strength of foundation soils. It is important to minimize the possibility of moisture content changes by considering the following precautions:

- Direct surface runoff away from the structures by sloping the subgrade away from the slabs and building footprint.
- Extend paving or other impervious coverings, such as sidewalks, to the slab's edges.
- Excessive drying of near surface soils in the floor and pavement slabs should be minimized during construction.
- Extend downspouts so that the discharge is at least 8 feet from the slab.

- Elevate the building pads with fill.
- Locate and operate the landscape irrigation system to minimize moisture impact on foundation and floor slabs.
- After installation of the irrigation system, pressure test the system and repair any leaks.
- If shrubs or bushes are placed next to the structures, an impervious membrane should be used to separate the slabs from the shrubs to limit any infiltration of water under the slab. The minimum distance between a tree and the slabs should be about one-half (1/2) the expected mature height of the tree.
- Use controlled compacted lean clay cohesive structural fill to limit perched water above the natural fat clay.

The following design recommendations have been developed on the basis of the previously described project characteristics and the subsurface conditions encountered. If there are any changes in these project criteria, including project location on the site, a review must be made by DRGeo to determine if any modifications in the recommendations will be required. The findings of such a review may be presented in a supplemental report.

7.0 FOUNDATION RECOMMENDATIONS

A site grading plan was not provided at the time this report was prepared. However, based on the adjacent structures we estimate the final grade elevation to be approximately 317 feet. At the gully area on the site over excavation shall be required up to 4 feet and undercut under the building shall be up to 4 feet. Fill in the gully area may be in excess of 11 feet.

The scope of our investigation is limited to a shallow foundation system. In the general area of the building, DRGeoES recommend undercutting a minimum of 4 feet in the building (Hanger) footprint plus an additional 5 feet outside the footprint on all sides and backfill with minimum 4 to 10 feet of select fill as described above.

7.1 SHALLOW FOUNDATION RECOMMENDATIONS

For dry and unsaturated conditions, a shallow foundation system may be used at this site for lightly loaded structures with tolerance of movement about 1 inch. If a more stringent tolerance is required than a deep foundation system may be used. We understand that fill shall be required to bring the site to grade. The building area shall be undercut a minimum of 4 feet throughout from the natural grade and 5 feet outside the building footprint. The exposed subgrade shall be scarified to a minimum of 12 inches, proof rolled and recompacted to 98% of standard proctor in the

upper 4 feet and 100% below 4 feet. The fill in the gully area may be as deep as 11 feet. The footprint shall be checked for soft zones and these zones should be removed and replaced with select fill. A minimum of 4 feet of select fill shall be placed under the footprint of the buildings. The foundation elements of the structure's spread footings for columns should bear in compacted select fill at least 30 inches below the finish grade. Continuous and turn down footings should bear at least 24 inches below the finish grade in compacted fill.

Based on the anticipated loads and the results of our field exploration and laboratory analysis, the vertical building loads may be supported by shallow footings if our recommendations are followed. Spread footings (max 3 feet) for columns and strip footings (max 2 feet wide) for walls may be designed for a maximum net allowable soil bearing pressure of 2,500 psf and 2,000 psf, respectively based on dead load plus design live load. Also, consideration should be taken for uplift.

We estimate the maximum foundation settlement to be approximately one (1) inch. Differential settlement is estimated to be up to $\frac{3}{4}$ inch. While settlement of this magnitude is generally considered tolerable for structures of the type proposed, **the design of any masonry or brick walls shall include provisions for liberally spaced control joints to minimize the effects of cosmetic cracking.** Based on the conditions encountered at the site, a post tension foundation system or a stiffened reinforced concrete foundation system should be considered for this structure.

The following items should be considered during the preparation of construction documents and foundation installation:

- The geotechnical engineer or his representative shall be retained to observe the exposed bearing surface prior to fill placement. He should observe fill placement for the entire section and foundation concrete placement in order to verify that the conditions anticipated from the subsurface exploration are encountered. Any unsuitable bearing materials that are found should be removed and replaced with select fill in accordance with the referenced report. The geotechnical engineer should be contacted for additional recommendations if needed.
- Even though computed footing dimensions may be less, column footings should be more than 24-inches wide, and strip footings should be at least 18-inches wide. These dimensions facilitate hand cleaning of the foundation bearing surfaces disturbed by the excavation process and the placement of reinforcing steel. They also reduce the potential for localized punching shear failure.
- The foundations should be excavated to bear in the compacted select fill subgrade at least 24-inches below finished exterior grades as described above.

- Wherever possible, the foundation concrete should be placed “neat,” using the sides of the excavations as forms. Excavation shall be kept clean and cleaned and mucked out if water is allowed to settle in the trenches. Where this is not possible, the excavations created by forming the foundations must be backfilled with suitable structural fill and properly compacted. The building pad should be sloped to drain away from the building foundations.
- All bearing surfaces must be free of soft or loose soil prior to placing concrete.
- Concrete should be placed the same day the excavation is completed; and bearing materials should be verified by the geotechnical engineer’s representative. Bearing capacities should be confirmed in the open footings using DCP testing in accordance with ASTM D6951. If the excavation is left open for an extended period, or if the bearing surface is disturbed after the initial observation, then the bearing surface should be re-evaluated prior to concrete placement.
- Water should not be allowed to pond in the excavation prior to the concrete placement or above the concrete after the foundation is completed. Therefore, measures should be taken to direct water away from the foundation.

8.0 FLOOR SLABS

Soil supported floor slab should be supported on a minimum of 4 feet of stable approved select fill. Fill should be compacted to 98 percent of standard proctor in the upper 4 feet and 100 percent below 4 feet. Depth was determined from the existing ground surface at the time of the investigation. The exposed subgrade should be scarified, and recompacted prior to fill placement.

Proof-rolling, as discussed earlier in the report, should be accomplished to identify, and remove any soft or unstable soils from the floor slab area prior to fill placement and/or floor slab construction. The site should be prepared as presented in the “Site Preparation” section of this report. The floor slab should have an adequate number of joints to reduce the cracking that could result from any differential movement.

Positive drainage away from the structure is required during and after construction to reduce the potential for ponding of water around structures, as well as infiltration of surface run-off water below the floor system. The project geotechnical engineer representative should observe the operations.

8.1 SUBGRADE REHABILITATION

Often, floor slabs are not constructed for an extended period after the mass grading is complete. The subgrade soils often become disturbed during the period between mass grading and construction of surface improvements. The amount (and depth) of disturbance will vary with soil type, weather conditions, construction traffic, and drainage.

The geotechnical engineer or his representative should be retained to evaluate the subgrade soil during final grading and slab construction. The purpose of the recommended evaluation is to verify that the subgrade is suitable to receive floor slabs. Note that rehabilitation may include wetting, mixing, and recompact of the subgrade.

9.0 CONSTRUCTION MONITORING

The recommendations presented in this report are based on information obtained from test borings. Field verification of site conditions is an essential part of the services provided by the geotechnical consultant. The geotechnical engineer shall be retained to confirm the provided recommendations and to make periodic visits to the site during site grading and foundation installation. If any variances from the described conditions are encountered, the geotechnical engineer of record should be notified.

10.0 LIMITATIONS

The analyses, conclusions, and recommendations presented in this report are based upon the preceding project information and the results of the investigation. The data collected is representative of the locations tested. Variations are likely to occur at other locations throughout the site.

This report has been prepared in accordance with generally accepted standards of geotechnical engineering practice. No other warranty is expressed or implied.

11.0 CLOSING

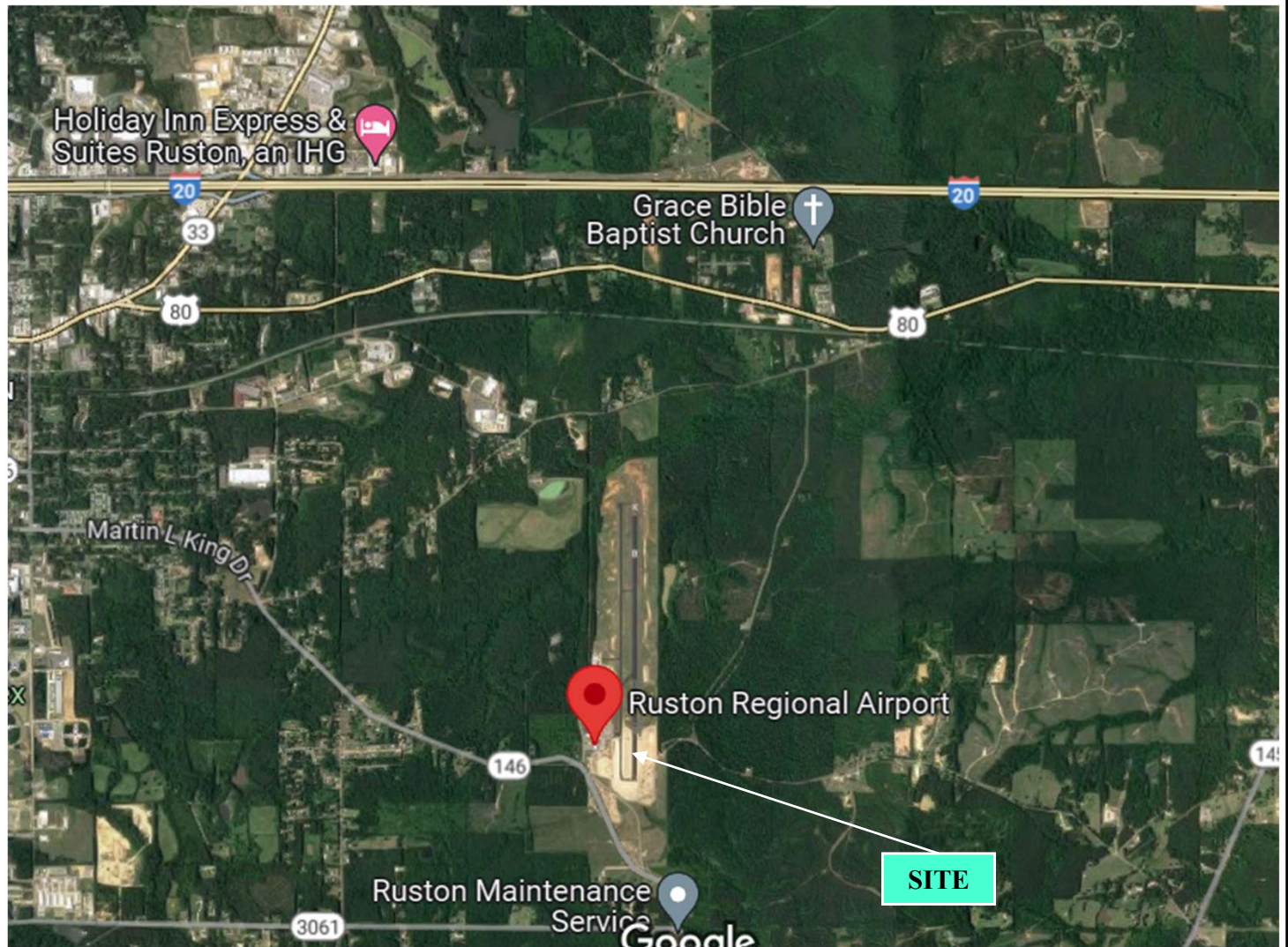
This report was prepared for KSA and their design team for specific application to this project and no other project. The information in this report is not transferable. This report shall not be used for a different development on the same property without first being evaluated by the engineer. The recommendations in this report were based on the information obtained from our field exploration, laboratory analysis, and engineering judgment regarding conditions between borings. It will be necessary to confirm the anticipated subsurface conditions during site grading and pavement installation.



This report is intended for use during design and preparation of specifications and may not address all conditions at the site during construction. Contractors reviewing this information should acknowledge that this document is for design information only.

An article published by the Association of Engineering Firms Practicing in the Geosciences (ASFE), titled *Important Information about Your Geotechnical Report*, has been included in the Appendix. We encourage all individuals to become familiar with the article.

APPENDIX



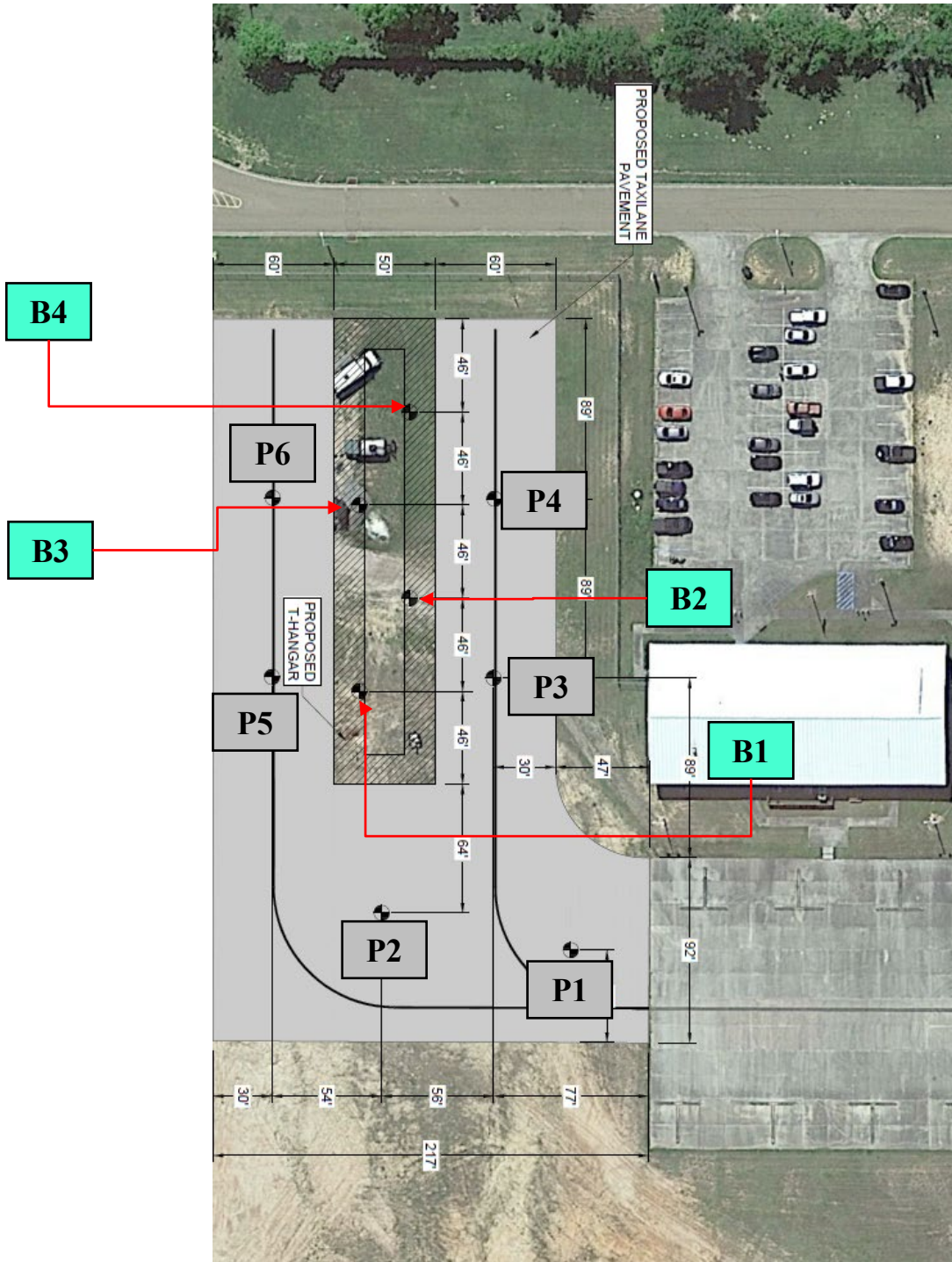
Source: Site Map provided by Client.
VICINITY MAP



RUSTON REGIONAL
AIRPORT HANGER &
TAXILANE
RUSTON, LA

Scale: NTS

Project Number: DRGeoES 23090G



Pavement

HANGER



Source: Site Map provided by Client.
Estimated Boring Location -----



RUSTON AIRPORT

Scale: NTS

Project Number: DRGeoES 23090G

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Email: contactus@drgeosciences.com

BORING NUMBER B1

PAGE 1 OF 1

CLIENT KSA
PROJECT NUMBER 23090G
DATE STARTED 10/4/23 COMPLETED 10/4/23
DRILLING CONTRACTOR Dave Rambaran Geosciences, LLC
DRILLING METHOD Drill rig
LOGGED BY PB CHECKED BY DRR
NOTES _____

PROJECT NAME RUSTON REGIONAL AIRPORT HANGER & TAXILANE
PROJECT LOCATION RUSTON, LA
GROUND ELEVATION _____ HOLE SIZE 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None Encountered
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0													
		Sandy Silty Clay (CL-ML); VERY STIFF, Tan	SS 1		9-8-7 (15)			9					
		VERY STIFF, Tan	SS 2		7-9-7 (16)		95	7			22	8	72
5		FIRM, Brown Grey	SS 3		4-3-2 (5)			11					
		Clayey Sand (SC); MEDIUM DENSE, Tan Grey	SS 4		6-7-8 (15)			11					
		MEDIUM DENSE, Red Grey	SS 5		4-6-8 (14)		98	13			33	13	
10													
		MEDIUM DENSE, Red Grey	SS 6		3-4-8 (12)			23					36
15													
		Silty Sand (SM); LOOSE, Tan Red	SS 7		3-4-5 (9)			23					
20													
		LOOSE, Tan Red	SS 8		3-2-2 (4)		85	22					26
25													

Bottom of borehole at 25.0 feet.

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BORING NUMBER B2

PAGE 1 OF 1

CLIENT KSA
PROJECT NUMBER 23090G
DATE STARTED 10/4/23 COMPLETED 10/4/23
DRILLING CONTRACTOR Dave Rambaran Geosciences, LLC
DRILLING METHOD Drill rig
LOGGED BY PB CHECKED BY DRR
NOTES _____

PROJECT NAME RUSTON REGIONAL AIRPORT HANGER & TAXILANE
PROJECT LOCATION RUSTON, LA
GROUND ELEVATION _____ HOLE SIZE 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0.0		Clayey Sand (SC); MEDIUM DENSE, Tan	SS 1		18-18-12 (30)		102	6					
2.5		MEDIUM DENSE, Tan Grey	SS 2		5-5-6 (11)			12					38
5.0		MEDIUM DENSE, Tan Grey	SS 3		4-5-5 (10)			18					
7.5		MEDIUM DENSE, Red Grey	SS 4		5-8-13 (21)		99	20			49	23	
10.0		MEDIUM DENSE, Red Grey	SS 5		6-8-11 (19)			12					34
12.5		MEDIUM DENSE, Tan Red	SS 6		5-6-6 (12)			22					
15.0													

Bottom of borehole at 15.0 feet.

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BORING NUMBER B3

PAGE 1 OF 1

CLIENT KSA PROJECT NAME RUSTON REGIONAL AIRPORT HANGER & TAXILANE
PROJECT NUMBER 23090G PROJECT LOCATION RUSTON, LA
DATE STARTED 10/4/23 COMPLETED 10/4/23 GROUND ELEVATION _____ HOLE SIZE 4 inches
DRILLING CONTRACTOR Dave Rambaran Geosciences, LLC GROUND WATER LEVELS:
DRILLING METHOD Drill rig AT TIME OF DRILLING --- None Encountered
LOGGED BY PB CHECKED BY DRR AT END OF DRILLING ---
NOTES _____ AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0.0		Clayey Sand (SC); MEDIUM DENSE, Red	SS 1		6-5-5 (10)			11					
2.5		MEDIUM DENSE, Tan Grey	SS 2		6-8-8 (16)		98	9					27
5.0		MEDIUM DENSE, Tan	SS 3		6-8-12 (20)			8					
7.5		Sandy Clay (CL); STIFF, Grey Red	SS 4		5-6-8 (14)			16					
10.0		VERY STIFF, Red Grey	SS 5		6-10-11 (21)		90	13			31	15	54
12.5		STIFF, Red Grey	SS 6		5-6-8 (14)			13					
15.0													

Bottom of borehole at 15.0 feet.

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BORING NUMBER B4

PAGE 1 OF 1

CLIENT KSA
PROJECT NUMBER 23090G
DATE STARTED 10/4/23 COMPLETED 10/4/23
DRILLING CONTRACTOR Dave Rambaran Geosciences, LLC
DRILLING METHOD Drill rig
LOGGED BY PB CHECKED BY DRR
NOTES _____

PROJECT NAME RUSTON REGIONAL AIRPORT HANGER & TAXILANE
PROJECT LOCATION RUSTON, LA
GROUND ELEVATION _____ HOLE SIZE 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None Encountered
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0		Silty Sand (SM); MEDIUM DENSE, Tan Red	SS 1		5-6-8 (14)		102	9					40
		Clayey Sand (SC); MEDIUM DENSE. Tan	SS 2		10-10-9 (19)			6					
5		MEDIUM DENSE. Tan	SS 3		6-6-8 (14)		102	7					44
		MEDIUM DENSE. Red Grey	SS 4		6-8-9 (17)			13					
		MEDIUM DENSE. Red Grey	SS 5		7-8-11 (19)			13					31
10													
		MEDIUM DENSE. Red Grey	SS 6		4-4-6 (10)		99	18			34	13	
15													
		MEDIUM DENSE. Tan	SS 7		4-4-6 (10)			18					
20													
		Silty Sand (SM); LOOSE, Tan	SS 8		3-4-5 (9)		98	24					26
25													

Bottom of borehole at 25.0 feet.

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PAGE 1 OF 1

CLIENT	KSA	PROJECT NAME	RUSTON REGIONAL AIRPORT HANGER & TAXILANE			
PROJECT NUMBER	23090G	PROJECT LOCATION	RUSTON, LA			
DATE STARTED	10/4/23	COMPLETED	10/4/23	GROUND ELEVATION	HOLE SIZE	4 inches
DRILLING CONTRACTOR	Dave Rambaran Geosciences, LLC					
DRILLING METHOD	Drill rig					
LOGGED BY	PB	CHECKED BY	DRR			
NOTES						
		GROUND WATER LEVELS:				
		AT TIME OF DRILLING			--- None Encountered	
		AT END OF DRILLING			---	
		AFTER DRILLING			---	

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0.0		Clayey Sand (SC); MEDIUM DENSE, Red	SS 1		10-10-12 (22)		98	9			31	10	
2.5		MEDIUM DENSE, Red Grey	SS 2		7-9-9 (18)			13					
5.0		Sandy Fat Clay (CH); VERY STIFF, Red	SS 3		7-8-9 (17)			11					
7.5		STIFF, Red	SS 4		3-4-5 (9)		90	17					53
10.0		STIFF, Red	SS 5		3-5-5 (10)			13					

Bottom of borehole at 10.0 feet.

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PAGE 1 OF 1

CLIENT KSA
PROJECT NUMBER 23090G
DATE STARTED 10/4/23 COMPLETED 10/4/23
DRILLING CONTRACTOR Dave Rambaran Geosciences, LLC
DRILLING METHOD Drill rig
LOGGED BY PB CHECKED BY DRR
NOTES _____

PROJECT NAME RUSTON REGIONAL AIRPORT HANGER & TAXILANE
PROJECT LOCATION RUSTON, LA
GROUND ELEVATION _____ HOLE SIZE 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None Encountered
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0.0		Clayey Sand(SC); MEDIUM DENSE, Tan	SS 1		10-7-7 (14)			9					49
2.5		LOOSE, Tan	SS 2		4-3-3 (6)		95	13					
5.0		Sandy Fat Clay (CH); FIRM, Red Grey	SS 3		3-2-3 (5)			22					
7.5		Stiff, Red Grey	SS 4		3-3-5 (8)		90	22			58	33	
10.0		Stiff, Red Grey	SS 5		4-6-5 (11)			27					

Bottom of borehole at 10.0 feet.

COPY DMCP LOG WITH N VALUE FOR LA - COMPANY TEMPLATE FOR PROJECT.GDT - 11/22/23 11:51 - C:\USERS\ANARIDROPBOX\PROJECT FOLDER 2023\23090G RUSTON REGIONAL AIRPORT HANGER & TAXILANE RUSTON



DRGeoES, LLC
9053 Mansfield Rd, Suite A
Shreveport, LA - 71118
Telephone: 318-671-1760
Email: contactus@drgeosciences.com

BORING NUMBER P3

PAGE 1 OF 1

CLIENT KSA
PROJECT NUMBER 23090G
DATE STARTED 10/4/23 COMPLETED 10/4/23
DRILLING CONTRACTOR Dave Rambaran Geosciences, LLC
DRILLING METHOD Drill rig
LOGGED BY PB CHECKED BY DRR
NOTES _____

PROJECT NAME RUSTON REGIONAL AIRPORT HANGER & TAXILANE
PROJECT LOCATION RUSTON, LA
GROUND ELEVATION _____ HOLE SIZE 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING ---
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0.0		Sandy Clay (CL); VERY STIFF, Tan	SS 1		11-13-9 (22)			7			28	10	
2.5		FIRM, Tan	SS 2		3-2-2 (4)		90	14					58
5.0		FIRM, Tan Grey	SS 3		3-3-2 (5)			23					
7.5		Clayey Sand (SC); MEDIUM DENSE, Tan Grey	SS 4		7-7-8 (15)			23			47	23	44
10.0		LOOSE, Red	SS 5		3-4-5 (9)		85	24					

Bottom of borehole at 10.0 feet.

COPY DMCP LOG WITH N VALUE FOR LA - COMPANY TEMPLATE FOR PROJECT.GDT - 11/22/23 11:51 - C:\USERS\ANAR\DROPBOX\PC\OLD DROPBOX COPIED\DRGEOES\PROJECT FOLDER 2023\23090G RUSTON REGIONAL AIRPORT HANGER & TAXILANE RUSTON



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BORING NUMBER P4

PAGE 1 OF 1

CLIENT KSA
PROJECT NUMBER 23090G
DATE STARTED 10/4/23 COMPLETED 10/4/23
DRILLING CONTRACTOR Dave Rambaran Geosciences, LLC
DRILLING METHOD Drill rig
LOGGED BY PB CHECKED BY DRR
NOTES _____

PROJECT NAME RUSTON REGIONAL AIRPORT HANGER & TAXILANE
PROJECT LOCATION RUSTON, LA
GROUND ELEVATION _____ HOLE SIZE 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None Encountered
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0.0		Sandy Clay (CL); STIFF, Brown	SS 1		5-5-3 (8)			10					
2.5		FIRM, Red Grey	SS 2		2-3-3 (6)		90	23			44	22	
5.0		STIFF, Tan Grey	SS 3		2-4-5 (9)			23					61
7.5		Clayey Sand(SC); MEDIUM DENSE, Tan Red	SS 4		4-6-9 (15)		85	22					
10.0		LOOSE, Tan Red	SS 5		2-2-3 (5)			25			39	15	37

Bottom of borehole at 10.0 feet.

COPY DMCP LOG WITH N VALUE FOR LA - COMPANY TEMPLATE FOR PROJECT.GDT - 11/22/23 11:51 - C:\USERS\ANARIDROPBOX\PC\OLD DROPBOX COPIED\DRGeoES\PROJECT FOLDER 2023\23090G RUSTON REGIONAL AIRPORT HANGER & TAXILANE RUSTON



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BORING NUMBER P5

PAGE 1 OF 1

CLIENT KSA
PROJECT NUMBER 23090G
DATE STARTED 10/4/23 COMPLETED 10/4/23
DRILLING CONTRACTOR Dave Rambaran Geosciences, LLC
DRILLING METHOD Drill rig
LOGGED BY PB CHECKED BY DRR
NOTES _____

PROJECT NAME RUSTON REGIONAL AIRPORT HANGER & TAXILANE
PROJECT LOCATION RUSTON, LA
GROUND ELEVATION _____ HOLE SIZE 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None Encountered
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0.0		Silty Sand (SM); MEDIUM DENSE, Tan	SS 1		18-16-11 (27)			3					
2.5		LOOSE, Tan Grey	SS 2		4-4-3 (7)		80	8					32
5.0		LOOSE, Red Grey	SS 3		3-3-2 (5)			14					
7.5		Clayey Sand (SC); MEDIUM DENSE, Red Grey	SS 4		5-7-8 (15)		98	21			46	21	
10.0		MEDIUM DENSE, Red Grey	SS 5		3-6-8 (14)			22					39

Bottom of borehole at 10.0 feet.

COPY DMCP LOG WITH N VALUE FOR LA - COMPANY TEMPLATE FOR PROJECT.GDT - 11/22/23 11:51 - C:\USERS\ANAR\DROPBOX\PROJECT FOLDER 2023\23090G RUSTON REGIONAL AIRPORT HANGER & TAXILANE RUSTON



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BORING NUMBER P6

PAGE 1 OF 1

CLIENT KSA
PROJECT NUMBER 23090G
DATE STARTED 10/4/23 COMPLETED 10/4/23
DRILLING CONTRACTOR Dave Rambaran Geosciences, LLC
DRILLING METHOD Drill rig
LOGGED BY PB CHECKED BY DRR
NOTES _____

PROJECT NAME RUSTON REGIONAL AIRPORT HANGER & TAXILANE
PROJECT LOCATION RUSTON, LA
GROUND ELEVATION _____ HOLE SIZE 4 inches
GROUND WATER LEVELS:
AT TIME OF DRILLING --- None Encountered
AT END OF DRILLING ---
AFTER DRILLING ---

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	TORVANE Su (ksf)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	% CL	% ML	ATTERBERG LIMITS		FINES CONTENT (%)
											LIQUID LIMIT	PLASTICITY INDEX	
0.0		Silty Clayey Sand (CL-ML); MEDIUM DENSE, Tan	SS 1		7-7-5 (12)			9					
2.5		MEDIUM DENSE, Tan	SS 2		6-12-9 (21)		98	4			18	4	44
5.0		MEDIUM DENSE, Tan	SS 3		7-8-7 (15)			8					
7.5		Clayey Sand (SC); MEDIUM DENSE, Tan Grey	SS 4		10-11-11 (22)			11					38
10.0		MEDIUM DENSE, Red Grey	SS 5		6-6-9 (15)		98	17			44	19	

Bottom of borehole at 10.0 feet.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

CBR - PI and SPT Relationship P-1

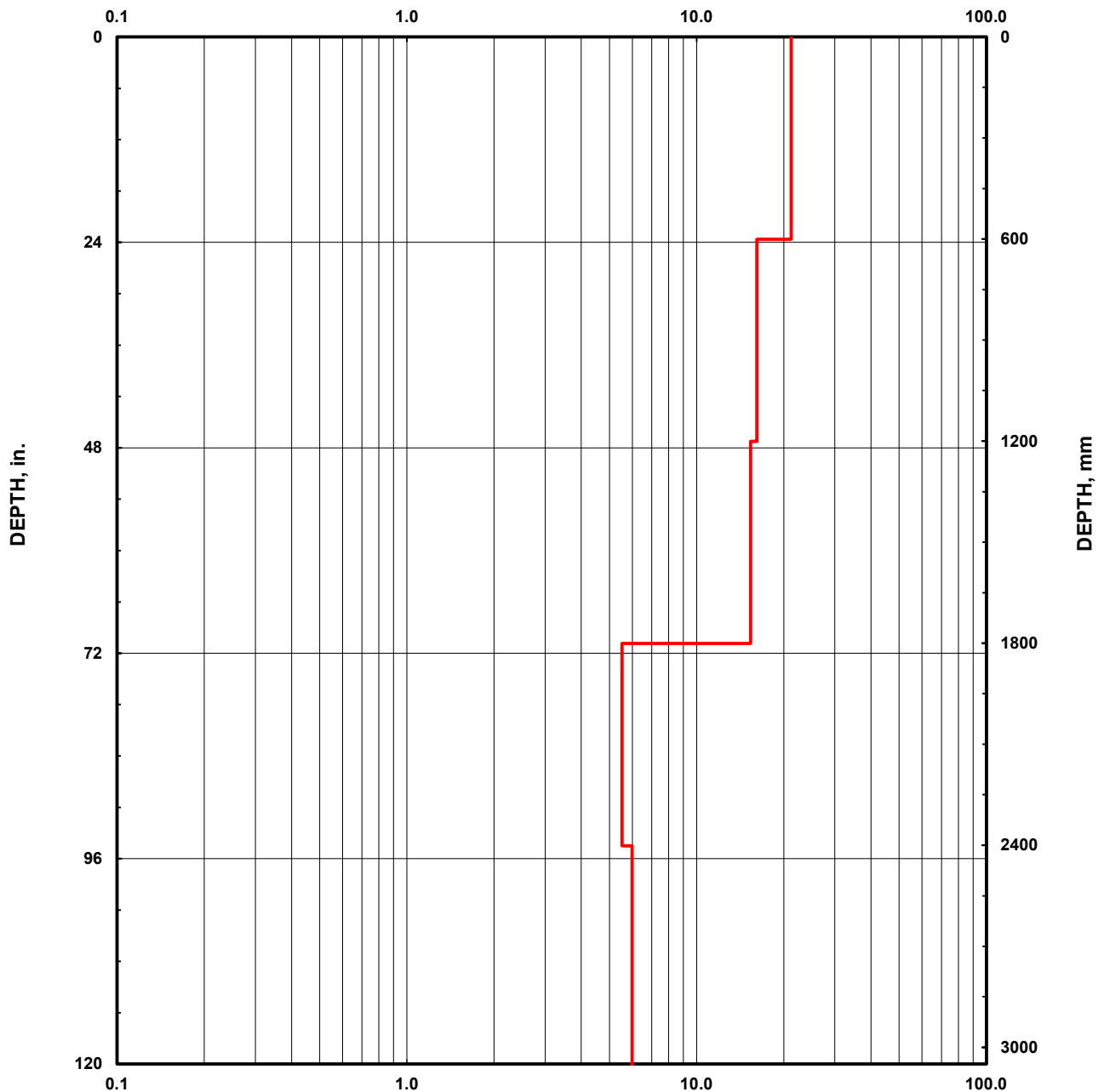
Project: Ruston Regional Airport Hanger and Taxiway
Location: Ruston, LA

Date: November 14, 2023
Soil Type(s): CL



Soil Type
☐ CH
☒ CL
☐ All other soils

CBR



CBR - PI and SPT Relationship P-2

Project: Ruston Regional Airport Hanger and Taxilane

Location: Ruston, LA

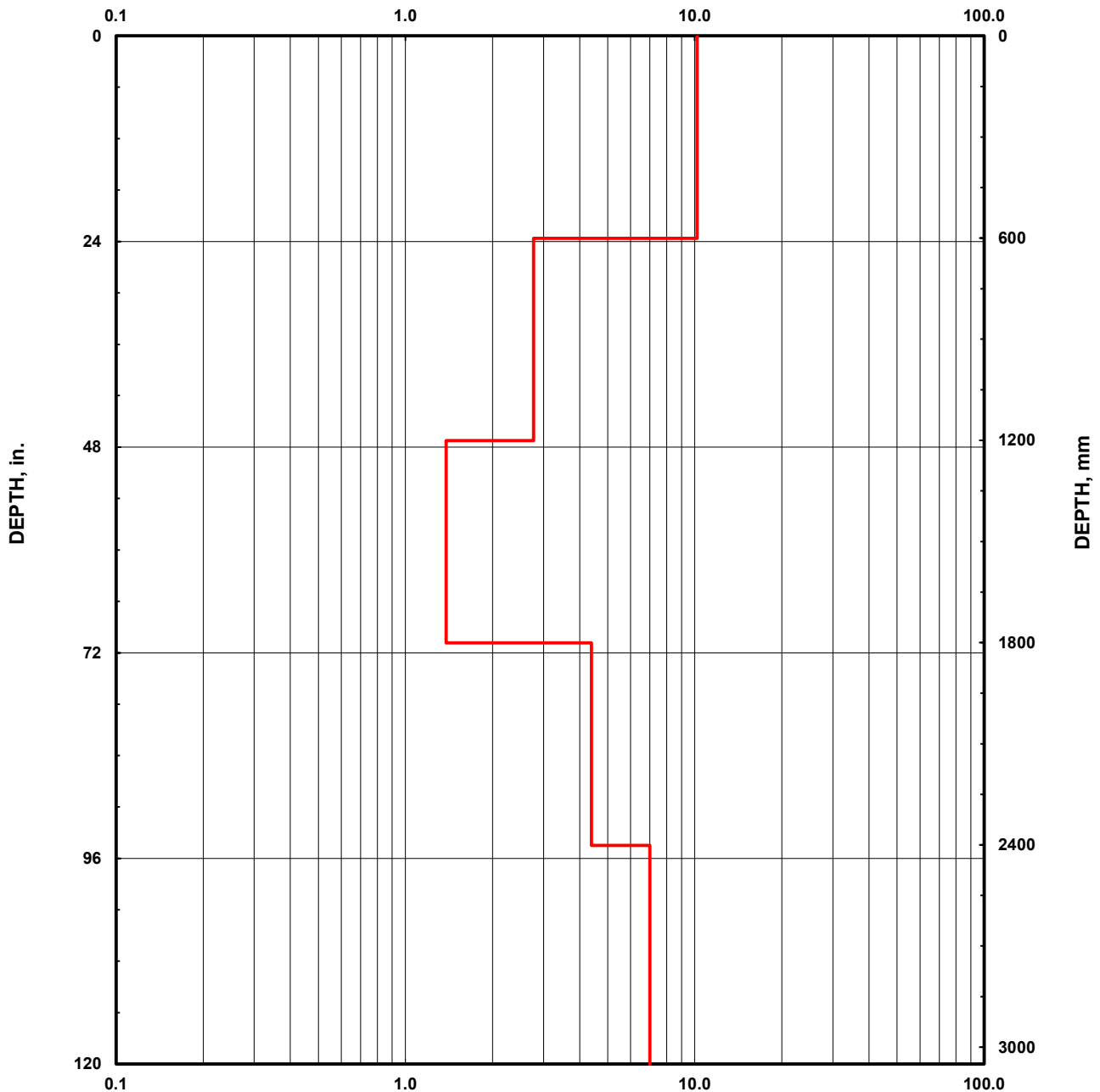


Date: November 14, 2023

Soil Type(s): CL

- Soil Type
- ☐ CH
 - ☒ CL
 - ☐ All other soils

CBR



CBR - PI and SPT Relationship P-3

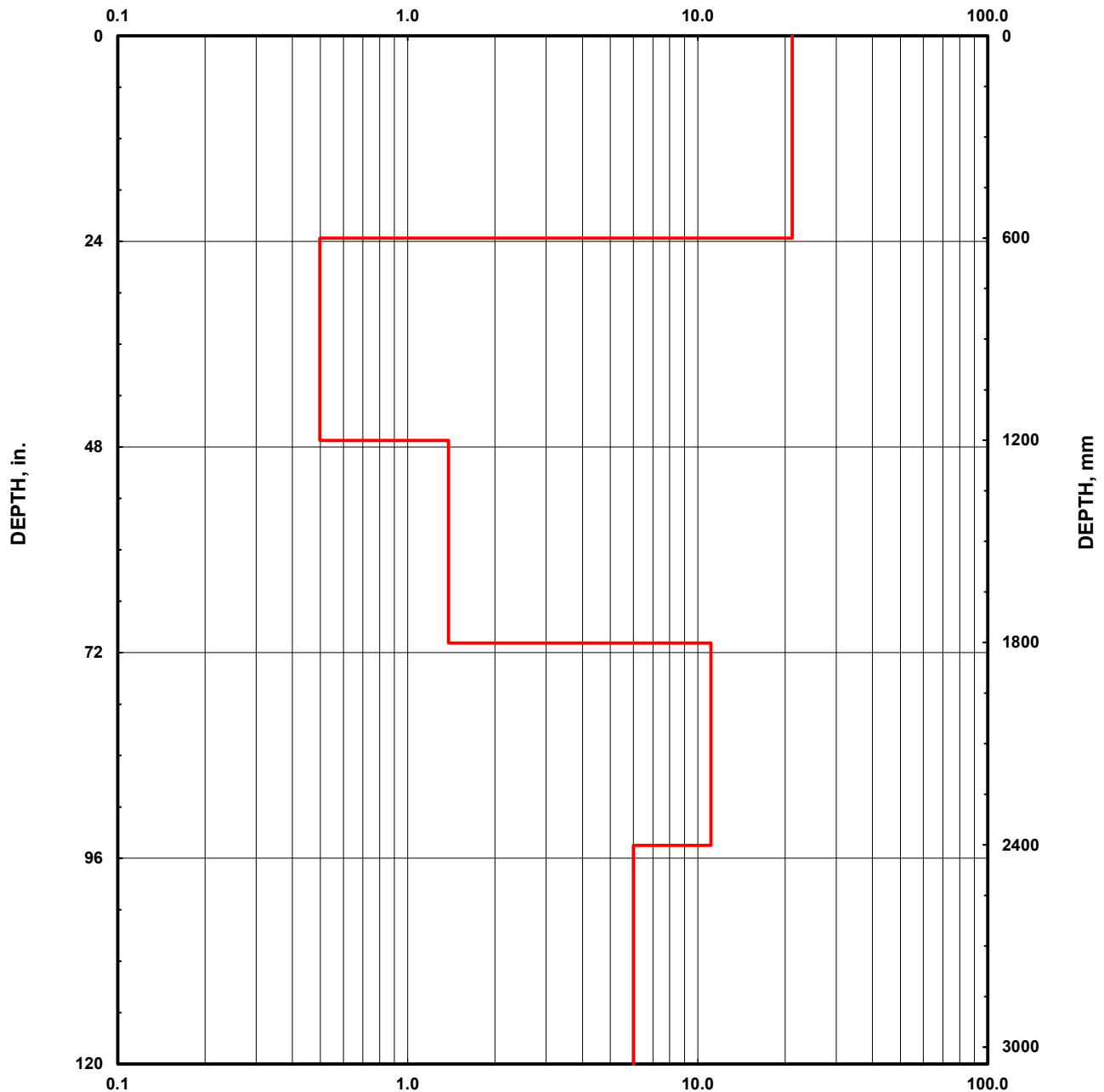
Project: Ruston Regional Airport Hanger and Taxilane
Location: Ruston, LA

Date: November 14, 2023
Soil Type(s): CL



Soil Type
☐ CH
☒ CL
☐ All other soils

CBR



CBR - PI and SPT Relationship P-4

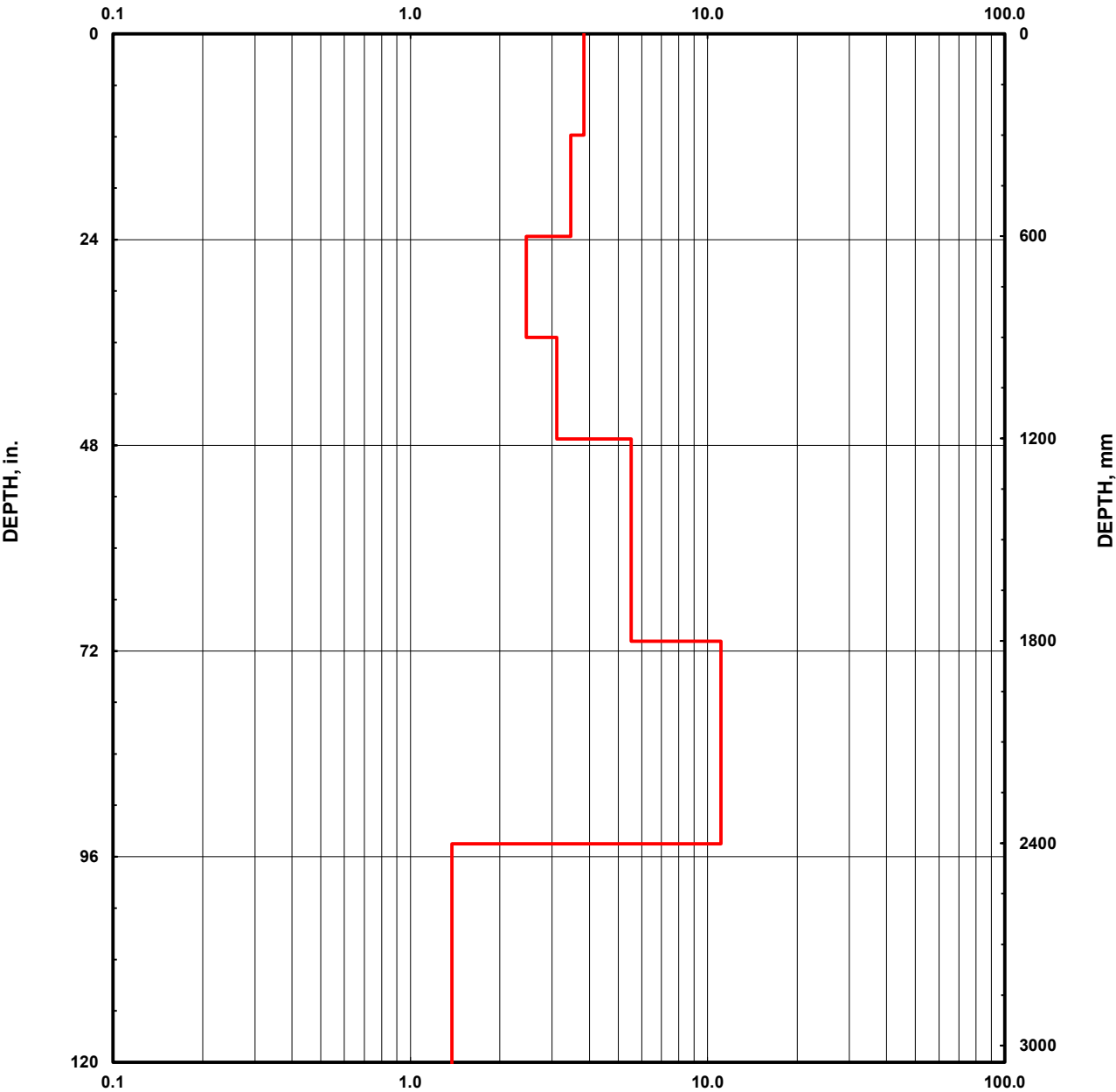
Project: Ruston Regional Airport Hanger and Taxilane
Location: Ruston, LA

Date: November 14, 2023
Soil Type(s): CL



Soil Type
☐ CH
☒ CL
☐ All other soils

CBR



CBR - PI and SPT Relationship P-5

Project: Ruston Regional Airport Hanger and Taxilane

Location: Ruston, LA

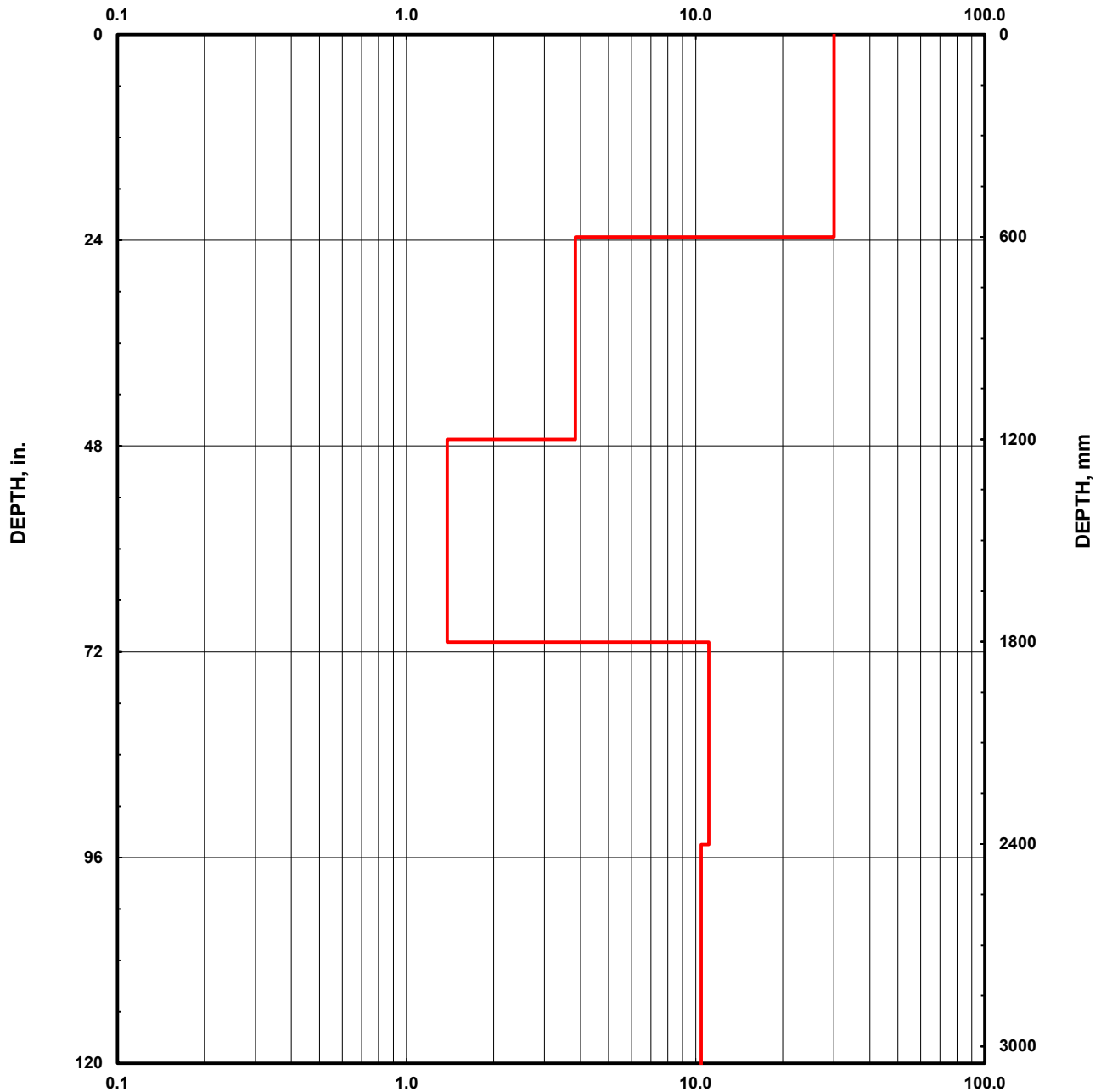


Date: November 14, 2023

Soil Type(s): CL

- Soil Type
- ☐ CH
 - ☒ CL
 - ☐ All other soils

CBR



CBR - PI and SPT Relationship P-6

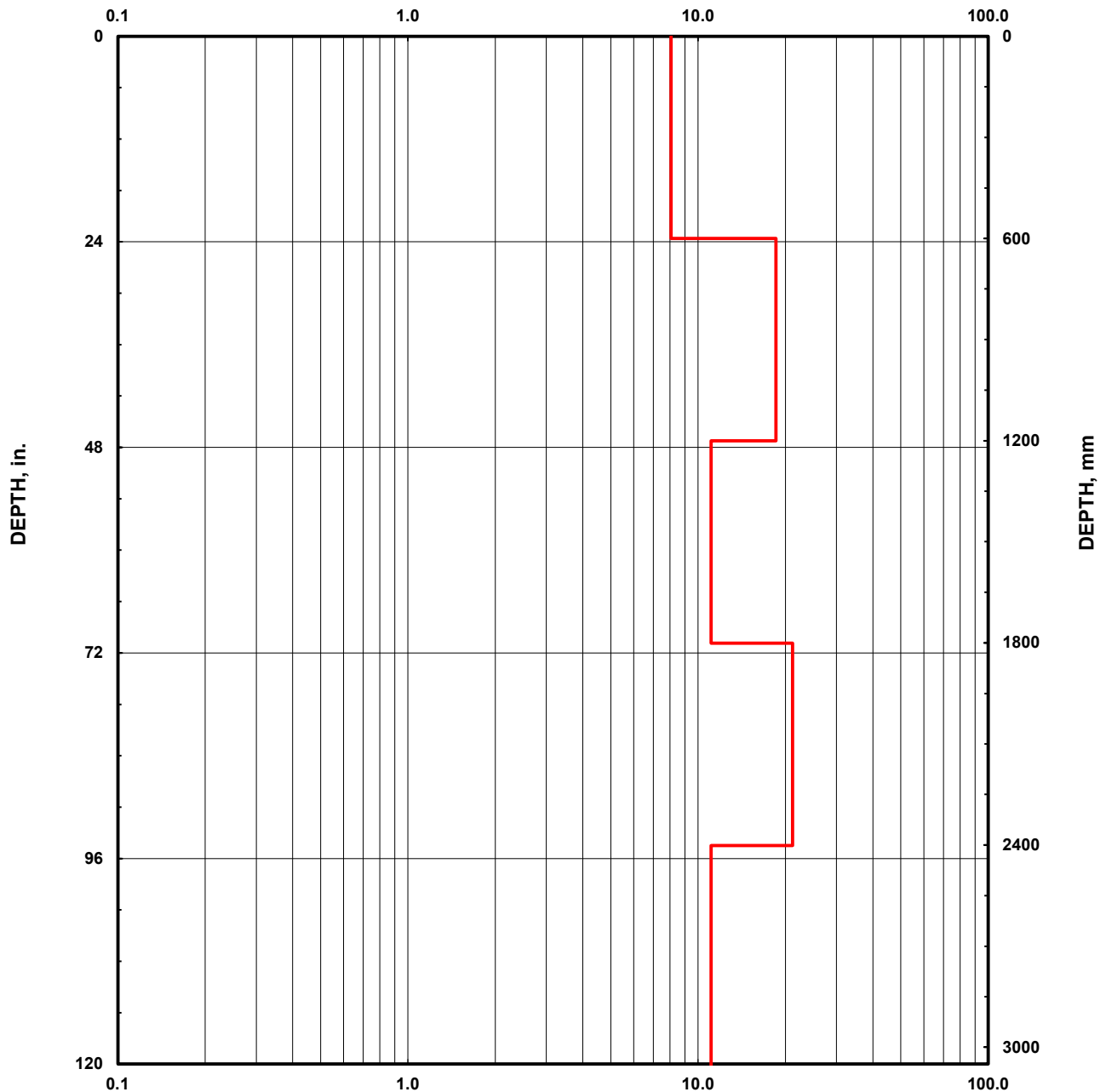
Project: Ruston Regional Airport Hanger and Taxiway
Location: Ruston, LA

Date: November 14, 2023
Soil Type(s): CL



Soil Type
☐ CH
☒ CL
☐ All other soils

CBR



LABORATORY ANALYSIS

After the soil samples are visually classified, specific samples are selected by the geotechnical engineer for laboratory analysis. The laboratory analysis may consist of moisture profiles of the natural moisture content, #200 washes, and Atterberg limits tests determinations. The results of the laboratory analysis are presented on the boring logs in the Appendix of this report. A brief description of the laboratory tests performed is provided in the following sections. Tests follow the general procedures of ASTM.

DESCRIPTION OF SOILS (VISUAL-MANUAL PROCEDURE) (ASTM D 2488)

The soil samples were visually examined by our engineer and soil descriptions were provided. Representative samples were then selected and tested in accordance with the aforementioned laboratory-testing program to determine soil classifications and engineering properties. This data was used to correlate our visual descriptions with the Unified Soil Classification System (USCS).

NATURAL MOISTURE CONTENT (ASTM D 2216)

Natural moisture content (M%) was determined on selected samples. The natural moisture content is the ratio, expressed as a percentage, of the weight of water in a given amount of soil to the weight of solid particles. The results are indicated on the boring logs and table in the Appendix of this report.

ATTERBERG LIMITS (ASTM D-4318)

The Atterberg Limits test was performed to evaluate the soil's plasticity characteristics. The soil Plasticity Index (PI) is representative of this characteristic and is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL). The Liquid Limit is the moisture content at which the soil will flow as a heavy viscous fluid. The Plastic Limit is the moisture content at which the soil is between "plastic" and the semi-solid stage. The Plasticity Index ($PI = LL - PL$) is a frequently used indicator for a soil's potential for volume change. Typically, a soil's potential for volume change increases with higher plasticity indices. The results of Atterberg limit testing are presented on the boring logs and summary table in the Appendix of this report.

WASH #200 TEST (ASTM D 422)

Grain-size tests were performed to determine the partial soil particle size distribution. The amount of material finer than the openings on the No. 200 sieve (0.074 mm) was determined by washing soil over the No. 200 sieve. The results of wash #200 tests are presented on the boring logs included in the Appendix of this report.

POCKET PENETROMETER

Pocket penetrometer tests were performed on cohesive soil samples. The pocket penetrometer provides a consistency classification and an estimate of the soil's unconfined compressive strength. The pocket penetrometer data are presented as Q_p in units of tons per square foot (tsf) on the logs in the Appendix.

STANDARD TEST METHOD FOR FIELD VANE SHEAR TEST ASTM D4767 – 04 ASTM D2573 - 08

The vane shear test is an in-situ geotechnical testing methods used to estimate the undrained shear strength of fully saturated clays without disturbance. The test is relatively simple, quick, and provides a cost effective way of estimating the soil shear strength; therefore, it is widely used in geotechnical investigations. Under special condition, the vane shear test can be also carried out in the laboratory on undisturbed soil specimens; however, the use of the vane shear test in in-situ testing is much more common.

IMPORTANT INFORMATION ABOUT YOUR

Geotechnical Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared solely for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. *And no one—not even you—should apply the report for any purpose or project except the one originally contemplated.*

Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

A Geotechnical Engineering Report Is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,

- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. *Do not rely on a geotechnical engineering report whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. Always contact the geotechnical engineer before applying the report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ—sometimes significantly—from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

A Report's Recommendations Are Not Final

Do not overrely on the construction recommendations included in your report. *Those recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual

subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.*

A Geotechnical Engineering Report Is Subject to Misinterpretation

Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Engineer's Logs

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

Give Contractors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure contractors have sufficient time to perform additional study.* Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

Read Responsibility Provisions Closely

Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that

have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations" many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely. Ask questions. Your geotechnical engineer should respond fully and frankly.*

Geoenvironmental Concerns Are Not Covered

The equipment, techniques, and personnel used to perform a *geoenvironmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. *Do not rely on an environmental report prepared for someone else.*

Obtain Professional Assistance To Deal with Mold Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, a number of mold prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; ***none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention. Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.***

DIVISION 3
CONCRETE

SECTION 03 10 00 – CONCRETE FORMWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Bidding and/or Negotiations Requirements,
- B. General Conditions of the Contract,
- C. Supplementary Conditions,
- D. Pertinent portions of sections in Division 1 of the Project Specifications and the Drawings shall apply to the Work of this Section.

1.2 WORK INCLUDED

- A. Scope: Provide all labor, materials, equipment and services necessary to provide the formwork, shoring, bracing, form removal, reshoring, etc., for cast-in-place concrete as indicated and/or specified.
- B. Work Included: Formwork for cast-in-place concrete, with shoring, bracing, anchorage and as follows:
 - 1. Openings for other affected work.
 - 2. Form accessories.
 - 3. Stripping forms.

1.3 RELATED WORK

- A. General: Following items of related work are included in other sections:
 - 1. Concrete reinforcement: Section 03 20 00
 - 2. Cast-in-place concrete: Section 03 30 00

1.4 SYSTEM DESCRIPTION

- A. General: Design, engineer, and construct formwork, shoring, and bracing to meet design and code requirements, so that resultant concrete conforms to required shapes, lines, and dimensions.

1.5 QUALITY ASSURANCE

- A. General: Construct and erect concrete formwork in accordance with ACI 301.

1.6 REFERENCES

- A. General: Construct concrete formwork in accordance with requirements of following standards:
 - 1. ACI 301 - Specifications for Structural Concrete for Buildings.
 - 2. ACI 347 - Recommended Practice for Concrete Formwork.
 - 3. PS-1 - Construction and Industrial Plywood.

1.7 SUBMITTALS

- A. General: Submit in accordance with requirements of Section 01 34 00 - "Submittals and Shop Drawings."
- B. Product Data: Submit manufacturer's technical data and application instructions.

1.8 SUBSTITUTIONS

- A. General: For products specified herein, Bids shall be based on products named in Project Manual, or on items which Engineer has designated as an "approved equal." A product not named in Project Manual or that is not approved by Engineer will only be acceptable when such product meets all other requirements of Project Specifications, including specifications of originally specified products' manufacturer as of date of Contract Documents.
- B. Requests for Substitutions: Requests for Engineers approval of a product as equal will not be considered unless sufficient data for evaluation is received by Engineer seven (7) days prior to the Bid Opening Date.
- C. Submittals: Submit a separate request for each Product in accordance with requirements of Section 01 64 00 - "Substitutions and Product Options."
- D. Note: Engineer's or Owner's approval of an item for a previous project does not constitute approval for this Project.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. General: Deliver, store, and handle materials in accordance with Section 01 60 00 - "Material and Equipment."
- B. Delivery: Deliver form materials in manufacturer's packaging with installation instructions.
- C. Storage: Store off ground in ventilated and protected area to prevent deterioration from moisture or damage.

PART 2 – PRODUCTS

2.1 FORM MATERIALS

- A. Plywood: PS-1, MDO grade, Class I.
- B. Steel: Minimum 16-gauge sheet, well matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- C. Void Forms: Corrugated fiberboard forms shall be provided as indicated on Drawings. Products shall be:
 - 1. Savway Carton Forms as manufactured by Savway Carton Forms, Inc., 700 North Wildwood, Irving, Texas 75017 phone: (214) 721-0238.
 - 2. Or approved equal.
- D. Void forms shall be designed to carry a minimum uniformly distributed top load of 1000 pounds per square foot when in dry condition.

2.2 FORMWORK ACCESSORIES

- A. Form Ties: Snap-off metal of fixed or adjustable length; cone type; inch break back dimension; free of defects that will leave holes no larger than one inch in diameter in concrete surface.
- B. Form Release Agent: Colorless material which will not stain concrete, absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete; manufactured by Symon's Corp. or approved equal.
- C. Fillets for Chamfered Corners: Wood strips type; 1 inch x 1 inch size.

- D. Flashing Reglets: 26-gauge galvanized steel or Rigid PVC; longest possible lengths; release tape sealed slots; with alignment splines for joints; securable to concrete formwork.
- E. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required; of strength and character to maintain formwork in place while placing concrete.

PART 3 - EXECUTION

3.1 INSPECTION

- A. General: Verify lines, levels, and measurements before proceeding with formwork.

3.2 PREPARATION

- A. Earth Forms: Hand-trim sides and bottoms of earth forms; remove loose dirt prior to placing concrete.
- B. General: Minimize form joints. Symmetrically align joints and make watertight to prevent leakage of mortar.
- C. Arrangement of Forms: Arrange and assemble formwork to permit dismantling and/or stripping, so that concrete is not damaged during its removal.
- D. Note: Arrange forms to allow stripping without removal of principal shores, where required to remain in place.

3.3 ERECTION

- A. General: Provide bracing to ensure stability of formwork. Strengthen formwork liable to be overstressed by construction loads.
- B. Camber: Camber slabs and beams to achieve ACI 301 tolerances.
- C. Clean-Out Ports: Provide temporary ports in formwork to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain. Close ports with tight fitting panels, flush with inside face of forms, neatly fitted so that joints will not be apparent in exposed concrete surfaces.
- D. Chamfer Strips: Provide chamfer strips on external corners of beams and columns.
- E. Note: Do not displace or damage vapor barrier placed by Section 03300 - "Cast-In-Place Concrete."
- F. Form Construction: Construct formwork to maintain tolerances in accordance with ACI 301.

3.4 APPLICATION OF FORM RELEASE AGENT

- A. General: Apply form release agent on formwork in accordance with manufacturer's instructions. Apply prior to placing reinforcing steel, anchoring devices, and embedded items.
- B. Note: Do not apply form release agent where concrete surfaces are scheduled to receive special finishes which may be affected by agent. Soak contact surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

3.5 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. General: Provide formed openings where required for work embedded in or passing through concrete.
- B. Coordination: Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.
- C. Installation: Install accessories in accordance with manufacturer's instructions, level and plumb. Ensure items are not disturbed during concrete placement.

3.6 FORM REMOVAL

- A. General: Do not remove forms until concrete has sufficient strength to support its own weight, and construction and design loads which may be imposed upon it. Remove load supporting forms when concrete has attained 75 percent of required 28-day compressive strength, provided construction is reshored.
- B. Reshorings: Reshore structural members due to design requirements or construction conditions to permit successive construction.
- C. Form Removal: Remove formwork progressively so no unbalanced loads are imposed on structure.
- D. Note: Do not damage concrete surfaces during form removal.
- E. Storage of Forms: Store reusable forms for exposed Engineerural concrete to prevent damage to contact surfaces.

3.7 CLEANING

- A. General: Clean forms to remove foreign matter as erection proceeds.
- B. Clean-Out Ports: Ensure that water and debris drain to exterior through clean-out ports.
- C. Note: During cold weather, remove ice and snow from forms. Do not use de-icing salts. Do not use water to clean out completed forms, unless formwork and construction proceed within heated enclosure. Use compressed air to remove foreign matter.

END OF SECTION 03 10 00

SECTION 03 20 00 – CONCRETE REINFORCEMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. General: Bidding and/or Negotiations Requirements, General Conditions of the Contract, Supplementary Conditions, pertinent portions of sections in Division 1 of the Project Specifications and the Drawings shall apply to the Work of this Section.

1.2 WORK INCLUDED

- A. Scope: Provide concrete reinforcement as indicated on Drawings and specified herein.

1.3 RELATED WORK

- A. General: Following items of related work are included in other sections:
- B. Concrete: Section 03 30 00

1.4 QUALITY ASSURANCE

- A. Standard and Industry Specifications: Any material or operation specified by reference to a published specification of a manufacturer, American Society for Test and Materials (ASTM), American Concrete Institute (ACI), Concrete Reinforcing Steel Institute (CRSI) or other published standards, shall comply with requirement of such current specifications or standards listed.
- B. Note: In case of conflict between referenced specification or standard and this Project Specification, the Project Specification shall govern.

1.5 SUBMITTALS

- A. General: Submit in accordance with requirements of Section 01 34 00 - "Submittals and Shop Drawings."
- B. Product Data: Submit manufacturer's product data with application and installation instructions for proprietary materials and items, including reinforcement and forming accessories.
- C. Reinforcement Shop Drawings: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of concrete reinforcement. Include special reinforcement required and openings through concrete structures.
- D. Note: Do not fabricate and/or deliver reinforcing materials until shop drawings are approved, unless such approval is waived in writing by Engineer.
- E. Marking System: Identify various shipping pieces, units or groups by an approved marking system.
- F. Test Reports: Furnish certified copies of tests on reinforcing materials to determine compliance with material requirements specified herein, if required by Engineer.

1.6 SUBSTITUTIONS

- A. General: For products specified herein, Bids shall be based on products named in Project Manual, or on items which Engineer has designated as an "approved equal." A product not named in Project Manual or that is not approved by Engineer will only be acceptable when such product meets all other requirements of Project Specifications, including specifications of originally specified products' manufacturer as of date of Contract Documents.
- B. Requests for Substitutions: Requests for Engineer's approval of a product as equal will not be considered unless sufficient data for evaluation is received by Engineer seven (7) days prior to the Bid Opening Date.
- C. Submittals: Submit a separate request for each Product in accordance with requirements of Section 01 64 00 - "Substitutions and Product Options."
- D. Note: Engineer's or Owner's approval of an item for a previous project does not constitute approval for this Project.

1.7 DELIVERY, STORAGE AND HANDLING

- A. Storage: Store reinforcing materials a minimum of 4 inches above ground level, under cover, protected from rusting, oil, grease and any other condition that might affect bonding. Protect reinforcing from distortion.
- B. Note: Do not cover with polyethylene or other plastic sheets if subject to direct sunlight.
- C. Handling: Remove from storage only reinforcement needed for immediate use.

PART 2 - PRODUCTS

2.1 REINFORCING MATERIALS

- A. Reinforcing Bars: ASTM A-615, Grade 60, deformed to ASTM A-305; clean and free of loose rust, mill scale and/or other coating that will reduce bonding.
- B. Steel Wire: ASTM A-82, plain, cold-drawn steel.
- C. Welded Wire Fabric: ASTM A-185, welded steel wire fabric.
- D. Supports for Reinforcement: Provide accessories and supports for reinforcement including bolsters, chairs, spacers and other devices required for spacing, supporting and fastening reinforcing bars and weld wire fabric in place. Use wire bar type supports complying with CRSI recommendations. Provide galvanized finish on accessories where legs will be exposed in finished concrete surface. Accessories fabricated from concrete, ceramic or plastic materials may be used if prior approval is obtained in writing from Engineer.

PART 3 - EXECUTION

3.1 REINFORCING MATERIAL PLACEMENT

- A. General: Conform to requirements of ACI 301 "Specifications for Structural Concrete for Buildings," and as specified herein, except as modified by General Notes on Structural Drawings.
- B. Cleaning: Reinforcing materials shall be cleaned of loose rust and mill scale, earth, ice and other materials which reduce or destroy bond with concrete.

- C. Placement: Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing with metal chairs, runners, bolsters, spacers, and hangers as required.
- D. Reinforcing Bars: Place reinforcement to obtain at least minimum coverage for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.
- E. Welded Wire Fabric: Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction. Support welded wire fabric with metal chairs, runners, bolsters, spacers, and hangers as required.

END OF SECTION 03 20 00

SECTION 03 30 00 – CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. General: Bidding and/or Negotiations Requirements, General Conditions of the Contract, Supplementary Conditions, pertinent portions of sections in Division 1 of the Project Specifications and the Drawings shall apply to the Work of this Section.

1.2 WORK INCLUDED

- A. Scope: Provide Cast-In-Place Concrete as indicated on Drawings and as specified herein.

1.3 RELATED WORK

- A. General: Following items of related work are included in other sections:
 - 1. Concrete testing: Section 01 41 00
 - 2. Concrete formwork: Section 03 10 00
 - 3. Concrete reinforcement: Section 03 20 00

1.4 QUALITY ASSURANCE

- A. Standard and Industry Specifications: Any material or operation specified by reference to a published specification of a manufacturer, American Society for Test and Materials (ASTM), American Concrete Institute (ACI), Concrete Reinforcing Steel Institute (CRSI) or other published standards, shall comply with requirement of such current specifications or standards listed.
- B. Note: In case of conflict between referenced specification or standard and this Project Specification, the Project Specification shall govern.

1.5 REFERENCES

- A. Reference Specifications: ACI 301-10, "Specification for Structural Concrete for Buildings." Referenced chapters in Part Two of this Section, in total or as supplemented and/or modified, are hereby made part of this specification as if bound herein.
- B. Note: Maintain one copy of said referenced specification at Project site.

1.6 SUBMITTALS

- A. Product Data: Submit manufacturer's product data with application and installation instructions for proprietary materials and items, including admixtures, patching compounds, waterstops, joint systems, curing compounds, dry-shake finish materials, and others as requested by Engineer. Submit in accordance with requirements of Section 01 34 00 - "Submittals and Shop Drawings."
- B. Design Mix: Submit required design mixes in accordance with requirements of Section 01 41 00 - "Testing Laboratory Services" and as specified herein.

1.7 SUBSTITUTIONS

- A. General: For products specified herein, Bids shall be based on products named in Project Manual, or on items which Engineer has designated as an "approved equal."

A product not named in Project Manual or that is not approved by Engineer will only be acceptable when such product meets all other requirements of Project Specifications, including specifications of originally specified products' manufacturer as of date of Contract Documents.

- B. Requests for Substitutions: Requests for Engineer's approval of a product as equal will not be considered unless sufficient data for evaluation is received by Engineer seven (7) days prior to the Bid Opening Date.
- C. Submittals: Submit a separate request for each Product in accordance with requirements of Section 01 64 00 - "Substitutions and Product Options."
- D. Note: Engineer's or Owner's approval of an item for a previous project does not constitute approval for this Project.

PART 2 - PRODUCTS

2.1 MATERIALS FOR CONCRETE

- A. Portland Cement: ASTM C-150, Type 1. Use one brand of cement throughout Project, unless otherwise acceptable to Engineer.
- B. Aggregates: Shall be as follows:
 - 1. Fine Aggregate: Sand, ASTM C-33
 - 2. Coarse Aggregate: Gravel, ASTM C-33, uniformly graded between 1 inch and No. 4 sieve unless otherwise specified herein.
- C. Water: Fresh, clean and drinkable (potable).
- D. Admixtures: Shall be as follows:
 - 1. Air-Entraining Admixture: ASTM C-260
 - 2. Water-Reducing Admixture: ASTM C-494, containing no calcium chloride.
 - 3. Note: Calcium Chloride not permitted.

2.2 PROPORTIONING

- A. General: Contractor shall submit for Engineer's approval proposed design mix for each class of concrete (28-day strength) required by Contract Documents.
- B. Proportion Method: Contractor option; subject to prior approval:
 - 1. Trial mix; reference ACI 301-10; article 3.8.
 - 2. Previous field experience; reference ACI 301-10; article 3.9.
- C. Concrete Trial Mix: Reference ACI 301-10; article 3.8 and as follows:

Concrete Strength Class	Minimum Cement Content Per Yard
1. 3000 PSI 5 bag + admixtures	
2. 4000 PSI 6 bag + admixtures	
- D. Previous Field Experience: Reference ACI 301-10, article 3.9 and as follows:
 - 1. Contractor shall submit complete data substantiating plant mix proposed for Engineer's review and approval prior to bidding.
 - 2. Data shall include following:
 - a. Mix proportions.
 - b. Not less than thirty current test results.
 - c. Standard deviation calculations.
 - 3. If quality control test cylinders indicated that actual job concrete is not performing as per data submitted, Engineer reserves the right to increase cement content of job concrete at no expense to Owner.

- E. Slump Exceptions: Shall be as follows:
 - 1. Floor slabs on grade: 4 inches to 6 inches.
- F. Coarse Aggregates: Maximum size exceptions shall be as follows:
 - 1. 1-1/2 inch: footings, grade beams, piers, walls.
 - 2. 3/4 inch: slabs, pads, columns, beams.
- G. Admixtures: Use as indicated below:
 - 1. Air-Entraining Admixtures: Use air-entrainment admixture in all concrete exposed to weather.
 - 2. Water-Reducing Admixtures: Water-reducing-densifying admixture shall be used in all concrete mixes.
 - 3. Note: Admixtures shall be administered in strict accordance with manufacturer's written instructions.

2.3 JOINTS AND EMBEDDED ITEMS

- A. Joints: Refer to Structural Drawings for keying and dowel requirements.
- B. Bonding: Bond required only as specified in paragraphs 8.5.2 and 8.5.3.
- C. Expansion Joint Material: Resilient type, premolded bituminous impregnated fiberboard units complying with ASTM D-1751.
- D. Waterstops: Waterstops to be pre-formed plastic adhesive waterstops. Provide single component, self sealing plastic adhesive type which has been extruded into a "rope" form of approximate 1.0 sq. in. cross section and min. 36 in. length, and protected 2 sides by strippable papers. Provide manufacturers standard formulation which is non-oxidizing, non-evaporating, non-expanding, non-shrinking and which has water, chemical and saturated hydrogen sulfide resistant characteristics.
 - 1. Acceptable Manufacturers: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - a. "Synco-Flex" pre-formed plastic adhesive waterstop; Synco-Flex Products Inc.; or approved equal.
- E. Non-Shrink Grout: CRD-C 588, factory pre-mixed grout.
 - 1. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:
 - a. Type B, Metallic "Embeco 636", as made Master Buildings; "Ferrolith G", as made by Sonneborn-Contech; or "Ferrogrout", as made by L & M Const. Chemical Company.
 - b. Type D, Non-metallic "Masterflow 713", as made by Master Builders; "Sonogrout", as made by Sonneborn-Contech; "Five Star Grout", as made by U. S. Grout Company; or "Duragrout", as made by L & M Const. Chemical Company.

2.4 CURING COMPOUNDS

- A. Liquid Membrane-Forming Curing Compounds: Liquid type membrane-forming curing compound complying with ASTM C-309, Type I, Class A, unless other type acceptable to Engineer.

- B. Products: Floors indicated on Finish Schedule as troweled concrete with hardener shall receive two (2) coats of "Kure-N-Seal" as made by Sonneborn-Contech, "Hardtop" as made by Gifford-Hill, "Masterseal" as made by Master Builders or "Quad-Cure" by Symons.

PART 3 - EXECUTION

3.1 PRODUCTION OF CONCRETE

- A. No site mixed concrete is permitted.

3.2 PLACING CONCRETE

- A. Refer to ACI 301-10.

3.3 REPAIR OF SURFACE DEFECTS

- A. Refer to ACI 301-10.

3.4 FINISHING OF FORMED SURFACES

- A. Formed Concrete Finishes: Shall be as follows:
 - 1. Rough Form Finish: Concrete surfaces not exposed to view.
 - 2. Smooth Rubbed Finish: Concrete surfaces exposed to view.
 - 3. Scratched Finish: Concrete surfaces intended to receive applied cementitious applications such as plaster, stucco and/or cement plaster finish, refer to Finish Schedule on Drawings.

3.5 SLABS

- A. Vapor Barrier: Provide one layer of 6 mil. thick polyethylene vapor barrier under on-grade slabs. Edge laps to be a minimum of 6 inches. Fit vapor barrier tightly and tape material at all conduit, piping and other penetrations.
- B. Concrete Slab Finishes: Provide following slab finishes as indicated on the Drawings and specified herein.
- C. Wood Float Finish: For surfaces intended to receive roofing, waterproofing membranes, and/or sand bed terrazzo.
- D. Standard Steel Troweled Finish: Floors intended for interior walk surfaces or for application of finished floor coverings to be finished to Class B tolerance, 1/4 inch in 10'-0;" ground, patched, broom swept and ready to receive finished floor.
- E. Broom Finish: For sidewalks, exterior steel stair pan fill, truck docks, garage floors and ramps.

3.6 CURING AND PROTECTION

- A. Note: Liquid membrane curing is permitted.
- B. Scheduling: Apply first coat immediately after completion of concrete finishing. Apply second coat when final floor finishes are applied.

3.7 TESTING

- A. All required testing to be coordinated and paid for by Contractor. Testing Schedule is as follows:

1. Slump: ASTM C 143; one test at point of discharge for each day's pour of each type of concrete; additional tests when concrete consistency seems to have changed.
2. Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231, pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.
3. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg. F (4 deg. C) and below, when 80 deg. F (27 deg. C) and above, and one test for each set of compressive-strength specimens.
4. Compression Test Specimen: ASTM C 31; one test on each pour of concrete greater than 5 cubic yards; one additional test for every 50 cubic yards within a pour. One set of four standard cylinders for each compressive-strength test, unless otherwise directed. Mold and store cylinders for laboratory-cured test specimens except when field-cured test specimens are required.
5. When frequency of testing will provide fewer than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.
6. When total quantity of a given class of concrete is less than 50 cu. yd., Engineer may waive strength testing if adequate evidence of satisfactory strength is provided.
7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
8. Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength and no individual strength test result falls below specified compressive strength.
9. Test results will be reported in writing to Engineer, Structural Engineer, ready-mix producer, and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the Project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, compressive breaking strength, and type of break for both 7-day tests and 28-day tests.
10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.
11. Additional Tests: The testing agency will make additional tests of the in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Engineer. Testing agency may conduct tests to determine adequacy of concrete by cored cylinders with ASTM C 42, or by other methods as directed.

END OF SECTION 03 30 00

DIVISION 7

THERMAL & MOISTURE PROTECTION

SECTION 07 84 00
FIRESTOPPING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Firestopping perimeter of and penetrations through fire and smoke rated assemblies.

1.2 REFERENCES

- A. ASTM International (ASTM):
 - 1. E814 - Standard Test Method for Fire Tests of Through-Penetration Firestops.
 - 2. E1966 - Standard Test Method for Fire-Resistive Joint Systems.
- B. Underwriters Laboratories, Inc. (UL):
 - 1. 1479 - Fire Tests of Through-Penetration Firestops.
 - 2. 2079 - Fire Resistance of Building Joint Systems.

1.3 SYSTEM DESCRIPTION

- A. Provide continuous protection against passage of heat, fire, smoke, and gases at perimeter of and penetrations through rated assemblies.

1.4 SUBMITTALS

- A. Submittals for Review:
 - 1. Product Data:
 - a. Firestopping schedule; prepare in tabular format and identify:
 - 1) Type of assembly receiving firestop and required fire rating.
 - 2) Type of penetrating item.
 - 3) Proposed firestop system.
 - b. Include UL or equivalent details for each firestop system.
 - 2. Test Reports: Indicate conformance with ASTM E814, ASTM E1966, UL 1479, or UL 2079.
- B. Quality Control Submittals:
 - 1. Certificates of Compliance: Indicate conformance of installed systems with specified requirements.

1.5 QUALITY ASSURANCE

- A. Applicator Qualifications: Minimum 5 years documented experience in work of this Section.
- B. Firestopping: Fire resistance rating equivalent to adjacent construction; tested to ASTM E814, ASTM E1966, UL 1479, or UL 2079.
- C. Sealers: Maximum volatile organic compound (VOC) content as follows:
 - 1. Sealers: 250 grams per liter.
 - 2. Primers for non-porous substrates: 250 grams per liter.
 - 3. Primers for porous substrates: 775 grams per liter.
- D. Mockups:
 - 1. Provide mockup of each firestopping system.
 - 2. Locate where directed.
 - 3. Approved mockups may remain as part of the Work.
- E. Pre-Installation Conference:
 - 1. Convene at site 2 weeks prior to beginning work of this Section.

2. Attendance: Architect, Contractor, firestopping applicator, firestopping manufacturer's representative, and related trades.
3. Review and discuss: Contract Documents, fire rating requirements, manufacturer's literature, job conditions, scheduling, and other matters affecting application.
4. Tour representative areas of firestopping substrates; discuss substrate construction, related work, work conditions, materials compatibility, and protection after application.

1.6 PROJECT CONDITIONS

- A. Do not apply sealants, mortars, or putties when temperature of substrate material and surrounding air is below 40 degrees F or is anticipated to drop below that temperature within 24 hours after installation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 1. Hilti, Inc.
 2. 3M Fire Protective Products.
 3. Nelson Firestop Products.
 4. Specified Technologies, Inc.
 5. Tremco, Inc.
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Firestopping: One or more of the following:
 1. Silicone elastomer compound: Single or multiple components, low modulus, moisture curing silicone sealant.
 2. Ceramic sealant: Single component, moisture curing ceramic sealant.
 3. Intumescent sealant: Single component, water based intumescent sealant.
 4. Acrylic sealant: Single component acrylic sealant, suitable for painting.
 5. Putty: Single component ceramic fiber base putty or intumescent elastomer putty that expands on exposure to surface heat gain.
 6. Mortar: Hydraulic cementitious mortar.
 7. Pillows or blocks: Formed intumescent or mineral fiber pillows or blocks.
 8. Intumescent strips: Solvent free intumescent wrap strips.
 9. Mechanical devices: Incombustible fillers or silicone elastomer covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
 10. Cast-in-place devices: Containing intumescent material and smoke/water seals.

2.3 ACCESSORIES

- A. Forming and Damming Materials: As recommended by firestopping manufacturer for intended use.
 1. Permanent: Mineral fiber board, mineral fiber matting, or mineral fiber putty.
 2. Temporary: Plywood, particle board, or other.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prepare openings to receive firestopping as directed by manufacturer:
 1. Remove incidental and loose materials from penetration opening.
 2. Remove free liquids and oil from involved surfaces and penetration components.
 3. Install damming materials to accommodate and ensure proper thickness and fire rating requirements and provide containment during installation.
 4. Remove combustible materials and materials not intended for final penetration seal system.

3.2 INSTALLATION

- A. Install firestopping at perimeter of and penetrations through fire and smoke rated assemblies.
- B. Apply materials in accordance with manufacturer's instructions.
- C. Apply firestopping material in sufficient thickness to achieve required ratings.
- D. Compress fibered material to achieve a density of 40 percent of its uncompressed density.
- E. Place foamed material in layers to ensure homogenous density, filling cavities and spaces. Place sealant to completely seal junctions with adjacent dissimilar materials.
- F. Place intumescent coating in sufficient coats to achieve rating required.
- G. Remove dam material after firestopping material has cured.
- H. Finish exposed surfaces to smooth, flush appearance.

END OF SECTION 07 84 00

SECTION 07 92 00
JOINT SEALERS

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes joint sealers for the following locations:
1. Exterior joints in vertical surfaces and nontraffic horizontal surfaces as indicated below.
 - a. Control and expansion joints in cast-in-place concrete.
 - b. Control and expansion joints in unit masonry.
 - c. Joints between different materials listed above.
 - d. Perimeter joints between materials listed above and frames of doors and windows.
 - e. Other joints as indicated.
 2. Exterior joints in horizontal traffic surfaces as indicated below:
 - a. Control, expansion, and isolation joints in cast-in-place concrete slabs for floors and paving.
 - b. Tile control and expansion joints.
 - c. Joints between different materials listed above.
 - d. Other joints as indicated.
 3. Interior joints in vertical surfaces and horizontal nontraffic surfaces as indicated below:
 - a. Control and expansion joints on exposed interior surfaces of exterior walls.
 - b. Perimeter joints of exterior openings where indicated.
 - c. Tile control and expansion joints.
 - d. Perimeter joints between interior wall surfaces and frames of interior doors and windows, Perimeter joints of toilet fixtures.
 - e. Joints between cabinet surfaces and walls
 - f. Other joints as indicated.
 4. Interior joints in horizontal traffic surfaces as indicated below:
 - a. Control and expansion joints in cast-in-place concrete slabs.
 - b. Control and expansion joints in tile flooring.
 - c. Other joints as indicated.
- B. Sealing joints related to flashing and sheet metal for roofing is specified in Division-7 Section: "Flashing and Sheet Metal."
- C. Sealants for glazing purposes are specified in Division-8 Section "Glass and Glazing."
- D. Sealing concealed perimeter joints of gypsum drywall partitions to reduce sound transmission characteristics is specified in Division-9 Section "Gypsum Drywall."
- E. Sealing tile joints is specified in Division-9 Section "Tile."

1.2 SYSTEM PERFORMANCES

- A. Provide joint sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

1.3 SUBMITTALS

- A. Product Data from manufacturers for each joint sealer product required, including instructions for joint preparation and joint sealer application.
- B. Samples for Initial Selection Purposes: Manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available, for each product exposed to view.
- C. In regards to all materials requiring color selection, the User Agency shall sign/date color selection(s) with copy to FP&C prior to ordering materials. Colors must be from "standard" line of manufacturer's colors.

1.4 QUALITY ASSURANCE

- A. Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required.
- B. Environmental Reference Standards:
 - 1. South Coast Air Quality Management District (SCAQMD): Comply with requirements of Rule 1168 – Adhesive and Sealant Applications.
 - a. Adhesive VOC Content: 40 CFR 59, Subpart D (EPA Method 24).
 - 2. Green Seal Standard for Commercial Adhesives: Comply with requirements of GS-36 – Aerosol Adhesives
 - 3. Code of Federal Regulations (CFR)
 - a. 40 CFR, Part 59, Subpart D-2001: National Volatile Organic Compound Emission Standards for Architectural Coatings.
- C. Guarantee:
 - 1. The sealant guarantee shall be a Ten (10) Year from the date of acceptance of the project material and labor guarantee/warranty, furnished by the manufacturer of the materials.
 - 2. The contractor shall be a certified contractor approved by the waterproofing material manufacturer, to conduct necessary testing and inspections as required by the waterproofing material manufacturer to obtain said guarantee.
 - 3. The guarantee shall not require the Owner's signature to be effective, shall not be DL/pro-rated, nor state the manufacturer will not honor the warranty until the waterproofing contractor, the supplier, and/or the manufacturer have been paid in full. The sample form of the guarantee shall be delivered to the Owner, and said guarantee shall be approved by the Owner prior to any ordering of materials.
 - 4. The manufacturer's labor and material guarantee shall guarantee, at the manufacturer's own cost and expense, to make or cause to be made such re-application of, and to correct any and all faulty installations/applications. All riders or attachments noting changes to the original guarantee shall be so noted on the face of the original guarantee. Any legal action to be in the Nineteenth Judicial Court in and for the Parish of East Baton Rouge, State of Louisiana, and so noted in the guarantee/rider.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to Project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time, and mixing instructions for multi-component materials.
- B. Store and handle materials in compliance with manufacturers' recommendations to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

1.6 PROJECT CONDITIONS

- A. Environmental Conditions: Do not proceed with installation of joint sealers under the following conditions:
 - 1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturers.
 - 2. When joint substrates are wet due to rain, frost, condensation, or other causes.

- B. Joint Width Conditions: Do not proceed with installation of joint sealers where joint widths are less than allowed by joint sealer manufacturer for application indicated.
- C. Joint Substrate Conditions: Do not proceed with installation of joint sealers until contaminants capable of interfering with their adhesion are removed from joint substrates.

1.7 SEQUENCING AND SCHEDULING

- A. Sequence installation of joint sealers to occur not less than 21 nor more than 30 days after completion of waterproofing, unless otherwise indicated.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
- B. Colors: Provide color of exposed joint sealers indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

2.2 ELASTOMERIC JOINT SEALANTS (Exterior Use)

- A. Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those referenced for Type, Grade, Class, and Uses.
- B. One-Part Nonacid-Curing Silicone Sealant: Type S (single component), Grade NS (nonsag), Class 25, and complying with the following requirements for Uses and additional joint movement capability:
 - 1. Uses NT(nontraffic), M(multicomponent), G, A, and, as applicable to joint substrates indicated, O
 - 2. Additional capability, when tested for adhesion and cohesion under maximum cyclic movement per ASTM C 719, to withstand the following percentage changes in joint width as measured at time of application and remain in compliance with other requirements of ASTM C 920 for Uses indicated:
 - a. 35 percent movement in both extension and compression for a total of 70 percent movement.
- C. One-Part Mildew-Resistant Silicone Sealant: Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with fungicide; intended for sealing interior joints with nonporous substrates and subject to in-service exposure to conditions of high humidity and temperature extremes.
- D. Available Products: Subject to compliance with requirements, elastomeric sealants which may be incorporated in the Work include, but are not limited to, the following:
 - 1. One-Part Nonacid-Curing Silicone Sealant:
 - a. "Dow Corning 795"; Dow Corning Corp.
 - b. "Rhodorsil 6B"; Rhone-Poulenc Inc.
 - c. "Rhodorsil 70"; Rhone-Poulenc Inc.
 - d. "Omniseal"; Sonneborn Building Products Div., Rexnord Chemical Products Inc.
 - 2. One-Part Mildew-Resistant Silicone Sealant:
 - a. "Dow Corning 786"; Dow Corning Corp.
 - b. "SCS 1702 Sanitary"; General Electric Co.
 - c. "863 #345 White"; Pecora Corp.

- d. "Rhodorsil 6B White"; Rhone-Poulenc Inc.
 - e. "Proglaze White"; Tremco Corp.
 - f. "OmniPlus"; Sonneborn Building Products Div., Rexnord Chemical Products Inc.
3. One-Part Pourable Urethane Sealant for Use T (Traffic):
- a. "Chem-Calk 950"; Bostik Construction Products Div.
 - b. "Vulkem 45"; Mameco International, Inc.
 - c. "NR-201 Urexpan"; Pecora Corp.
 - d. "Sonolastic SL-1"; Sonneborn Building Products Div., Rexnord Chemical Products Inc.

2.3 LATEX JOINT SEALANTS (Interior use)

- A. Acrylic-Emulsion Sealant: Manufacturer's standard, one part, nonsag, mildew-resistant, acrylic-emulsion sealant complying with ASTM C 834, formulated to be paintable and recommended for exposed applications on interior and on protected exterior locations involving joint movement of not more than plus or minus 5 percent.
- B. Available Products: Subject to compliance with requirements, latex joint sealants which may be incorporated in the Work include, but are not limited to, the following:
 - 1. Acrylic-Emulsion Sealant:
 - a. "Chem-Calk 600"; Bostik Construction Products Div.
 - b. "AC-20"; Pecora Corp.
 - c. "Sonolac"; Sonneborn Building Products Div.; Rexnord Chemical Products, Inc.
 - d. "Tremco Acrylic Latex 834"; Tremco Inc.

2.4 MISCELLANEOUS JOINT SEALANTS

- A. Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

2.5 FIRE-RESISTANT JOINT SEALERS

- A. General: Provide manufacturer's standard fire-stopping sealant, with accessory materials, having fire-resistance ratings indicated as established by testing identical assemblies per ASTM E 814 by Underwriters Laboratory, Inc. or other testing and inspecting agency acceptable to authorities having jurisdiction.

2.6 JOINT SEALANT BACKING

- A. General: Provide sealant backings of material and type which are nonstaining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape as recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

2.7 MISCELLANEOUS MATERIALS

- A. Primer: Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealer-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Provide nonstaining, chemical cleaners of type which are acceptable to manufacturers of sealants and sealant backing materials, which are not harmful to

substrates and adjacent nonporous materials, and which do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.

- C. Masking Tape: Provide nonstaining, nonabsorbent type compatible with joint sealants and to surfaces adjacent to joints.
- D. Accessory Materials for Fire-Stopping Sealants: Provide forming, joint fillers, packing and other accessory materials required for installation of fire-stopping sealants as applicable to installation conditions indicated.

2.8 JOINT FILLERS FOR CONCRETE PAVING

- A. General: Provide joint fillers of thickness and widths indicated.
- B. Bituminous Fiber Joint Filler: Preformed strips of composition below, complying with ASTM D 1751:
 - 1. Asphalt saturated fiberboard.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine joints indicated to receive joint sealers, with Installer present, for compliance with requirements for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance. Do not proceed with installation of joint sealers until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following requirements:
 - 1. Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; old joint sealers; oil; grease; waterproofing; water repellants; water; surface dirt; and frost.
 - 2. Clean concrete, masonry, unglazed surfaces of ceramic tile and similar porous joint substrate surfaces, by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealers. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
 - 3. Remove laitance and form release agents from concrete.
 - 4. Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile; and other nonporous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.
- B. Joint Priming: Prime joint substrates where indicated or where recommended by joint sealer manufacturer based on preconstruction joint sealer-substrate tests or prior experience. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond, do not allow spillage or migration onto adjoining surfaces.
- C. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALERS

- A. General: Comply with joint sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

- B. Elastomeric Sealant Installation Standard: Comply with recommendations of ASTM C 962 for use of joint sealants as applicable to materials, applications and conditions indicated.
 - C. Latex Sealant Installation Standard: Comply with requirements of ASTM C 790 for use of latex sealants.
 - D. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.
 - E. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:
 - 1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant movement capability.
 - a. Do not leave gaps between ends of joint fillers.
 - b. Do not stretch, twist, puncture, or tear joint fillers.
 - c. Remove absorbent joint fillers which have become wet prior to sealant application and replace with dry material.
 - 2. Install bond breaker tape between sealants and joint fillers, compression seals, or back of joints where adhesion of sealant to surfaces at back of joints would result in sealant failure.
 - 3. Install compressible seals serving as sealant backings to comply with requirements indicated above for joint fillers.
 - F. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration, and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.
 - G. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
 - 1. Provide concave joint configuration per Figure 6A in ASTM C 962, unless otherwise indicated.
 - a. Use masking tape to protect adjacent surfaces of recessed tooled joints.
 - H. Installation of Fire-Stopping Sealant: Install sealant, including forming, packing, and other accessory materials to fill openings around mechanical and electrical services penetrating floors and walls to provide fire-stops with fire resistance ratings indicated for floor or wall assembly in which penetration occurs. Comply with installation requirements established by testing and inspecting agency.
- 3.4 CLEANING
- A. Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occur.
- 3.5 PROTECTION
- A. Protect joint sealers during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers immediately and installations with repaired areas indistinguishable from original work.

END OF SECTION 07 92 00

DIVISION 9

FINISHES

SECTION 09 29 00
GYPSUM BOARD

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes gypsum drywall and metal framing systems and accessories.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's descriptive literature indicating material composition, thickness, sizes and fire resistance.
- B. Certificates: Submit manufacturer's written certification that product meets specified requirements.

1.3 REFERENCES

- A. American Society for Testing Materials (ASTM):
 - 1. ASTM C36: Gypsum Wallboard.
 - 2. ASTM C475: Joint Treatment Materials for Gypsum Wallboard Construction.
 - 4. ASTM C840: Application and Finishing of Gypsum Board.

1.4 QUALITY ASSURANCE

- A. Fire-resistance ratings: Where applicable, provide materials and construction that are identical to those of assemblies whose fire-resistance ratings are indicated.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Deliver materials to the job site in manufacturer's original packaging, containers and bundles with manufacturer's brand name and identification intact and legible.
- B. Storage and handling: Store level and handle materials to protect against contact with damp and wet surfaces, exposure to weather, breakage and damage to edges. Provide air circulation under covering and around stacks of materials.
- C. Job site conditions that expose the gypsum board material to water or moisture should be avoided. Follow the gypsum board manufacturer's guidelines for the prevention of mold growth on gypsum board material during all phases of the construction.

1.6 WARRANTY

- A. Materials Warranty: Provide manufacturer's standard warranty covering materials for five years commencing on date of purchase.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Subject to compliance with the requirements, provide materials as manufactured by one of the following:
 - 1. Georgia-Pacific
 - 2. BPB America Inc.
 - 3. National Gypsum
 - 3. Temple-Inland
- B. Requests for substitutions will be considered in accordance with provisions of Section 01 25 00.

2.2 DRYWALL MATERIALS

- A. Gypsum Board: ASTM C840, 5/8" standard taper Firecode.
 - 1. Locations: Rated wall ceiling assemblies.
- B. Joint Compound: ASTM C475.
 - 1. Provide ready-mixed vinyl-type for interior work. Provide a single multi-purpose compound for three (3) courses of compound application.
- C. Accessories:
 - 1. Joint Tape: ASTM C475, perforated.
 - 2. Gypsum Board Fasteners: Type recommended by gypsum board manufacturing, except as otherwise indicated.
 - 3. Acoustical Sealant: Water-based, non-staining type, permanently elastic, recommended by gypsum board manufacturer.
 - 4. Trim Accessories: Provide manufacturer's standard metal trim accessories, of the beaded type with face flanges for concealment in joint compound except where semi-finishing or exposed type is indicated.

2.3 METAL SUPPORT MATERIALS

- A. Cold-Formed Non-Loadbearing Metal Framing:
 - 1. Studs, Runners: 4" -20 gauge and 6"-20 gauge at interior walls as noted. Studs spaced 16"o.c.
 - 3. Furring Channels: 16 gauge minimum unless noted otherwise.

2.4 ACCESSORIES

- A. Joint tape: 2" wide, 10x10 glass mesh tape.
- B. Joint compound: G-P Gypsum setting-type joint compound.
- C. Screws, metal framing:
 - 1. Type S-12, bugle head, self-tapping, rust-resistant, fine thread for heavy-steel gauge (12 to 22).
 - 2. Type S, bugle head, rust-resistant sharp point, fine thread for light-gauge metal framing or furring.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Do not bridge building expansion joints with support systems; frame both sides of joints with furring and other supports as indicated.
- B. Provide corner beads at external corners.
- C. Provide edge trim of the shape indicated where edge of gypsum board would otherwise be exposed or semi-exposed; L-type for tight abutment at edges, otherwise U-type except special kerfed-type where kerf is provided in adjoining work.
- D. Provide resilient slip-on-type PVC edge trim (semi-finishing) where indicated for juncture of walls and partitions with ceilings.

3.2 METAL FRAMING SYSTEMS

- A. Install steel studs with bottom and top runner tracks anchored to substrates. Isolate system from building structure to prevent transfer of loading and deflections into metal support system, both vertically and horizontally.
- B. Install supplementary framing, runners, furring, blocking and bracing at openings and terminations in gypsum drywall and where required for support of other work which cannot be adequately supported on gypsum board alone.

3.3 DRYWALL INSTALLATION

- A. Install gypsum boards in lengths and directions that will minimize number of end joints, and avoid end joints in central area of ceilings. Install boards with edges perpendicular to supports, with end joints staggered over supports, except where recommended in a different arrangement by manufacturer.
- B. Provide Unimast double-V- 2" control joints at spacing not to exceed 30 feet o.c. Install acoustical sealant at base of space, and apply trim accessory at face.
- C. Form "Floating" construction for gypsum boards at internal corners, except where special isolation or edge trim is indicated.
- D. Isolate drywall work from abutting structural and masonry work; provide edge trim and acoustical sealant as recommended by manufacturer.
- E. Screw gypsum board to metal supports. Provide number and spacing of fasteners as recommended by manufacturer.

3.4 FINISHING

- A. Drywall Finishing: Except as otherwise indicated, apply joint tape and joint compound at joints (both directions) between gypsum boards. Apply compound at accessory flanges, penetrations, fasteners heads and surface defects.
- B. Install compound in three (3) coats plus pre-fill of cracks where recommended by manufacturer's and after last two (2) coats.
- C. Provide a level 1 gypsum board finish (as defined by the Gypsum Association) where covered with metal panels.

END OF SECTION 09 29 00

DIVISION I0

SPECIALTIES

SECTION 10 44 13
FIRE EXTINGUISHERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes portable fire extinguishers and wall brackets.

1.2 REFERENCES

- A. ASTM International (ASTM) E814 - Standard Test Method for Fire Tests of Through-Penetration Firestops.
- B. National Fire Protection Association (NFPA) 10 - Portable Fire Extinguishers.
- C. Underwriters Laboratories (UL):
 - 1. 154 - Carbon Dioxide Fire Extinguishers.
 - 2. 299 - Dry Chemical Fire Extinguishers.
 - 3. 711 - Rating and Fire Testing of Fire Extinguishers.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Indicate locations and mounting heights.
 - 2. Product Data: Include data on extinguishers and brackets, operational features, materials, finishes, and anchorage.
- B. Closeout Submittals:
 - 1. Maintenance Data: Include test, refill, or recharge schedules and re-certification requirements.

1.4 QUALITY ASSURANCE

- A. Provide fire extinguishers complying with UL 711 and NFPA 10.
- B. Conform to applicable accessibility code for locating extinguishers.

1.5 PROJECT CONDITIONS

- A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Ansul Incorporated.
 - 2. JL Industries.
 - 3. Larsen's Mfg. Co.
 - 4. Potter Roemer.
- B. Substitutions: Under provisions of Division 01.

2.2 COMPONENTS

- A. Extinguishers: Multi-purpose dry chemical type, UL 299, cast steel tank, Class 4A:60B:C, 10 pound nominal capacity.

- B. Brackets: Formed steel, sized to accommodate extinguisher.

2.3 ACCESSORIES

- A. Mounting Hardware: Type best suited to application.

2.4 FINISHES

- A. Brackets: Baked enamel, color to be selected from manufacturer's full color range.
- B. Extinguishers: Baked enamel, red color.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install brackets in accordance with manufacturer's instructions.
- B. Set plumb, level, and rigid.
- C. Place an extinguisher in each bracket.

END OF SECTION 104413

DIVISION 13
SPECIAL CONSTRUCTION

SECTION 13 34 20
PRE-ENGINEERED METAL AIRCRAFT HANGARS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. This item shall consist of providing all labor, tools, equipment and materials for furnishing, installation, and erection of aircraft hangars on site as indicated on drawings. The items of work include, but are not limited to, the following: design of hangar foundations; construction of hangar foundations and subgrade, including additional excavation and embankment associated with the foundation design above and beyond what is shown in the plans; purchase and erection of pre-fabricated metal hangars including doors, hardware, and all other related accessories; purchase and installation of electrical devices; connection of all electrical utilities; and purchase and installation of all other accessories and utility connections as shown and indicated on plans.
- B. Construction of pre-engineered metal buildings and accessories for aircraft hangars as defined by the Construction Documents. Each metal building to have gabled roof and steel frame type construction, and be a completely integrated system according to specified dimensions and as shown on plans.
- C. Unless otherwise specified within this section, all aspects of the building system including design, details, materials, fabrication, quality criteria, tolerances, marking and identification, methods and procedures are governed by the building system manufacturer's standards.

1.2 BUILDING DESCRIPTION

- A. Building Type: Aircraft Hangar(s): 10-Unit Full Nested T-Hangar Multi-span (with two Maintenance bays as indicated on building floor plan), single gabled, rigid frame structure.
- B. Roof Slope: Min. 1:12 Max. 3:12. Provide 12" minimum overhang for bi-fold doors to shed water away from hangar doors.
- C. Minimum Eave Height: 14.5 feet, measured vertically from top of eave strut at sidewall steel line to base of sidewall frame column.
- D. Clear Door Opening(s): Nominal 42' w. X 12 feet high.
- E. Total Building Overall Dimensions: 231'-7" feet X 51'-7 feet. Tolerance to be within 6 inches
- F. T-Hangar Dimensions:
 - 1. Clear stall depth, minimum 32'-0"
 - 2. Clear wing stall depth, minimum 18'-0"
 - 3. Clear door height (open position), minimum 12'
 - 4. Clear tail stall width, minimum 21'

1.3 QUALITY ASSURANCE

- A. Codes and Standards:
 - 1. Use following where applicable in structural design:
 - a. AWS "Code of Welding in Building Construction" and "Specification for Welding Sheet Steel in Structures", latest edition.
 - b. MBMA "Recommended Design Practices Manual", latest edition and "Low-Rise Building Systems Manual", latest edition.
 - c. AISI "Specifications for the Design of Cold Formed Steel Structural Members", latest edition.
 - d. AISC "Steel Construction Manual" and "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings", latest edition (Manufacturer must be certified by AISC).
 - e. AAMA "Aluminum Construction Manual", latest edition.
 - f. AISC "Code of Standard Practice for Steel Buildings and Bridges", latest edition.
 - g. IBC "International Building Code", latest edition.
 - 2. Use following where applicable in other phases of design:

- a. Building Code and Regulations of other governing authorities having jurisdiction at project site.
- b. Structural Steel Painting Council (SSPC) Standards.
- c. Roofing system rating UL Classification 90.
- d. American Society for Testing and Materials (ASTM) Standards.
- e. NFPA 409 as applicable to authority having jurisdiction.
- f. NEC "National Electrical Code", latest edition, as amended.

B. Design Loads:

- 1. Basic Design Loads: To include live and wind, in addition to dead loads and including loading imposed by mechanical units. Consider all other design loads, whether they are of static, dynamic, or kinetic nature, as auxiliary loads. Design must conform to the minimum requirements of the IBC, latest edition. Vertical live loads and wind loads with doors closed shall be as prescribed by the IBC, latest edition.
- 2. Tributary reductions as allowed by IBC, latest edition
- 3. Crane Loads: No crane loads are required.
- 4. Horizontal deflections shall be limited to "L"/180 under full wind load, or as required by hangar door manufacturer's requirements for operation.
- 5. No moments to be transferred into foundation.

1.4 SUBMITTALS

A. General: Comply with requirements of City of Ruston codes and ordinances and all State adopted Codes and Amendments.

B. Shop Drawings and Calculations:

- 1. Within six weeks of award of bid, the Contractor shall furnish Engineer with completed erection drawings and calculations for approval.
 - a. Design Calculations and Erection Drawings: Prepared by, or under direct supervision of Professional Engineer licensed to practice in the State of Louisiana with all drawings and calculations bearing this seal.
 - b. Show each type structural building frame required and their locations within structure; details of anchor bolt settings; sidewall, endwall, and roof framing; diagonal bracing and location within structure; roof insulation and types; longitudinal and transverse cross sections; details of curbs, roof jacks, and items penetrating roof; canopy framing and details; trim, liner panels, wall and roof coverings, and all accessory items; materials; finishes; construction and installation details, and other pertinent information required for proper and complete installation.
 - c. All shop drawings shall be approved by Engineer before purchase or start of fabrication.

C. Material and Color Samples:

- 1. For each specific material sample requested by Engineer, submit in size, form, and number as directed.
- 2. Submit duplicate color sample sets showing full color range available, for selection purposes. The Sponsor will select the roof, wall panel, and trim colors.

D. Product Data: Two (2) copies of manufacturer's specifications, and descriptive literature.

E. Certification: Two (2) copies of written certification prepared and signed and sealed by a Professional Engineer licensed to practice in the State of Louisiana attesting that building design meets specified loading requirements, requirements of codes and authorities having jurisdiction at project site, and other requirements as specified.

F. Contractor shall provide record drawings to the Architect after final acceptance of the project.

1.5 PRODUCT HANDLING:

A. Deliver and store pre-fabricated components, sheets, panels and other manufactured items so that they will not be damaged or deformed. Any damaged or deformed building materials shall be replaced by the Contractor for no additional cost or project time.

- B. Stack materials on platforms or pallets, covered with tarpaulins or other approved weathertight ventilated covering
- C. Store metal sheets and panels so water accumulation will drain freely. Do not store sheets and panels in contact with other materials that might cause staining.
- D. Store materials to be readily accessible, with factory makings visible. Contractor shall be responsible for the stored materials until building systems can be erected. Contractor may elect to store materials in bonded warehouse, but at no additional cost.
- E. Include installation and maintenance instructions.
- F. No payments shall be made to the Contractor for deposits or down payments for pre-fabricated buildings, components, or equipment. Payment will be made for materials that are delivered and stored satisfactorily on the project site in accordance with these specifications.

1.6 WARRANTIES

Item	Materials & Workmanship	Panel Finish
Panel Rib Roof	3 years	20 years
Panel Rib Walls	3 years	20 years
Materials, Components & Accessories	3 years	20 years
Provide any other manufacturer's standard or extended warranties.		

PART 2 - PRODUCTS

2.1 PRE-ENGINEERED HANGAR STRUCTURES

- A. Basis of Design Hangars: Drawings and specifications are generally based on 6-unit nested T-hangars units as manufactured by the following:
 1. Erect-A-Tube
 2. Fulfab, Inc., Model
 3. Other manufacturers may be acceptable subject to review and approval by the Architect.

2.2 STRUCTURAL STEEL

- A. Materials:
 1. Structural steel shall conform to the following ASTM designations:
 - a. ASTM A36 – Structural steel angles and wide flange sections
 - b. ASTM A572 GR 50 – Structural steel plate
 - c. ASTM A500 GR B – All tubular sections
 - d. ASTM A1003 GR 50 – Cold-Formed steel sections
 2. High Strength Bolts, Nuts and Washers; ASTM A325, or equivalent unless otherwise noted on plans; size required by metal building system manufacturer.
 3. Prime Coat: Primer shall meet or exceed the end performance requirements of Federal Specification TT-P-636
- B. Fabrication:
 1. Primary Framing: Rigid frames of shop-welded steel plate columns, tube columns, and rafters, both tapered and uniform depth sections as required by drawings, complete with all necessary stiffeners, connections plates and holes for field bolted assembly. Design rigid frames on basis of elastic behavior.
 - a. Minimum wall, flange, or web thickness of columns shall be 3/16".
 - b. All building components less than 1/8" thick shall be manufactured from galvanized steel. Components greater than 1/8" thick shall have a shop coat of rust inhibitive primer that meets or exceed the end performance requirements of Federal Specification TT-P-636
 - c. Steel framing shall be factory punched for assembly by bolting; sidewall framing members shall be pre-punched to accurate dimensions.
 - d. Welding shall be done in accordance with the American Welding Society Code for building construction.

2. Secondary Framing: (Purlin, Girts, Struts, Flange Braces, Base Angles, Base Trim Angles), per ASTM A572 and/or ASTM A36 as applicable:
 - a. Clean secondary framing components to be free from oil, dirt, loose scale and foreign matter and apply one (1) coat of primer.

2.3 ROOFING AND SIDING

- A. Exterior Wall and Hangar Door Panels:
 1. Minimum 26 gauge pre-finished siliconized polyester paint steel ribbed "R" panels with 36" wide net coverage, four (4) major corrugations at 12" centers, with two (2) minor ribs located symmetrically between the major ribs.
 2. Provide all wall panels in continuous lengths, complete with all required sealant, trim, flashings, panel closure, and other components required for complete weathertight installation. Color to be selected by Sponsor.
- B. Roofing Panels:
 1. Minimum 26 gauge Galvalume Plus steel ribbed "R" panels with 36" wide net coverage, four (4) major corrugations at 12" centers, with two (2) minor ribs located symmetrically between the major ribs.
 2. Provide all roof panels in continuous lengths from ridge to eave, complete with all required sealant, trim, flashings, panel closure, and other components required for complete weathertight installation.
- C. Building Trim: Minimum 26 gauge pre-finished with paint same as wall panels, color as selected by the Architect.
- D. Interior Partitions: Minimum 29 gauge Galvalume pressed rib panels. Sheeting should extend from floor level to roof with allowance for expansion to prevent buckling. Flashing added as necessary to seal hangar units.
- E. Fasteners:
 1. Wall Panels: #14 x 7/8" self-tapping zinc plated screws with bonded neoprene washers color coated to match wall and door sheeting.
 2. Roof Panels: Fasten panels to purlins with #12 x 1" heavy-duty zinc/aluminum/cast alloy headed self-drilling screws with bonded neoprene washers. Stitch screws to be #14 x 7/8" self-tapping zinc plated screws with bonded neoprene washers.
 3. Trim Fasteners: #14 x 7/8" self-tapping zinc plated screws with bonded neoprene washers color coated to match wall and door sheeting.
- F. Roof and Wall Panel Sealant:
 1. Neoprene or other solid or closed cell, preformed (inside for roof panels and outside for endwall panels at the rake) closure strips matching the profile of the panel shall be installed along the eave of the roof panels and rake of the endwall panels.
 2. Base Flashing: Manufacturer's standard base trim to provide dirt proof seal between slab and floor panels.

2.4 WIND BRACING

- A. General:
 1. Approved type rod bracing or portal frames as shown on final shop drawings.
 2. Clean components free of oil, dirt, loose scale and foreign matter and apply one (1) coat of primer.

2.4 HANGAR DOORS

- A. General:
 1. Hangar doors shall be electrically operated bi-fold overhead doors adequate for building design live and wind load with uplift protection. Doors to be installed according to manufacturer's installation instructions and specifications.
 2. Door design/manufacture shall be part of the metal building system for hangar, or certified to be compatible with hangar building design. Door panels shall match building wall material and color. The manufacturer of the metal building system and the bi-fold overhead doors must coordinate to ensure compatibility of products.

3. Doors to have secure locking system, to be keyed alike to a master key system, with two (2) keys per hangar, and four (4) master keys for hangar locks to be provided.

B. Electric Bi-Fold Doors:

1. Each unit shall be furnished with an electrically-operated bi-fold overhead door. The electric door operator shall be sized and provided by the manufacturer to properly and safely operate the designated size door. Each door shall be controlled by a constant pressure (dead man) switch controlling a single-phase electric motor, worm gear speed reducer, with direct drive, aircraft cable, or lift strap operation. Door operators shall be rated not greater than 3.0-Hp and designed to operate at 230-vac, 1-phase, 60-Hz.
2. Door operator to be capable of being stopped and restarted, up or down, in any position, and have automatic stop at the fully opened and fully closed positions. Provide wall mounted motor disconnect switch adjacent to the operating switch.
3. A walk-in door approximately 36" wide, minimum 76" door height shall be provided in the bi-fold door for each T-hangar. The door to be installed with hinge pins inside hangar, to swing inward, away from light and door operator switches. Door to have factory baked enamel finish to match hangar wall or trim color.
4. Each walk-in door shall be equipped with heavy duty stainless steel door lock. The portion of the door and frame receiving lock and strike to be solid core. All locks to be keyed alike to a master key system, two (2) keys for each lock and four (4) master keys to be provided.
5. Overhead doors shall be hung plumb and true to building, and shall open in a continuous motion without binding, or warping.
6. Provide full length, durable weatherstrip at sill and head of each overhead door assembly. Walk-in door jambs shall be sealed by steel overlap flashings or appropriate rubber weather-strips.

2.5 ACCESSORIES

A. Access Doors, Frames and Hardware: Provide all metal doors in building exterior as follows:

1. Frames: Manufacturer's standard self-flashing, self-trimming, non-handed, wrap-around type fabricated from 16 gauge steel with ASTM A 525 G60 commercial zinc coating, with 5-3/4" frame profile. Provide complete with 18 gauge sill channel, 22 gauge adaptor angles, galvanized reinforcements and preparations required for finish hardware, and factory applied dark brown rust inhibitive prime coat finish.
2. Doors: Manufacturer's standard non-handed type in size indicated, not less than 1-3/4" thick, of flush panel design. Fabricate from minimum 16 gauge steel with ASTM A-535 G60 minimum commercial zinc coating. Provide complete with internal reinforcements, stiffeners and sound deadening honeycomb core material, galvanized reinforcements and other preparation required for finish hardware, and factory applied dark brown rust inhibitive coat finish.
3. Finish Hardware: Provide each door with heavy duty stainless steel door lock ADA lever trim. The portion of the door and frame receiving lock and strike to be reinforced. All locks to be keyed alike to a master key system, two (2) keys for each lock and four (4) master keys to be provided.
4. Overhead Roll-Up Doors: The work shall consist of furnishing complete rolling door equipment, finished installation and all materials incidental thereto including final adjustments. All work shall be done in accordance with the Drawings and these Specifications subject to acceptance and approval by the Architect.
 - e. Doors shall be Model SFW with all aluminum curtains, guides, hoods and bottom bar as manufactured by the Windsor Door Company, Little Rock, AR, or equal.
 - f. Curtain shall be made from interlocking flat slats, roll-formed from 0.060 inch thick aluminum metal. Slats to be a minimum of 2-3/4 inches in height and minimum of 3/4 inches in depth. Both ends of alternate slats shall be fitted with endlocks. Bottom of curtain to be reinforced with a T-shaped aluminum extrusion. The bottom edge of door shall have a vinyl weatherseal of tubular shape.
 - g. Guides shall be made from roll-formed channels and angles of aluminum. Channel shall have a depth of not less than 2½ inches. Guides shall be weatherstripped.
 - h. Aluminum brackets shall be designed to support the entire barrel and curtain weight. Brackets shall be attached to continuous wall angle with 5/16 inch bolts. Unit shall include aluminum hood.
 - i. Curtain shall wrap on a barrel made of sufficient diameter and thickness so deflection of barrel with weight of curtain does not exceed .03 inches per foot of door width.
 - j. Springs shall be oil-tempered, helical-wound torsion springs stress=relieved after coiling. Springs shall be attached to a steel torsion bar of sufficient size to carry load of curtain and torque of springs. Springs to transmit torque to barrel through steel discs. Sealed ball

- bearings shall be located at rotating support points of barrel. Spring adjustment shall be readily available. Operation shall be by chain hoist with 35 lbs. maximum pull.
- k. Doors shall be equipped for padlocking from coil side. Doors shall be guaranteed against defective materials and workmanship for one (1) year.
- l. All doors shall be constructed to meet or exceed standard established under National Association of Garage Door Manufacturer's specifications 101-1975.

PART 3 - EXECUTION

3.1 ERECTION

- A. General:
 - 1. Install metal building system components following manufacturer's instructions and complying with requirements shown on final shop drawings.
 - 2. Erection of metal building, insulation and accessories shall be performed by a competent building erector familiar with, and experienced in, aircraft hangar construction.
- B. Structural Frames:
 - 1. Erect true to line, level, and plumb, rigid and secure.
 - 2. Level base plates to true even plane with full bearing to supporting structures. Use non-shrinking grout to obtain uniform bearing and to maintain level base line elevation. Moist cure grout for not less than seven (7) days after placement.
 - 3. Installation and location of anchor bolts shall be coordinated with manufacturer so that they are installed in the concrete foundation at the correct locations. Manufacturer will be required to review the foundation plan as prepared so that anchor bolt alignment and orientation is acceptable. Drilling and doweling of anchor bolts after the concrete foundation has been placed is unacceptable.
- C. Bracing: Install diagonal rod or angle bracing in lieu of sidewall rod bracing, to suit manufacturer's standards.
- D. Framed Openings: Provide shapes of proper design and size to reinforce opening and to carry loads and vibrations imposed, including equipment furnished under mechanical or electrical work. Securely attach to building structural frame.
- E. Roofing and Siding Panels:
 - 1. Install roof panels with long edges running parallel to gable ends of building, with panel ends parallel to ridge. Install wall panels with long edges plumb. Install canopy roof panels with long edges running parallel with building walls.
 - 2. Arrange and nest sidelap joints so prevailing winds will blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation.
 - 3. Apply panels and associated items for neat and weathertight enclosure.
 - 4. Avoid "panel creep" or application not true to line.
 - 5. Protect factory finishes from damage.
 - 6. Install approved type closures to exclude weather. Provide weather seal under ridge cap. Flash and seal roof panels at eave and rake, at perimeter of all openings through roof, and elsewhere as required. Flash and seal wall and liner panels at perimeter of all openings, under eaves and gable trims, along lower panel edges, and elsewhere as required or shown on drawings, as applicable
- F. Wall panels:
 - 1. Install wall panels on exterior of all metal buildings, with liner panels installed on building interior in locations shown on drawings.
 - 2. Apply approved type, continuous elastomeric sealant bead between metal base sill angle and concrete, and elsewhere as necessary for waterproofing. Handle and apply sealant and back-up in accordance with sealant manufacturer's recommendations.
 - 3. Align bottoms of panels and fasten with manufacturer's recommended and supplied anchorage devices. Fasten flashings and trim around openings, etc. with approved type self-tapping screws; fasten window and door frames with approved type machine screws or bolts.
 - 4. Install screw fasteners with power tool having controlled torque adjusted to compress tightly without damage to screws, screw heads, or panels

- G. Accessories: Install flashings, trim, ridge covers, roof curbs, pipe flashings, closure strips, roof jacks, and other accessories and sheet metal items in accordance with manufacturer's recommendations for anchorage to building and weathertight mounting.
- H. Swing Doors and Frames: Install doors and frames straight, plumb, and level. Securely anchor frames to building structure. Set units with 1/8" maximum clearance between door and frame at jambs and head, and 3/4" maximum between door and floor. Adjust hardware for proper operation.
- I. Thermal Insulation: Install in accordance with manufacturer's directions, performed concurrently with installation of roof panels.
 - 1. Insulation, Roof, Exterior Walls & Bi-Fold Doors: Min. 2" standard condensation type non-combustible fiberglass blanket insulation with reinforced vinyl backing, MP-50 or better. Place insulation with vinyl backing exposed-to-view from interior of building unless recommended otherwise by metal building manufacturer or shown on drawings. Provide thicknesses required to achieve minimum R values as indicated on the drawings.

3.2 PAINTING

- A. General: Touch-up abrasions, marks, skips or other defects in shop-primed or factory finished painted surfaces with same type material as used for shop primer or factory finished painting.
 - 1. Apply finish paint coats to factory primed items on surfaces that are not required to be galvanized surfaces.
 - 2. Provide finish coats that are compatible with metal building manufacturer's prime coat paints.
 - 3. Provide approved type barrier coats over incompatible primers where required.
 - 4. Remove hardware and accessories, and similar items in place and not to be finish-painted, or provide surface-applied protection. Reinstall removed items.
 - 5. Finish exterior swing doors on tips, bottoms, and edges same as exterior faces, unless otherwise indicated.

END OF SECTION 13 34 20

DIVISION 26

ELECTRICAL

SECTION 260400 - GENERAL PROVISIONS

PART 1 - GENERAL

1.1 SCOPE

The scope of the electrical phase of this project shall include all labor, materials, equipment, etc., required to fulfill the intent of the Contract Documents and shall include the work specified under the following sections:

SECTION 26 05 00 – COMMON WORK RESULTS
SECTION 26 05 03 – EQUIPMENT WIRING CONNECTIONS
SECTION 26 05 19 – LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
SECTION 26 05 26 – GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
SECTION 26 05 29 – HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
SECTION 26 05 33 – RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS
SECTION 26 05 53 – IDENTIFICATION FOR ELECTRICAL SYSTEMS
SECTION 26 09 23 – LIGHTING CONTROL DEVICES
SECTION 26 20 00 – LOW-VOLTAGE ELECTRICAL TRANSMISSION
SECTION 26 27 26 – WIRING DEVICES
SECTION 26 50 00 – LIGHTING

1.2 RELATED DOCUMENTS

All applicable provisions of Division 0 and 1 govern work under this division. Refer to these articles in the specifications for additional information.

1.3 REFERENCED STANDARDS

1.3.1 All work shall be performed in accordance with the latest editions of the applicable state, national and local ordinances, building codes and the National Electric Code.

1.3.2 Refer to each section for applicable codes and reference standards.

1.4 FEES, PERMITS AND TAXES

This Contractor shall make arrangements for and pay for all inspection fees and permits required by the local authorities. The Contractor shall also pay all taxes levied for labor and materials associated with work under this Division.

1.5 SUBMITTALS

1.5.1 The symbol "<S>" indicates a requirement for submittals.

1.5.2 Shop drawings, manufacturer's data materials lists, etc., are required for all equipment and material where submittals are required.

1.5.3 Refer to "General Conditions" and/or "Instructions to Bidders" for additional information on submittals where applicable.

1.5.4 Submittals shall be presented from published manufacturer's data and in such a form that the Engineer can readily verify compliance with codes, standards, and the Contract Documents including construction features, rough-in requirements, etc. Each submittal shall contain data relevant to the particular equipment (including options). The data shall be identified by "highlighting", arrows, underlining, etc. Do not submit pages of non-relevant information. Broad general data is not acceptable. If equipment submitted is not as specified in the Contract Documents, then the

submittal shall contain specific details prominently identifying any differences in form, fit or function. If the equipment submitted is not as specified, then the Contractor shall be responsible for any additional costs necessary to install and connect the equipment. This includes, but is not limited to, increased panelboard size, circuit breaker size, disconnect size or circuit size. Submit dimensional layout of all electrical equipment locations, drawn to scale, with equipment locations shown. Clearances shall be in accordance with NEC and local codes. Panelboard and switchgear submittals will be rejected without dimensioned room or equipment location layouts.

1.6 WARRANTY

This Contractor shall guaranty fully all workmanship, material, equipment, systems, etc., provided by him for a period of one year after substantial completion of the project. The use of building equipment for temporary service and testing does not constitute the beginning of the warranty. This guaranty means that this Contractor shall make good to the owner, at no cost, any defects that become apparent during the year following substantial completion. This guaranty is in addition to any other guaranties or warranties and is not intended to limit such other guaranties or warranties.

1.7 DEFINITIONS

The following words and phrases are hereby defined:

- 1.7.1 "provide": Furnish and install all material and labor required for a complete installation ready for operation in accordance with the intent of the Contract Documents.
- 1.7.2 "as required": Indicates that the contractor shall perform the work or provide the material as indicated in accordance with manufacturer's installation instructions and in accordance with applicable codes or regulations.
- 1.7.3 "or equal": Indicates that the contractor may substitute equipment by another manufacturer if the salient features of the equipment indicated by manufacturer's name and/or described are, in the judgment of the Engineer, adequate. See article PRIOR APPROVAL.
- 1.7.4 "contractor": Where the word(s) "contractor" or "this contractor" is used herein it refers to the contractor engaged to execute the work under this division of the specifications only, even though he may be technically described as a sub-contractor.
- 1.7.5 "Intent of the Contract Documents": The specific intent of these documents is to provide to the owner, in a thoroughly functional condition, all the various systems, equipment, etc., indicated herein. Final interpretation of the "intent" shall rest with the Engineer.
- 1.7.6 "shall": Indicates a mandatory requirements.

1.8 INSPECTION OF THE SITE

- 1.8.1 The drawings are prepared from the best information available and reflect all conditions commensurate with this information. However, the contractor should visit the site prior to submitting a proposal and should verify the locations, sizes, depths, pressures, etc., of all existing utilities and familiarize himself with working conditions, hazards, existing grades, soil conditions, obstructions, etc. If it becomes evident that existing site conditions will impair the proper operation of the utilities, the Engineer shall be notified in writing.
- 1.8.2 All proposals shall take these existing conditions and any revisions required into consideration, and the lack of specific site information on the drawings shall not relieve the contractor of any responsibility.

1.9 CONSTRUCTION SAFETY

This Contractor assumes all responsibility for the safety of his personnel on the project during construction. The Contract Documents do not include materials, procedures, components, etc., required to insure construction safety. Refer to General Conditions for additional information.

1.10 DAMAGE

1.10.1 This Contractor shall be responsible for damage to the project caused by this Contractor's failure to recognize hazards associated with items such as lack of power, scheduling of work (tardiness), inexperienced workmen, excessive cutting, etc. This Contractor shall repair at no expense to the owner any such damage.

1.10.2 This Contractor shall familiarize himself with working conditions to the extent that he shall be responsible for damage to concealed piping, wiring and other equipment meant to remain, and shall repair any damage caused by his negligence at no cost to the owner.

PART 2 - PRODUCTS

NOT APPLICABLE

PART 3 - EXECUTION

3.1 WORKMANSHIP

3.1.1 All work shall be done by experienced craftsmen skilled in the applicable trade.

3.1.2 Unprofessional and incomplete work shall be rejected and corrected at no additional expense. The judgement of professionalism and completeness of work shall be made by the architect/engineer and shall be final.

3.2 MANUFACTURER'S INSTALLATION INSTRUCTIONS

All equipment shall be installed in strict compliance with manufacturer's installation instructions.

3.3 PROTECTION OF EQUIPMENT

The Contractor shall continuously maintain adequate protection of stored materials and installed equipment. Fixtures and equipment, whether located inside or outside, shall be tightly covered with sheet polyethylene or waterproof tarpaulin as protection against dirt, rust, moisture and abuse from other trades. Adequate air circulation shall be provided under any protective sheet to prevent condensate build up. Materials and equipment shall not be stored where it can come into direct contact with the ground. Conduit, conduit hangars, cable tray and equipment shall not be used by other trades as supports for their equipment, scaffolds or personnel. At the completion of the work, equipment, fixtures, exposed supports and piping shall be cleaned of loose dirt, construction debris, over-spray, etc., to the satisfaction of the Engineer. Repairs made necessary by damage shall be paid for by the Contractor.

3.4 CONFLICTS, INTERFERENCE'S AND COORDINATION BETWEEN TRADES

3.4.1 The drawings are not to be construed as shop drawings but indicate the extent, general locations, arrangement, etc., of conduit systems and equipment. Electrical drawings are diagrammatic and shall not be scaled for exact size. If the contractor has any questions regarding the layout of a particular device or equipment item he shall contact the Engineer for clarification. This Contractor shall, in laying out his work, refer to other sections of the specifications and other drawings such as air conditioning, structural, plumbing, architectural, etc., in order to eliminate conflicts and undue

delays in the progress of the work. See article CUTTING AND PATCHING for additional coordination required. Where items are furnished by other trades require connections by this Contractor, they shall be held responsible for providing rough-in drawings and assistance upon request.

- 3.4.2 In the event of interference's, piping or equipment requiring set grades or elevations shall have precedence over conduit, lighting, outlet boxes, air conditioning, ductwork, etc.
- 3.4.3 Plans, specifications and other documents have been prepared and developed with reasonable professional care and coordination. It is the intent that all documents are supportive and complimentary, one to the other; and as such what is required by one shall be considered as required and binding as if indicated by all. Work indicated shall include, regardless of whether or not specifically stated, such supportive or required items or work as consistent with what is indicated, is reasonably inferable from what is indicated, and/or is common construction procedure or knowledge with regard to what is indicated.
- 3.4.4 In the event of conflict between codes as interpreted by the authority having jurisdiction, and the contract documents, the codes shall govern.
- 3.4.5 In the event of a conflict between manufacturer's installation instructions and the drawings, the manufacturer's installation instructions shall govern.
- 3.4.6 Should discrepancies be found between the documents and/or an interpretation is required, and a decision or interpretation to the contractor is not rendered by the Engineer, it shall be assumed the contractor has reviewed all the documents to find the most costly method or items in question which then shall be required. One document does not take precedence over another when interpreting a discrepancy.

3.5 CUTTING AND PATCHING

- 3.5.1 All cutting required by the installation of sleeves, conduit, equipment, etc., shall be coordinated with the General Contractor, but performed by this Contractor. Patching shall be by General Contractor. This Contractor shall not cut any structural element or any finished work without written permission from the Engineer.
- 3.5.2 This Contractor shall cut and patch all paving as required by the installation of buried conduit or wire.

3.6 CONCRETE WORK

This Contractor shall provide all forming, reinforcing and concrete as indicated such as equipment bases, transformer pads, etc. Work shall conform to the applicable portion of Division 3 CONCRETE otherwise concrete must be 3,000 psi at 28 days.

3.7 PAINTING

- 3.7.1 All painting except "touch-up" shall be provided under the painting section (Division 9) unless noted otherwise. All exposed conduit, equipment, etc., shall be left clean and free from rust or grease and ready for the painter.
- 3.7.2 Where equipment finishes are damaged, this Contractor shall obtain touch-up paint in matching colors from the equipment manufacturer and paint as required.

3.8 TRENCHING AND BACKFILL

- 3.8.1 This Contractor shall perform all trenching, excavation, shoring, pumping and backfill required in the installation of his work. All trenches shall be maintained dry until all circuits have been satisfactorily tested (see paragraph TEST) and then filled in tamped 6" layers immediately after approval of tests by the Engineer. All backfill shall be free of construction debris and any other foreign material which might damage any circuit runs. Stability of backfilled soil shall match adjacent undisturbed soil.
- 3.8.2 All exterior raceway or cable shall be laid with at least a minimum cover as indicated in the National Electrical Code.
- 3.8.3 The contractor shall exercise all possible care to avoid damage to trees and roots in excavation. Where possible, the contractor shall excavate beyond the drip line of trees. If it is necessary to cut roots 1" to 2-1/2" in diameter, the contractor shall excavate around, cut clean and paint severed ends of roots with a tree wound sealer. Do not cut roots 2-1/2" and larger.

3.9 EQUIPMENT CONNECTIONS

- 3.9.1 This Contractor shall bring all required electrical service to all equipment items furnished under other sections of these specifications or by the owner, make final connections, and leave equipment ready for operation. This Contractor shall coordinate with any affected trade to assure correct operation of the equipment item, i.e., phase rotation, switching, control location and accessibility.
- 3.9.2 When the contractor is uncertain about the method of installation, proper location, etc., he shall ask for further instructions or details. Failure to request such information will not excuse non-compliance.

3.10 FLASHING AND WATERPROOFING

All building penetrations to the outside shall be flashed and counter-flashed as required to eliminate leaks.

3.11 TESTS

All circuit and operational tests of the electrical systems shall be made by this Contractor and repeated until approved by the Engineer. Conduit systems shall not be covered or otherwise concealed until review has been made and approvals obtained from the Engineer. Notify the Engineer four days prior to tests to allow for scheduling.

3.12 CLEAN-UP

Where all work has been finally tested, this Contractor shall clean all work installed by him, including all fixtures, equipment, and all exposed work.

END OF SECTION

SECTION 26 05 00 – COMMON WORK RESULTS

PART 1 - GENERAL

1.1 SCOPE

Work of this Section shall include specification of electrical devices to be used in subsequent sections and shall include the following principal items:

Raceways
Wires and Cables
Outlet and Junction Boxes
Wiring Devices
Device Plates
Fuses
Mounting Heights
Identification and Nameplates

1.2 REFERENCED STANDARDS

NFPA 70 - National Electrical Code
NFPA 101 - Life Safety Code

PART 2 - PRODUCTS

2.1 RACEWAYS

2.1.1 All wiring indicated including power wiring, emergency systems wiring (NEC Article 700), temperature control wiring, communication wiring, etc., shall be in separate raceways. ALL WIRING ON THIS PROJECT SHALL BE IN RACEWAY.

2.1.2 Rigid metal conduit or intermediate metal conduit shall be hot dipped galvanized steel or electrogalvanized steel and shall be used for applications underground, under slab, underfloor, or "cast-in" concrete, or exposed on the exterior. Connectors and couplings shall be threaded type only.

2.1.3 Electrical metallic tubing (EMT) shall be hot dipped galvanized steel or electrogalvanized steel and shall be used for all concealed or exposed work above the floor unless noted otherwise. Connectors and couplings shall be compression type. NO SET SCREW FITTINGS SHALL BE ALLOWED.

2.1.4 Flexible metal conduit may be used for final connections to recessed lighting fixtures and shall be used for final connections to motors, transformers and other equipment subject to vibration. Maximum length permitted is 72". Use "liquid-tight" type conduit for outdoor installations, where exposed to continuous or intermittent moisture and to all liquid pump motors.

2.1.5 Rigid nonmetallic conduit (Schedule 40 PVC) may be used for conduit runs where specifically indicated on the plans. Plastic conduit shall conform to Article 347 of the N.E.C. Grounding conductors sized in accordance with N.E.C. table 250-95 shall be provided. Provide long sweep rigid or IMC galvanized metal bends for all changes in direction greater than 15° in 10' of conduit. PLASTIC STUB-UPS ABOVE GRADE NOT PERMITTED.

2.1.6 Acceptable manufacturers:

Rigid, IMC, EMT:
LTV, Allied, ARMCO
Flexible Metal Conduit:

Electri-Flex, International, Allflex
"Liquid-Tight":
Electri-Flex, Liguatite, Anaconda
Rigid Nonmetallic (Sch 40 PVC):
Cantex, Carlow, Sceptor

2.2 WIRES AND CABLES (600 VOLTS AND LESS)

- 2.2.1 Provide all wiring as indicated and/or required to each piece of equipment, wiring device, lighting fixture, etc. Provide control and interlock wiring to the extent described in Section 16010.
- 2.2.2 All wire sizes specified shall be in accordance with and designated by AWG (American Wire Gauge).
- 2.2.3 Copper conductors shall be used throughout unless specifically noted otherwise. The design is based on copper conductors.
- 2.2.4 Insulation for power conductors shall be type THWN or THHN, rated 600 volts and wiring below finished floor line shall be THWN. Branch circuit conductor sizes #6 AWG and smaller may be type THWN or THHN. Insulation shall be color coded as required by the N.E.C. and as specified below. For conductors in fluorescent fixture runs use type RHH or THHN insulation.

Acceptable manufacturers: Anaconda, Southwire, General Electric, Anderson, Thomas & Betts, ITT, Blackburn, Penn- Union, Cerrowire, or Rome Cable.

- 2.2.5 Color coding of conductor insulation shall be uniform throughout the project, in accordance with the following tables:

	<u>120/240volts</u>
Phase A	Black
Phase B	Red
Phase C	Blue
Neutral	White
Ground	Green

No other colors may be used for branch circuits. Main feeders may be taped or painted at panelboard terminations. From left to right, the first bus in each panel shall be phase "A", middle "B", and right bus "C".

2.3 OUTLET AND JUNCTION BOXES

- 2.3.1 Provide metallic galvanized boxes per the N.E.C. Article 370 at each outlet location indicated on the drawings or as required.
- 2.3.2 Boxes at exterior locations shall be cast aluminum with threaded hubs and gasketed covers.
- 2.3.3 The owner reserves the right to make minor adjustments to the locations of outlet boxes prior to rough-in.
- 2.3.4 Sizes and configuration of boxes shall be as required for the intended service and shall conform to and be applied in accordance with Table 370-16(a) of the N.E.C. Provide extension rings, expandable bars sets, supports, gaskets for weatherproof type etc., where required.

Boxes shall be equal to Steel City with "CV" bracket.

Acceptable Manufacturers: Steel City, Hubbell, or Appleton.

- 2.3.5 Gang type boxes shall be used where multiple wiring devices are located adjacent to one another, including cast in floor boxes.

2.4 WIRING DEVICES

- 2.4.1 General: Provide wiring devices as indicated on drawings. Device color shall be ivory unless otherwise indicated. At dark finishes and paneling devices shall be brown. Each type of device on the project shall be of the same manufacturer and catalog number throughout.

- 2.4.2 Toggle switches: Specification grade, AC only, 20A 120-277V rating, full size handle (framed toggle not acceptable), side and back wired (screw terminal only; pressure terminal not acceptable). The type switch shall be indicated on the drawings.

	<u>Hubbell</u>	<u>Leviton</u>	<u>P & S</u>
single pole	HBL 1221	1221-2	20AC1
3-way	HBL 1223	1223-2	20AC3
4-way	HBL 1224	1224-2	20AC4
Pilot light	HBL 1221-PL	1221-PLR	20AC1-RPL

Acceptable manufacturers: Arrow Hart, Bryant, G.E., Hubbell, Leviton, or P & S.

- 2.4.3 Duplex receptacle: Specification grade, AC, 15A 125V rating, automatic grounding clip, side and back wired (screw terminals).

	<u>Hubbell</u>	<u>Leviton</u>	<u>P & S</u>
standard	HBL 5252I	5252-I	5252-I
safety	HBL 8200SG	5262-SG	TR62H
isolated ground	IG5262	5262-IG	IG6200

Acceptable manufacturers: Arrow Hart, Bryant, G.E., Hubbell, Leviton, or P & S.

2.5 DEVICE PLATES

- 2.5.1 Provide a brushed finish formula 302 stainless steel device plate unless otherwise directed by architect with matching screws for each flush mounted wiring device, blank box, telephone outlet, etc., as required. Plates shall completely cover rough wall opening (use oversized plates if required) and shall have rounded edges.

- 2.5.2 Plates on surface mounted boxes not used in conjunction with surface metal raceway system shall be galvanized steel with 1/2" raised face and rounded edges.

- 2.5.3 Single multi-gang device plates shall be used where multiple devices occur.

- 2.5.4 Sectionalized plates will not be acceptable.

- 2.5.5 Provide cast aluminum weatherproof device plates with hinged cover for each outlet for exterior receptacles as indicated. When outdoor receptacle is permanently in use (heat tape, etc.) provide a while-in-use cover listed for wet locations "open".

	<u>Hubbell</u>	<u>Leviton</u>	<u>P & S</u>
standard	WP26	6196	CA26GV
open	WP26-MHP	6196-FS	3703

- 2.5.6 Acceptable manufacturers: Bell, Hubbell, Leviton, P & S, Perfectline, Arrow Hart, or G.E.

2.6 MOTOR AND CIRCUIT DISCONNECTS <S>

2.6.1 Provide safety switches at each location indicated on the drawings or required by code. Switches shall be rigidly supported and properly aligned. Switches shall be equal to Square "D" type HD.

- A. Switching mechanism shall be quick-make, quick-break mechanism with handle as integral part of the box. All current carrying parts shall be electroplated.
- B. Enclosures shall be NEMA 1 for interior locations and NEMA 3R for exterior locations, and shall be of code gauge steel (galvanized for NEMA 3R) with baked enamel finish and shall have locking hasp.
- C. Ratings, fusing provisions, poles, etc., shall be as indicated.

	<u>Square D</u>	<u>General Electric</u>
standard	HD	TH

Acceptable Manufacturers: Square D, General Electric, Cutler-Hammer or Siemens.

2.6.2 General-use snap switches suitable only for use on AC shall be provided to disconnect 120, 208 or 240 volt motors, 2 horsepower or less where indicated. Switch ampere rating shall be 125% of motor full-load current.

2.6.3 Manual Motor Switches shall be provided as indicated. Units shall have NEMA 1 surface mounted enclosures unless otherwise indicated. Switches not located adjacent to equipment served shall have pilot lights.

	<u>Square D</u>	<u>General Electric</u>
2-pole	KG-1	CR1062S2
3-pole	KG-2	CR1062S3

Acceptable Manufacturers: Square D, Cutler-Hammer, Siemens or General Electric.

2.7 FUSES

2.7.1 All fuses shall be of the same manufacturer, shall have characteristics to insure retention of positive selective coordination as designed, shall be of the same size shown on schedules, and, where not indicated on the drawings, shall be of the required size for proper operation of the equipment protected.

2.7.2 Fused rated 600 amperes or less for all general power circuits shall be voltage as required by the system, dual element, UL Class R time-delay type. The design shall provide time-delay of not less than ten seconds at 500% of ampere rating. The interrupting rating shall be 200,000 amperes RMS symmetrical. Peak let-thru values shall be as established by Underwriters' Laboratories Standard for Class RK1 fuses.

	<u>Bussman</u>	<u>Gould Shawmut</u>	<u>Little Fuse</u>
250V	LPN-RK	A2D (Amp)R	LLNRK
600V	LPS-RK	A6D (Amp)R	LLSRK

Acceptable Manufacturers: Bussmann, Gould Shawmut, or Little Fuse.

2.7.3 Fuses installed in individual motor circuits shall be sized at 125% of motor nameplate current or nameplate current rating for the next standard fuse size, unless otherwise indicated on the drawings or indicated in the manufacturer's instructions for the equipment in which the motor is used.

PART 3 - EXECUTION

3.1 RACEWAYS

- 3.1.1 Raceways shall be installed per NEC Article 300. Raceways shall be cut square, threaded (if required), reamed smooth and drawn up tight so that ends will butt in couplings, connectors and fittings. All connections shall be mechanically and electrically continuous. Bends and offsets shall be made with standard ells or an approved bender. Kinked or otherwise deformed bends shall be removed.
- 3.1.2 Raceways shall be installed neatly racked, routed parallel or perpendicular to building lines, securely attached and supported complete with associated couplings, connectors and fittings. Installation shall conform with applicable sections of N.E.C. Article 345 through 355.
- 3.1.3 Concealed raceway shall be supported with galvanized stamped steel clamps secured to structure. Conduit or ductwork shall not be used to support other conduit. Exposed raceways shall be secured to structure with galvanized stamped steel clamps or suspended from structure with beam clamps and conduit hangers. All conduits shall be directly supported by the building structure with the use of the appropriate factory fabricated support system as specified above. Use of caddy clips to support conduit to top of T-bar ceiling grid or ceiling support system will not be permitted.

Grouped raceways shall be supported with galvanized steel channel assemblies.

	<u>Kindorf</u>	<u>Globe Strut</u>	<u>Unistrut</u>
strut	B-909	G-5812-PO	P1000-HS
two-hole strap	C-105	G-7000	P1100

Acceptable manufacturers: Unistrut, Power Strut, Globe Strut, or Kindorf.

Raceway supports shall be spaced as follows:

- A. Rigid metal, IMC or EMT - within 3' of termination, coupling or connection and 10' o.c.
 - B. Rigid nonmetallic - per N.E.C. paragraph 347-8.
 - C. Flexible nonmetallic - within 12" of termination or connection, 4.5' o.c.
- 3.1.4 Raceways shall be concealed where possible in finished areas, and may be exposed in mechanical/electrical equipment rooms.
- 3.1.5 Provide expansion fittings in all conduits crossing an expansion joint. Metallic conduit not containing a grounding conductor shall have bonding jumpers installed across expansion joints.

	<u>O.Z. Gedney</u>	<u>Crouse-Hinds</u>
Fittings		
	GRS, IMC, SCH 40 PVC	EX EMT
Bonding Jumper	BJ	XJG TX

Acceptable manufacturers: Burndy, ITT Blackburn, Thomas & Betts, Anderson, Raco, O.Z. Gedney, or Crouse-Hinds.

- 3.1.6 Pull boxes shall be provided as required for long runs greater than 200 feet and where excessive turns are encountered. Provide nylon pull cord in all empty conduits.

- 3.1.7 Grade all raceways away from the service entrance equipment to prevent water damage. Cap ends of raceways to prevent entrance of water and other foreign material during construction.
- 3.1.8 All conduit penetrations through fire rated ceilings, walls or floors shall be fire stopped using U.L. approved materials and methods to maintain the fire rating of the ceiling, wall or floor structure. All penetrations shall comply with the latest applicable edition of the UL fire resistance directory Vol. I and Vol. II.
- 3.1.9 Do not group more homeruns in a single raceway than shown on the drawings. Provide a separate neutral for each phase leg in the raceway unless shown otherwise on the drawings.

3.2 WIRES AND CABLES

- 3.2.1 All splices, taps, connections, terminations, etc., shall be made with appropriate connectors in a workmanlike manner and in compliance with the N.E.C.
- 3.2.2 All home runs shall be #12 or larger as indicated. Provide #10 where home runs exceed 100 feet in length. No wire smaller than #12 shall be permitted serving lighting or outlets (see Section 16500 for exception).
- 3.2.3 Splices for any combination of stranded and/or solid copper wire up to 3#8 or 2#6 shall be made with solderless electrical spring connectors. Splices for larger wire shall be solderless compression indentation type properly taped.

Acceptable Manufacturers: 3M Scotchlok, Panduit P-Conn, or Ideal Wirenut.

3.3 OUTLET AND JUNCTION BOXES

- 3.3.1 Outlet and Junction Boxes shall be installed in a workmanlike manner, rigidly supported and properly aligned. Unless otherwise noted, boxes shall be flush with finished surfaces. This contractor shall provide the necessary support to prevent other trades from misaligning the device.
- 3.3.2 In masonry walls, rough-in boxes at joints.
- 3.3.3 Do not rough-in boxes back-to-back.
- 3.3.4 Locate boxes for receptacles serving water coolers in accordance with cooler rough-in data so that cord is concealed.
- 3.3.5 All junction boxes installed in fire and/or smoke rated wall shall be U.L. listed and permanently marked for such use.

3.4 MOUNTING HEIGHTS AND PLUMB REQUIREMENTS

Wiring devices, and other equipment shall, unless noted otherwise, be mounted as follows:

Receptacles:	16" above floor or 6" above working surface unless noted otherwise on plan, + 1/16" vertical alignment.
Switches:	4'-0" above floor to centerline of toggle switch, + 1/16" vertical alignment.
Panelboards:	6'-6" to top above finished floor.

(*All dimensions above floor or work surface are to bottom of device unless noted otherwise.)

3.5 IDENTIFICATION AND NAMEPLATES

- 3.5.1 Provide engraved, laminated bakelite (white letters on black surface) nameplates bolted (using stainless steel fasteners) to each piece of electrical distribution equipment as follows:
- A. Panelboards, Switchboards - Designation L1, P1, etc., voltage, phase number of wires, etc.; Wording example: Panel L1-208V-3 phase, 4 wire.
 - B. Motor starters, disconnect switches - unless mounted directly on or adjacent to identify equipment; Wording example: Exhaust Fan 1, Air Handling Unit 1.
- 3.5.2 Provide typed directories for panelboard branch circuit identification. Identify each circuit breaker as to the exact room numbers or area served and the type of circuit, i.e. "Rooms 101-104 lights" or "Corridor 2300" or "Toilet 109 exhaust fan". Room numbers and/or names shall match the installed graphics.

END OF SECTION

SECTION 26 05 03 - EQUIPMENT WIRING CONNECTIONS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes electrical connections to equipment.
- B. Related Sections:
 - 1. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
 - 2. Section 26 05 33 - Raceway and Boxes for Electrical Systems.

1.2 REFERENCES

- A. National Electrical Manufacturers Association:
 - 1. NEMA WD 1 - General Requirements for Wiring Devices.
 - 2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit wiring device manufacturer's catalog information showing dimensions, configurations, and construction.
- C. Manufacturer's installation instructions.

1.4 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Submittal procedures.
- B. Project Record Documents: Record actual locations, sizes, and configurations of equipment connections.

1.5 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
- C. Determine connection locations and requirements.
- D. Sequence rough-in of electrical connections to coordinate with installation of equipment and the construction sequence of the project.
- E. Sequence electrical connections to coordinate with start-up of equipment.

PART 2 PRODUCTS

2.1 CORD AND PLUGS

- A. Manufacturers:
 - 1. Substitutions: Section 01 60 00 - Product Requirements

- B. Attachment Plug Construction: Conform to NEMA WD 1.
- C. Configuration: NEMA WD 6; match receptacle configuration at outlet furnished for equipment.
- D. Cord Construction: Type SO or "SOJ" as required, multi-conductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
- E. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify equipment is ready for electrical connection, for wiring, and to be energized.

3.2 INSTALLATION

- A. Make all electrical connections.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap for field-supplied attachment plug.
- F. Provide suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Provide disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Provide terminal block jumpers to complete equipment wiring requirements.
- I. Provide interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.
- J. Coolers and Freezers: Cut and seal conduit openings in freezer and cooler walls, floor, and ceilings.

3.3 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Cooperate with utilization equipment installers and field service personnel during checkout and starting of equipment to allow testing and balancing and other startup

operations. Provide personnel to operate electrical system and checkout wiring connection components and configurations.

END OF SECTION

SECTION 26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes building wire and cable; nonmetallic-sheathed cable; service entrance cable; armored cable; metal clad cable; and wiring connectors and connections.
- B. Related Sections:
 - 1. Section 26 05 53 - Identification for Electrical Systems: Product requirements for wire identification.
 - 2. Section 31 23 17 - Trenching: Execution requirements for trenching required by this section.
 - 3. Section 31 23 23 - Fill: Requirements for backfill to be placed by this section.

1.2 REFERENCES

- A. International Electrical Testing Association:
 - 1. NETA ATS - Acceptance Testing Specifications for Electrical Power Distribution Equipment and Systems.

1.3 SYSTEM DESCRIPTION

- A. Product Requirements: Provide products as follows:
 - 1. Solid conductor for feeders and branch circuits 10 AWG and smaller.
 - 2. Stranded conductors for control circuits.
 - 3. Conductor not smaller than 12 AWG for power and lighting circuits.
 - 4. Conductor not smaller than 14 AWG for control circuits.
 - 5. 10 AWG conductors for 20 ampere, 120 volt branch circuits longer than 75 feet.
 - 6. 10 AWG conductors for 20 ampere, 277 volt branch circuits longer than 150 feet.
- B. Wiring Methods: Provide the following wiring methods:
 - 1. Concealed Dry Interior Locations: Use only Type THHN/THWN insulation, in raceway.
 - 2. Exposed Dry Interior Locations: Use only Type THHN/THWN insulation in raceway.
 - 3. Above Accessible Ceilings: Use only Type THHN/THWN insulation in raceway.
 - 4. Wet or Damp Interior Locations: Use only Type THHN/THWN insulation in raceway.
 - 5. Exterior Locations: Use only Type THHN/THWN insulation in raceway.
 - 6. Underground Locations: Use only Type THHN/THWN insulation in raceway.

1.4 DESIGN REQUIREMENTS

- A. Conductor sizes are based on copper. Copper conductors only, shall be used on this project.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit for building wire and all conductors on this project.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of components and circuits.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.8 FIELD MEASUREMENTS

- A. Verify field measurements are as indicated on Drawings.

1.9 COORDINATION

- A. Section 01 30 00 - Administrative Requirements : Requirements for coordination.
- B. Where wire and cable destination is indicated and routing is not shown, determine routing and lengths required.

PART 2 PRODUCTS <S>

2.1 BUILDING WIRE

- A. Manufacturers:
 - 1. Southwire
 - 2. Anaconda
 - 3. G.E.
 - 4. Thomas & Betts
 - 5. ITT
 - 6. Blackburn
 - 7. Penn-Union
 - 8. Cerrowire
 - 9. Remy Cable
 - 10. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: Single conductor insulated wire.
- C. Conductor: Copper.
- D. Insulation: 600 volt rating; thermoplastic material rated 90 degrees C.

2.2 WIRING CONNECTORS <S>

2.2.1 All splices, taps, connections, terminations, etc., shall be made with appropriate connectors in a workmanlike manner and in compliance with the N.E.C.

2.2.2 Splices for any combination of stranded and/or solid copper wire up to 3#8 or 2#6 shall be made with solderless electrical spring connectors. Splices for larger wire shall be solderless compression indentation type properly taped and U.L. Listed for conductor size and quantity.

Acceptable Manufacturers: 3M Scotchlok, Panduit P-Conn, or Ideal Wirenut.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify interior of building has been protected from weather.
- C. Verify mechanical work likely to damage wire and cable has been completed.
- D. Verify raceway installation is complete and supported from the building structure.

3.2 PREPARATION

- A. Contractor shall completely and thoroughly swab raceway before installing wire.

3.3 INSTALLATION

- A. Route wire and cable to meet Project conditions.
- B. Neatly train and lace wiring inside boxes, equipment, and panelboards.
- C. Identify and color code wire and cable in strict accordance with the latest applicable edition of the N.E.C. and under provisions of Section 26 05 53. Identify each conductor with its circuit number and/or other designation indicated.
- D. Special Techniques--Building Wire in Raceway:
 - 1. Pull conductors into raceway at same time.
 - 2. Install building wire 4 AWG and larger with pulling equipment.
 - 3.
- E. Special Techniques - Wiring Connections:
 - 1. Clean conductor surfaces before installing lugs and connectors.
 - 2. Make splices, taps, and terminations to carry full ampacity of conductors with no perceptible temperature rise.
 - 3. Tape uninsulated conductors and connectors with electrical tape to 150 percent of insulation rating of conductor.
 - 4. Provide split bolt connectors for copper conductor splices and taps, 6 AWG and larger.
 - 5. Provide solderless pressure connectors with insulating covers for copper conductor splices and taps, 8 AWG and smaller.
 - 6. Provide insulated spring wire connectors with plastic caps for copper conductor splices and taps, 10 AWG and smaller.
- F. Provide solid conductor for feeders and branch circuits 8 AWG and smaller.
- G. Provide stranded conductors for branch circuits 10 AWG and smaller. All stranded conductors shall be provided with crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under screws.
- H. All conductors shall be in conduit.

- I. No more than three (3) current carrying conductors shall be installed in a single raceway. All branch circuit current carrying conductors shall be provided with a dedicated neutral.

3.4 WIRE COLOR

- A. General
 - 1. For wire sizes 10 AWG and smaller, install wire colors in accordance with the following:
 - a. Black and red for single phase circuits at 120/240 volts.
 - b. Black, red, and blue for circuits at 120/208 volts single or three phase.
 - c. Orange, brown, and yellow for circuits at 277/480 volts single or three phase.
 - 2. For wire sizes 8 AWG and larger, identify wire with colored tape at terminals, splices and boxes. Colors are as follows:
 - a. Black and red for single phase circuits at 120/240 volts.
 - b. Black, red, and blue for circuits at 120/208 volts single or three phase.
 - c. Orange, brown, and yellow for circuits at 277/480 volts single or three phase.
- B. Neutral Conductors: White. When two or more neutrals are located in one conduit, individually identify each with proper circuit number.
- C. Branch Circuit Conductors: Provide three or four wire home runs with each phase uniquely color coded.
- D. Feeder Circuit Conductors: Uniquely color code each phase.
- E. Ground Conductors:
 - 1. For 6 AWG and smaller: Green.
 - 2. For 4 AWG and larger: Identify with green tape at both ends and visible points including junction boxes.

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

END OF SECTION

SECTION 26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Rod electrodes.
 - 2. Active electrodes.
 - 3. Wire.
 - 4. Grounding well components.
 - 5. Mechanical connectors.
 - 6. Exothermic connections.
- B. Related Sections:
 - 1. Section 03 20 00 - Concrete Reinforcing: Bonding or welding bars when reinforcing steel is used for electrodes.

1.2 REFERENCES

- A. Institute of Electrical and Electronics Engineers:
 - 1. IEEE 142 - Recommended Practice for Grounding of Industrial and Commercial Power Systems.
 - 2. IEEE 1100 - Recommended Practice for Powering and Grounding Electronic Equipment.
- B. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.
 - 2. NFPA 99 - Standard for Health Care Facilities.

1.3 SYSTEM DESCRIPTION

- A. Grounding systems use the following elements as grounding electrodes:
 - 1. Metal underground water pipe.
 - 2. Metal building frame.
 - 3. Concrete-encased electrode.
 - 4. Rod electrode.

1.4 PERFORMANCE REQUIREMENTS

- A. Grounding System Resistance: 5 ohms maximum. In strict accordance with NFPA 99 (provide test results to architect).

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit data on grounding electrodes and connections.
- C. Test Reports: Indicate overall resistance to ground and resistance of each electrode.
- D. Manufacturer's Installation Instructions: Submit for active electrodes.
- E. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of components and grounding electrodes.

1.7 QUALITY ASSURANCE

- A. Provide grounding materials conforming to requirements of NEC, IEEE 142, and UL labeled.
- B. Perform Work in accordance with NFPA 99.
- C. Maintain one copy of documents on site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum 5 years documented experience and approved by manufacturer.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.
- D. Do not deliver items to project before time of installation. Limit shipment of bulk and multiple-use materials to quantities needed for immediate installation.

1.10 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.
- B. Complete grounding and bonding of building reinforcing steel prior concrete placement.

PART 2 PRODUCTS

2.1 ROD ELECTRODES

- A. Manufacturers:
 - 1. Apache Grounding/Erico Inc.
 - 2. Copperweld, Inc.
 - 3. Erico, Inc.
 - 4. O-Z Gedney Co.
 - 5. Thomas & Betts, Electrical.

- 6. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description:
 - 1. Material: Copper-clad steel.
 - 2. Diameter: 3/4 inch (19 mm).
 - 3. Length: 10 feet (3.0 m).
- C. Connector: Connector for exothermic welded connection.

2.2 ACTIVE ELECTRODES

- A. Manufacturers:
 - 1. Apache Grounding/Erico Inc.
 - 2. Copperweld, Inc.
 - 3. Erico, Inc.
 - 4. O-Z Gedney Co.
 - 5. Thomas & Betts, Electrical.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.

2.3 WIRE

- A. Material: Stranded copper.
- B. Foundation Electrodes: 4 AWG.
- C. Grounding Electrode Conductor: Copper conductor bare.
- D. Bonding Conductor: Copper conductor insulated.

2.4 MECHANICAL CONNECTORS

- A. Manufacturers:
 - 1. Apache Grounding/Erico Inc.
 - 2. Copperweld, Inc.
 - 3. Erico, Inc.
 - 4. ILSCO Corporation.
 - 5. O-Z Gedney Co.
 - 6. Thomas & Betts, Electrical.
 - 7. Substitutions: Section 01 60 00 - Product Requirements.
- B. Description: Bronze connectors, suitable for grounding and bonding applications, in configurations required for particular installation.

2.5 EXOTHERMIC CONNECTIONS

- A. Manufacturers:
 - 1. Apache Grounding/Erico Inc.
 - 2. Cadweld, Erico, Inc.
 - 3. Copperweld, Inc.
 - 4. ILSCO Corporation.
 - 5. O-Z Gedney Co.
 - 6. Thomas & Betts, Electrical.
 - 7. Substitutions: [Section 01 60 00 - Product Requirements.

- B. Product Description: Exothermic materials, accessories, and tools for preparing and making permanent field connections between grounding system components.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify final backfill and compaction has been completed before driving rod electrodes.

3.2 PREPARATION

- A. Remove paint, rust, mill oils, and all surface contaminants at connection points.

3.3 INSTALLATION

- A. Provide in accordance with IEEE 142 and 1100.
- B. Provide rod electrodes to achieve specified resistance to ground.
- C. Provide grounding and bonding conductors concealed from view.
- D. Provide grounding electrode conductor and connect to reinforcing steel in foundation footing. Electrically bond steel together.
- E. Bond together metal siding not attached to grounded structure; bond to ground.
- F. Provide isolated grounding conductor for circuits supplying electronic cash registers, personal computers and sensitive electronic equipment in accordance with IEEE 1100.

3.4 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements, 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Perform ground resistance testing in accordance with IEEE 142. (Provide test results to architect in 3-ring, loose leaf binder, properly labeled.)
- C. Perform, record and submit in writing, leakage current tests in accordance with NFPA 99. (Provide test results to architect in 3-ring, loose leaf binder, properly labeled.)
- D. Perform continuity testing in accordance with IEEE 142. (Provide test results to architect in 3-ring, loose leaf binder, properly labeled.)
- E. When improper grounding is found on receptacles, check receptacles in entire project and correct. Perform retest.

END OF SECTION

SECTION 26 05 29 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Conduit supports.
 - 2. Formed steel channel.
 - 3. Spring steel clips.
 - 4. Sleeves.
 - 5. Mechanical sleeve seals.
 - 6. Firestopping relating to electrical work.
 - 7. Firestopping accessories.
 - 8. Equipment bases and supports.
- B. Related Sections:
 - 1. Section 03 30 00 - Cast-In-Place Concrete: Product requirements for concrete for placement by this section.
 - 2. Section 27 05 29 - Hangers and Supports for Communications Systems.

1.2 REFERENCES

- A. ASTM International:
 - 1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
 - 2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
 - 3. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
 - 4. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.
- B. FM Global:
 - 1. FM - Approval Guide, A Guide to Equipment, Materials & Services Approved By Factory Mutual Research For Property Conservation.
- C. National Fire Protection Association:
 - 1. NFPA 70 - National Electrical Code.
- D. Underwriters Laboratories Inc.:
 - 1. UL 263 - Fire Tests of Building Construction and Materials.
 - 2. UL 723 - Tests for Surface Burning Characteristics of Building Materials.
 - 3. UL 1479 - Fire Tests of Through-Penetration Firestops.
 - 4. UL 2079 - Tests for Fire Resistance of Building Joint Systems.
 - 5. UL - Fire Resistance Directory, Volume I and II.

1.3 DEFINITIONS

- A. Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.

1.4 SYSTEM DESCRIPTION

- A. All conduit and other penetrations through fire rated ceilings, walls or floors shall be fire stopped using U.L. approved materials and methods to maintain the fire rating of the ceiling, wall or floor structure. All penetrations shall comply with the latest applicable edition of the UL fire resistance directory Vol. I and Vol. II.
- B. Firestopping Materials: ASTM E119, ASTM E814, UL 263 and UL 1479 to achieve fire ratings as noted on Drawings for adjacent construction, but not less than 1 hour fire rating.
- C. Firestop interruptions to fire rated assemblies, materials, and components.

1.5 PERFORMANCE REQUIREMENTS

- A. Firestopping: Conform to FM and UL for fire resistance ratings and surface burning characteristics.
- B. Firestopping: Provide certificate of compliance from authority having jurisdiction indicating approval of materials used.

1.6 SUBMITTALS <S>

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate system layout with location and detail of trapeze hangers.
- C. Product Data:
 - 1. Hangers and Supports: Submit manufacturers catalog data.
 - 2. Firestopping: Submit data on product characteristics, performance and limitation criteria.
- D. Firestopping Schedule: Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly.
- E. Design Data: Indicate load carrying capacity of trapeze hangers and supports.
- F. Manufacturer's Installation Instructions:
 - 1. Hangers and Supports: Submit special procedures and assembly of components.
 - 2. Firestopping: Submit preparation and installation instructions.
- G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
- H. Engineering Judgements: For conditions not covered by UL or WH listed designs, submit judgements by licensed professional engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.

1.7 QUALITY ASSURANCE

- A. Through Penetration Firestopping of Fire Rated Assemblies shall comply with the latest applicable edition of the U.L. Fire Resistance Directory, Volumes I and II.
- B. Maintain copy of U.L. Fire Resistance Directory Volume I and II on site.

1.8 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.
- B. Installer: Company specializing in performing work of this section with minimum three years documented experience and approved by the materials manufacturer.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept materials on site in original factory packaging, labeled with manufacturer's identification.
- C. Protect from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original packaging.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Do not apply firestopping materials when temperature of substrate material and ambient air is below 60 degrees F (15 degrees C).
- C. Maintain this minimum temperature before, during, and for minimum 3 days after installation of firestopping materials.

PART 2 PRODUCTS

2.1 CONDUIT SUPPORTS

- A. Raceways shall be installed neatly racked, routed parallel or perpendicular to building lines, securely attached and supported complete with associated couplings, connectors and fittings. Installation shall conform with applicable sections of N.E.C. Article 345 through 355.
- B. Concealed raceway shall be supported with galvanized stamped steel "2-Hole" clamps secured to structure. Conduit or ductwork shall not be used to support other conduit. Exposed raceways shall be secured to structure with galvanized stamped steel "2-Hole" clamps or suspended from structure with beam clamps and conduit hangers. All conduits shall be directly supported by the building structure with the use of the appropriate factory fabricated support system as specified above. Use of caddy clips to support conduit to top of T-bar ceiling grid or ceiling support system will not be permitted. All hangers and hardware connecting to structure shall be completed prior to fire-proofing. "Bat-wing" supports utilizing light fixture or ceiling support wings are not acceptable.

Grouped raceways shall be supported with galvanized steel channel assemblies.

	<u>Kindorf</u>	<u>Globe Strut</u>	<u>Unistrut</u>
strut	B-909	G-5812-PO	P1000-HS
two-hole strap	C-105	G-7000	P1100

Acceptable manufacturers: Unistrut, Power Strut, Globe Strut, or Kindorf.

Raceway supports shall be spaced as follows:

- a. rigid metal, IMC or EMT - within 3' of termination, coupling or connection and 10' o.c.
 - b. rigid nonmetallic - per N.E.C. paragraph 347-8.
 - c. flexible nonmetallic - within 12" of termination or connection, 4.5' o.c.
- C. Raceways shall be concealed where possible in finished areas, and may be exposed in mechanical/electrical equipment rooms, as approved by architect.
- D. Hanger Rods: Threaded high tensile strength galvanized carbon steel with free running threads.
- E. Beam Clamps: Malleable Iron, with tapered hole in base and back to accept either bolt or hanger rod. Set screw: hardened steel.
- F. Conduit clamps for trapeze hangers: Galvanized steel, notched to fit trapeze with single bolt to tighten.
- G. Conduit clamps - general purpose: Two hole malleable iron for surface mounted conduits.
- H. Cable Ties: High strength nylon temperature rated to 185 degrees F (85 degrees C). Self locking.

2.2 SLEEVES

- A. Furnish materials in accordance with the latest applicable edition of the NEC.
- B. Sleeves for Conduit Through Non-fire Rated Floors: 18 gage (1.2 mm) thick galvanized steel.
- C. Sleeves for Conduit Through Non-fire Rated Beams, Walls, Footings, and Potentially Wet Floors: Steel pipe or 18 gage (1.2mm) thick galvanized steel.
- D. Sleeves for Conduit Through Fire Rated and Fire Resistive Floors and Walls, and Fire Proofing: Prefabricated fire rated sleeves including seals, UL listed.
- E. Fire-stopping Insulation: Per the latest edition of the UL Fire Resistance Directory Volumes I and II.

2.3 MECHANICAL SLEEVE SEALS <S>

- A. Manufacturers:
 - 1. Thunderline Link-Seal, Inc.
 - 2. NMP Corporation.
- B. Product Description: Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between object and sleeve, connected with bolts and pressure plates causing rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.

2.4 FIRESTOPPING

- A. Manufacturers:
 - 1. Dow Corning Corp.
 - 2. Fire Trak Corp.
 - 3. Hilti Corp.
 - 4. International Protective Coating Corp.
 - 5. 3M fire Protection Products.
 - 6. Specified Technology, Inc.
- B. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.

2.5 FIRESTOPPING ACCESSORIES

- A. Firestopping accessories shall comply with the latest applicable edition of the U.L. Fire Resistance Directory, Volumes I and II.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.
- B. Verify openings are ready to receive sleeves.
- C. Verify openings are ready to receive firestopping.

3.2 PREPARATION

- A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.
- B. Remove incompatible materials affecting bond.
- C. Provide materials to arrest liquid material leakage.
- D. Obtain permission from Architect/Engineer before using powder-actuated anchors.
- E. Do not drill or cut structural members.

3.3 INSTALLATION - HANGERS AND SUPPORTS

- A. Anchors and Fasteners:
 - 1. Concrete Structural Elements: Provide precast inserts, expansion anchors, and preset inserts as required and as approved by the project structural engineer.
 - 2. Steel Structural Elements: Provide beam clamps, spring steel clips, steel ramset fasteners, and welded fasteners as required and as approved by the project structural engineer.
 - 3. Concrete Surfaces: Provide self-drilling anchors and expansion anchors as required and as approved by the project structural engineer.

4. Hollow Masonry, Plaster, and Gypsum Board Partitions: Provide toggle bolts and hollow wall fasteners as required and as approved by the project structural engineer.
 5. Solid Masonry Walls: Provide expansion anchors and preset inserts as required and as approved by the project structural engineer..
 6. Sheet Metal: Provide sheet metal screws as required and as approved by the project structural engineer.
 7. Wood Elements: Provide wood screws as required and as approved by the project structural engineer.
- B. Inserts:
1. Install inserts for placement in concrete forms.
 2. Install inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
 3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches (100 mm).
 4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
 5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above, recessed into and grouted flush with slab.
- C. Install conduit and raceway support and spacing in accordance with the latest applicable edition of the NEC.
- D. Do not fasten supports to pipes, ducts, mechanical equipment, conduit or ceiling suspension wires.
- E. Install multiple conduit runs on common hangers.
- F. Supports:
1. Fabricate supports from structural steel or formed steel channel. Install hexagon head bolts to present neat appearance with adequate strength and rigidity. Install spring lock washers under nuts.
 2. Install surface mounted cabinets and panelboards with minimum of four anchors.
 3. In wet and damp locations install stainless steel channel supports to stand cabinets and panelboards 1 inch (25 mm) off wall.
 4. Support vertical conduit at every floor.

3.4 INSTALLATION - FIRESTOPPING

- A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping to comply with the latest applicable edition of the U.L. Fire Resistance Directory, Volumes I and II.

3.5 INSTALLATION - EQUIPMENT BASES AND SUPPORTS

- A. Provide housekeeping pads reinforced of concrete, minimum 3-1/2 inches (87 mm) thick and extending 6 inches (150 mm) beyond supported equipment Refer to Section 03 30 00.
- B. Using templates furnished with equipment, install anchor bolts, and accessories for mounting and anchoring equipment.
- C. Construct supports of steel members and/or formed steel channel. Brace and fasten with flanges bolted to structure.

3.6 INSTALLATION - SLEEVES

- A. Exterior watertight entries: Seal with adjustable interlocking rubber links.
- B. Conduit penetrations not required to be watertight: Sleeve and fill with silicon foam.
- C. Set sleeves in position in forms. Provide reinforcing around sleeves.
- D. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- E. Extend sleeves through floors 1 inch (25mm) above finished floor level. Caulk sleeves.
- F. Where conduit or raceway penetrates floor, ceiling, or wall, close off space between conduit or raceway and adjacent work with fire stopping insulation and caulk airtight. Provide close fitting metal collar or escutcheon covers at both sides of penetration.
- G. Install stainless steel escutcheons at finished surfaces.

3.7 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements, 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect installed firestopping for compliance with specifications and submitted schedule.

3.8 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Clean adjacent surfaces of firestopping materials.

3.9 PROTECTION OF FINISHED WORK

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.
- B. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 26 05 33 - RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes conduit and tubing, surface raceways, wireways, outlet boxes, pull and junction boxes, and handholes.
- B. Related Sections:
 - 1. Section 26 05 03 - Equipment Wiring Connections.
 - 2. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
 - 3. Section 26 05 29 - Hangers and Supports for Electrical Systems.
 - 4. Section 26 05 39 - Underfloor Raceways for Electrical Systems.
 - 5. Section 26 05 53 - Identification for Electrical Systems.
 - 6. Section 26 27 26 - Wiring Devices.

1.2 REFERENCES

- A. American National Standards Institute:
 - 1. ANSI C80.1 - Rigid Steel Conduit, Zinc Coated.
 - 2. ANSI C80.3 - Specification for Electrical Metallic Tubing, Zinc Coated.
- B. National Electrical Manufacturers Association:
 - 1. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
 - 2. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit and Cable Assemblies.
 - 3. NEMA OS 1 - Sheet Steel Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 4. NEMA OS 2 - Nonmetallic Outlet Boxes, Device Boxes, Covers, and Box Supports.
 - 5. NEMA RN 1 - Polyvinyl Chloride (PVC) Externally Coated Galvanized Rigid Steel Conduit and Intermediate Metal Conduit.
 - 6. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Tubing and Conduit.
 - 7. NEMA TC 3 - PVC Fittings for Use with Rigid PVC Conduit and Tubing.

1.3 SYSTEM DESCRIPTION

- A. Provide raceway and boxes located as indicated on Drawings, and at other locations required for splices, taps, wire pulling, equipment connections, and compliance with regulatory requirements. Raceway and boxes are shown in approximate locations unless dimensioned. Provide raceway, J-boxes and pullboxes required to complete wiring system.
- B. Underground More than 5 feet (1500mm) outside Foundation Wall: Provide rigid steel conduit. Provide cast metal boxes or nonmetallic handhole.
- C. Underground Within 5 feet (1500mm) from Foundation Wall: Provide rigid steel conduit. Provide cast metal or nonmetallic boxes.
- D. In or Under Slab on Grade: Provide rigid steel conduit. Provide cast or nonmetallic metal boxes.
- E. Outdoor Locations, Above Grade: Provide rigid steel conduit. Provide cast metal pull, and junction boxes.

- F. In Slab Above Grade: Provide rigid steel conduit. Provide cast metal boxes.
- G. Wet and Damp Locations: Provide plastic coated rigid. Provide cast metal or nonmetallic outlet, junction, and pull boxes. Provide flush mounting outlet box in finished areas.
- H. Concealed Dry Locations: Provide electrical metallic tubing. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.
- I. Exposed Dry Locations: Provide electrical metallic tubing. Provide sheet-metal boxes. Provide flush mounting outlet box in finished areas. Provide hinged enclosure for large pull boxes.

1.4 DESIGN REQUIREMENTS

- A. Minimum Raceway Size: 3/4 inch (19mm) unless otherwise specified.

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit for the following:
 - 1. Flexible metal conduit.
 - 2. Liquidtight flexible metal conduit.
 - 3. Nonmetallic conduit.
 - 4. Flexible nonmetallic conduit.
 - 5. Nonmetallic tubing.
 - 6. Raceway fittings.
 - 7. Conduit bodies.
 - 8. Surface raceway.
 - 9. Wireway.
 - 10. Pull and junction boxes.
 - 11. Handholes.
- C. Manufacturer's Installation Instructions: Submit application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation, and installation of Product.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Closeout procedures.
- B. Project Record Documents:
 - 1. Record actual routing of conduits larger than 3/4 inch.
 - 2. Record actual locations and mounting heights of outlet, pull, and junction boxes.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Protect conduit from corrosion and entrance of debris by storing above grade. Provide appropriate covering.

- C. Protect PVC conduit from sunlight.

1.8 COORDINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate installation of outlet boxes for equipment connected under Section 26 05 03.
- C. Coordinate mounting heights, orientation and locations of outlets mounted above counters, benches, and backsplashes.

PART 2 PRODUCTS

2.1 METAL CONDUIT

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices.
 - 3. Thomas & Betts Corp.
 - 4. Walker Systems Inc.
 - 5. The Wiremold Co.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.
- B. Rigid Steel Conduit: ANSI C80.1.
- C. Fittings and Conduit Bodies: NEMA FB 1; material to match conduit.

2.2 FLEXIBLE METAL CONDUIT

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices.
 - 3. Thomas & Betts Corp.
 - 4. Walker Systems Inc.
 - 5. The Wiremold Co.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: Interlocked steel construction.
- C. Fittings: NEMA FB 1.

2.3 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices.
 - 3. Thomas & Betts Corp.
 - 4. Walker Systems Inc.
 - 5. The Wiremold Co.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: Interlocked steel construction with PVC jacket.
- C. Fittings: NEMA FB 1.

2.4 ELECTRICAL METALLIC TUBING (EMT)

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices.
 - 3. Thomas & Betts Corp.
 - 4. Walker Systems Inc.
 - 5. The Wiremold Co.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: ANSI C80.3; galvanized tubing.
- C. Fittings and Conduit Bodies: NEMA FB 1; steel or malleable iron, compression type (no set screw allowed).

2.5 NONMETALLIC CONDUIT

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices.
 - 3. Thomas & Betts Corp.
 - 4. Walker Systems Inc.
 - 5. The Wiremold Co.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: NEMA TC 2; Schedule 40 PVC.
- C. Fittings and Conduit Bodies: NEMA TC 3.

2.6 SURFACE METAL RACEWAY

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices.
 - 3. Thomas & Betts Corp.
 - 4. Walker Systems Inc.
 - 5. The Wiremold Co.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: Sheet metal channel with fitted cover, suitable for use as surface metal raceway. All installations shall be approved by architect in writing, prior to performing any work.
- C. Finish: As directed by Architect.
- D. Fittings, Boxes, and Extension Rings: Furnish manufacturer's standard accessories; match finish on raceway.

2.7 WIREWAY

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices.
 - 3. Thomas & Betts Corp.
 - 4. Walker Systems Inc.

- 5. The Wiremold Co.
- 6. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: Oiltight, dust-tight and raintight type wireway.
- C. Knockouts: Manufacturer's standard.
- D. Size and length as indicated on Drawings.
- E. Cover: Hinged and Screw cover with full gaskets.
- F. Connector: Flanged.
- G. Fittings: Lay-in type with removable top, bottom, and side; captive screws drip shield.
- H. Finish: Rust inhibiting primer coating with gray enamel finish.

2.8 OUTLET BOXES <S>

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices.
 - 3. Thomas & Betts Corp.
 - 4. Walker Systems Inc.
 - 5. The Wiremold Co.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.
- B. Provide metallic galvanized boxes per the latest applicable edition of N.E.C. Article 370 at each outlet location indicated on the drawings or as required.
- C. Boxes at exterior locations shall be cast aluminum with threaded hubs and gasketed covers.
- D. The owner reserves the right to make minor adjustments to the locations of outlet boxes prior to rough-in.
- E. Sizes and configuration of boxes shall be as required for the intended service and shall conform to and be applied in accordance with Table 370-16(a) of the N.E.C. Provide extension rings, expandable bars sets, supports, gaskets for weatherproof type etc., where required.

Boxes shall be equal to Steel City with "CV" bracket.
Acceptable Manufacturers: Steel City, Hubbell, or Appleton.
- F. Floor mounted boxes shall be adjustable and gasketed. See Wiring Devices for additional information.
- G. Gang type boxes shall be used where multiple wiring devices are located adjacent to one another, including cast in floor boxes.
- H. Sheet Metal Outlet Boxes: NEMA OS 1, galvanized steel.
 - 1. Luminaire and Equipment Supporting Boxes: Rated for weight of equipment supported; Provide 1/2 inch (13 mm) male fixture studs where required.
 - 2. Concrete Ceiling Boxes: Concrete type.

- I. Nonmetallic Outlet Boxes: NEMA OS 2.
- J. Cast Boxes: NEMA FB 1, Type FD. Furnish gasketed cover by box manufacturer and provide threaded hubs.
- K. Wall Plates for Finished Areas: As specified in Section 26 27 26.
- L. Wall Plates for Unfinished Areas: Furnish gasketed cover.

2.9 PULL AND JUNCTION BOXES

- A. Manufacturers:
 - 1. Carlon Electrical Products.
 - 2. Hubbell Wiring Devices.
 - 3. Thomas & Betts Corp.
 - 4. Walker Systems Inc.
 - 5. The Wiremold Co.
 - 6. Substitutions: Section 01 60 00 - Product Requirements.
- B. Sheet Metal Boxes: NEMA OS 1, galvanized steel.
- C. Hinged Enclosures: As specified in Section 26 27 16.
- D. Surface Mounted Cast Metal Box: NEMA 250:
 - 1. Material: Cast aluminum.
 - 2. Cover: Furnish with ground flange, neoprene gasket, and stainless steel cover screws.
- E. In-Ground Cast Metal Box: NEMA 250, Type 6, flanged, recessed cover box for flush mounting:
 - 1. Material: Cast aluminum.
 - 2. Cover: Nonskid cover with neoprene gasket and stainless steel cover screws.
 - 3. Cover Legend: "ELECTRIC".
- F. Fiberglass Handholes: Die-molded, glass-fiber hand holes:
 - 1. Cable Entrance: Pre-cut 6 inch x 6 inch (150 mm x 150 mm) cable entrance at center bottom of each side.
 - 2. Cover: Glass-fiber , weatherproof cover with nonskid finish.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify outlet locations and routing and termination locations of raceway prior to rough-in.

3.2 INSTALLATION

- A. Install Work in accordance with the latest applicable edition of the NEC.
- B. Ground and bond raceway and boxes in accordance with Section 26 05 26.

- C. Fasten raceway and box supports to structure and finishes in accordance with Section 26 05 29.
- D. Identify raceway and boxes in accordance with Section 26 05 53.
- E. Arrange raceway and boxes as high as possible (in structure above corridor ceilings) to maintain headroom and present neat and workman like appearance.

3.3 INSTALLATION - RACEWAY

- A. Raceway routing is shown in approximate locations unless dimensioned. Route to complete wiring system. Contractor shall layout his work such that "gutters" are not required above electrical panels. Contractor shall route branch circuits underground as required to utilize all panelboard conduit entry points.
- B. Arrange raceway supports to prevent misalignment during wiring installation.
- C. Support raceway using coated steel or malleable iron straps, clevis hangers, and split hangers.
- D. Group related raceway; support using conduit rack. Construct rack using steel channel specified in Section 26 05 29; provide space on each for 25 percent additional raceways.
- E. Do not support raceway with wire or perforated pipe straps. Remove wire used for temporary supports
- F. Do not attach raceway to ceiling support wires or other piping systems.
- G. Construct wireway supports from steel channel specified in Section 26 05 29.
- H. Route exposed raceway parallel and perpendicular to walls and building lines. (Any and all exposed raceway shall be approved by architect, in writing, prior to performing work.)
- I. Route raceway installed above accessible ceilings parallel and perpendicular to walls.
- J. Route conduit in and under slab from point-to-point.
- K. Maximum Size Conduit in Slab Above Grade: 3/4 inch (19mm). Do not cross conduits in slab. (Verify with project Structural Engineer prior to placing, all conduit shall be below slab as much as possible.)
- L. Maintain clearance between raceway and piping for maintenance purposes.
- M. Maintain 12 inch (300 mm) clearance between raceway and surfaces with temperatures exceeding 104 degrees F (40 degrees C).
- N. Cut conduit square using saw or pipe cutter; de-burr and bush all cut ends.
- O. Bring conduit to shoulder of fittings; fasten securely.
- P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for minimum 20 minutes.

- Q. Provide conduit hubs or sealing locknuts to fasten conduit to sheet metal boxes in damp and wet locations and to cast boxes.
- R. Provide no more than equivalent of three 90 degree bends between boxes. Provide conduit bodies to make sharp changes in direction, as around beams. Provide factory elbows for bends in metal conduit larger than 2 inch (50 mm) size.
- S. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.
- T. Provide fittings to accommodate expansion and deflection where raceway crosses seismic, control and expansion joints.
- U. Provide suitable pull string or cord in each and every empty raceway except sleeves and nipples.
- V. Provide suitable caps to protect installed conduit against entrance of dirt and moisture.
- W. Surface Raceway: Provide flat-head screws, clips, and straps to fasten raceway channel to surfaces; mount plumb and level. Provide insulating bushings and inserts at connections to outlets and corner fittings. (Surface race shall be used only with architects written approval.)
- X. Close ends and unused openings in wireway.
- Y. Do not group more homeruns in a single raceway than shown on the drawings. Do not group more than three (3) homeruns in a single raceway without the written permission of the Architect. Provide a separate neutral for each phase leg in the raceway unless shown otherwise on the drawings.

3.4 INSTALLATION - BOXES

- A. Provide wall mounted boxes at elevations to accommodate mounting heights as indicated on Drawings or as specified in section for outlet device.
- B. The owner reserves the right to adjust box location up to 20 feet (6m) prior to rough-in to accommodate intended purpose.
- C. Orient boxes to accommodate wiring devices oriented as specified in Section 26 27 26.
- D. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.
- E. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6 inches (150 mm) from ceiling access panel or from removable recessed luminaire.
- F. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.
- G. Do not install flush mounting box back-to-back in walls; install with minimum 24 inches (600 mm) separation in walls.
- H. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

- I. Install stamped steel bridges to fasten flush mounting outlet box between studs.
- J. Install flush mounting box without damaging wall insulation or reducing its effectiveness.
- K. Install adjustable steel channel fasteners for hung ceiling outlet box.
- L. Do not fasten boxes to ceiling support wires or other piping systems.
- M. Support boxes from structure independently of conduit.
- N. Install gang box where more than one device is mounted together. Do not use sectional box.
- O. Install gang box with plaster ring for single device outlets.
- P. Permanently mark all j-boxes with circuit numbers of circuits contained in box.

3.5 INTERFACE WITH OTHER PRODUCTS

- A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods in accordance with Section 07 84 00.
- B. Route conduit through roof openings for piping and ductwork or through suitable roof jack with pitch pocket. Coordinate location with roofing installation.
- C. Locate outlet boxes to allow luminaries to be positioned as indicated on Drawings and Architect's reflected ceiling plan.
- D. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices.

3.6 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust flush-mounting outlets to make front flush with finished wall material.
- C. Install knockout closures in unused openings in boxes.

3.7 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Clean interior of boxes to remove dust, debris, and other material.
- C. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Nameplates.
 - 2. Labels.
 - 3. Wire markers.
 - 4. Conduit markers.
 - 5. Stencils.
 - 6. Underground Warning Tape.
 - 7. Lockout Devices.
- B. Related Sections:
 - 1. Section 09 90 00 - Painting and Coating: Execution requirements for painting specified by this section.
 - 2. Section 27 05 53 - Identification for Communications Systems.
 - 3. Section 28 05 53 - Identification for Electronic Safety and Security.

1.2 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data:
 - 1. Submit manufacturer's catalog literature for each product required.
 - 2. Submit electrical identification schedule including list of wording, symbols, letter size, color coding, tag number, location, and function.
 - 3. Submit two (2) samples of each type of identification products applicable to project.
 - 4. Submit two (2) nameplates, 4 x 4 inch in size illustrating materials and engraving quality.
- C. Manufacturer's Installation Instructions: Indicate installation instructions, special procedures, and installation.

1.3 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of tagged devices; include tag numbers.

1.4 QUALITY ASSURANCE

- A. Perform Work in a workman like and neat manner.

1.5 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three (3) years experience.
- B. Installer: Company specializing in performing Work of this section with minimum three (3) years experience.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Accept identification products on site in original containers. Inspect for damage.
- C. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
- D. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

1.7 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.
- B. Install nameplates only when ambient temperature and humidity conditions are within range recommended by manufacturer.

1.8 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements.

PART 2 PRODUCTS <S>

- A. Product Description: Laminated three-layer plastic with engraved letters on contrasting background color. White letters on red background for all items connected to an essential electrical system.
- B. Letter Size:
 - 1. 1/8 inch (3mm) high letters for identifying individual equipment and loads.
 - 2. 1/4 inch (6mm) high letters for identifying grouped equipment and loads and panelboards.
- C. Minimum nameplate thickness: 1/8 inch.

2.2 LABELS

- A. Labels: Embossed adhesive tape, with 3/16 inch white letters on black background. White letters on red background for essential electrical systems.

2.3 WIRE MARKERS

- A. Description: Cloth tape, split sleeve, or tubing type wire markers.
- B. Legend:
 - 1. Power and Lighting Circuits: Branch circuit or feeder number.
 - 2. Control Circuits: Control wire number as indicated on shop drawings.

2.4 CONDUIT AND RACEWAY MARKERS

- A. Description: Nameplate fastened with straps.

- B. Color:
 - 1. Provide white letters on red background for essential electrical systems.
 - 2. 240 Volt System: Black lettering on white background.

- C. Legend:
 - 1. 240 Volt System: 240 VOLTS.

2.5 STENCILS

- A. Stencils: With clean cut symbols and letters of following size:
 - 1. Up to 2 inches Outside Diameter of Raceway: 1/2 inch high letters.
 - 2. 2-1/2 to 6 inches Outside Diameter of Raceway: 1 inch high letters.
- B. Stencil Paint: As specified in Section 09 90 00, semi-gloss enamel, colors conforming to the following:
 - 1. Black lettering on white background.
 - 2. White lettering on gray background.
 - 3. Red lettering on white background.
 - 4. Blue lettering on white background.

2.6 UNDERGROUND WARNING TAPE

- A. Description: 4 inch wide plastic tape, detectable type, colored red and yellow with suitable warning legend describing buried electrical lines.

2.7 LOCKOUT DEVICES

- A. Lockout Hasps:
 - 1. Reinforced nylon hasp with erasable label surface; size minimum 7-1/4 x 3 inches.

PART 3 EXECUTION

3.1 PREPARATION

- A. Degrease and clean surfaces to receive adhesive for identification materials.
- B. Prepare surfaces in accordance with Section 09 90 00 for stencil painting.

3.2 EXISTING WORK

- A. Install identification on existing equipment to remain in accordance with this section.
- B. Install identification on unmarked existing equipment.
- C. Replace lost nameplates, labels or markers.
- D. Re-stencil existing equipment.

3.3 INSTALLATION

- A. Install identifying devices after completion of painting.

- B. Nameplate Installation:
1. Install nameplate parallel to equipment lines.
 2. Install nameplate for each electrical distribution and control equipment enclosure with corrosive-resistant mechanical fasteners, or adhesive.
 3. Install nameplates for each control panel and major control components located outside panel with corrosive-resistant mechanical fasteners, or adhesive.
 4. Secure nameplate to equipment front using stainless steel fasteners.
 5. Secure nameplate to inside surface of door on recessed panelboard in finished locations.
 6. Install nameplates for the following:
 - a. Switchboards.
 - b. Panelboards.
 - c. Transformers.
 - d. Service Disconnects.
 - e. Motor Toggle Switches
- C. Label Installation:
1. Install label parallel to equipment lines.
 2. Install label for identification of individual control device stations.
 3. Install labels for permanent adhesion and seal with clear lacquer.
- D. Wire Marker Installation:
1. Install wire marker for each conductor at panelboards, pull boxes, outlet and junction boxes, and each load connection.
 2. Mark data cabling at each end. Install additional marking at accessible locations along the cable run.
- E. Raceway Marker Installation:
1. Install raceway marker for each raceway longer than 6 feet.
 2. Raceway Marker Spacing: 20 feet on center.
 3. Raceway Painting: Identify conduit using field painting in accordance with Section 09 90 00.
 - a. Paint colored band on each conduit longer than 6 feet.
 - b. Paint bands 20 feet (6000mm) on center.
 - c. Color:
 - 1) 240 Volt System: Yellow.
- F. Stencil Installation:
1. Apply stencil painting in accordance with Section 09 90 00.
- G. Underground Warning Tape Installation:
1. Install underground warning tape along length of each underground conduit, raceway, or cable 6 to 8 inches (150 to 200 mm) below finished grade, directly above buried conduit, raceway, or cable.
- H. Install Work in accordance with the latest applicable edition of the NEC.

END OF SECTION

SECTION 26 09 23 - LIGHTING CONTROL DEVICES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Remote control lighting relays.
 - 2. Lighting contactors.
 - 3. Switches.
 - 4. Switch plates.
 - 5. Occupancy sensors.
 - 6. Photocells.
 - 7. Photocell control unit.
- B. Related Sections:
 - 1. Section 26 05 03 - Equipment Wiring Connections: Execution requirements for electric connections specified by this section.
 - 2. Section 26 05 19 - Low-Voltage Electrical Power Conductors and Cables.
 - 3. Section 26 05 33 - Raceway and Boxes for Electrical Systems: Product requirements for raceway and boxes for placement by this section.
 - 4. Section 26 05 53 - Identification for Electrical Systems: Product requirements for electrical identification items for placement by this section.
 - 5. Section 26 24 16 - Panelboards.
 - 6. Section 26 27 26 - Wiring Devices: Product requirements for wiring devices for placement by this section.

1.2 REFERENCES

- A. National Electrical Manufacturers Association:
 - 1. NEMA AB 1 - Molded Case Circuit Breakers and Molded Case Switches.
 - 2. NEMA FU 1 - Low Voltage Cartridge Fuses.
 - 3. NEMA ICS 2 - Industrial Control and Systems: Controllers, Contractors, and Overload Relays, Rated Not More Than 2000 Volts AC or 750 Volts DC.
 - 4. NEMA ICS 4 - Industrial Control and Systems: Terminal Blocks.
 - 5. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices.
 - 6. NEMA ICS 6 - Industrial Control and Systems: Enclosures.
 - 7. NEMA KS 1 - Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum).

1.3 SYSTEM DESCRIPTION

- A. Distributed switching control using self contained individually mounted lighting relays.

1.4 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Shop Drawings: Indicate dimensioned drawings of lighting control system components and accessories.
 - 1. One Line Diagram: Indicating system configuration indicating panels, number and type of switches or devices.
 - 2. Include typical wiring diagrams for each component.
- C. Product Data: Submit manufacturer's standard product data for each system component.

- D. Manufacturer's Installation Instructions: Submit for each system component.
- E. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.5 CLOSEOUT SUBMITTALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record the following information:
 - 1. Actual locations of components and record circuiting and switching arrangements.
 - 2. Wiring diagrams reflecting field installed conditions with identified and numbered, system components and devices.
- C. Operation and Maintenance Data:
 - 1. Submit replacement parts numbers.
 - 2. Submit manufacturer's published installation instructions and operating instructions.
 - 3. Recommended renewal parts list.

1.6 QUALITY ASSURANCE

- A. Perform Work in accordance with all applicable codes.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 60 00 - Product Requirements : Requirements for transporting, handling, storing, and protecting products.
- B. Accept components on site in manufacturer's packaging. Inspect for damage.
- C. Protect components by storing in manufacturer's containers indoor protected from weather.

1.9 WARRANTY

- A. Section 01 70 00 - Execution and Closeout Requirements : Requirements for warranties.
- B. Furnish five year manufacturer warranty for components.

1.10 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for extra materials.
- B. Furnish two of each switch type.
- C. Furnish two of each occupancy sensor type.
- D. Furnish two of each photocell type.

PART 2 PRODUCTS

2.1 REMOTE CONTROL LIGHTING RELAYS

- A. Manufacturers:
 - 1. Automatic Switch Co.
 - 2. Cutler-Hammer.
 - 3. Square D.
 - 4. Substitutions: Section 01 60 00 - Product Requirements
- B. Product Description: Heavy duty, single-coil momentary contact mechanically held remote control relays.
- C. Contacts: Rated 20 amperes at 277 volts. Rated for lighting applications with high intensity discharge (HID), lamps.
- D. Line Voltage Connections: Clamp type screw terminals.
- E. Enclosure: NEMA ICS 6, to meet conditions. Fabricate enclosure from steel finished with manufacturer's standard gray enamel.
 - 1. Interior Dry Locations: Type 1.
 - 2. Exterior Locations: Type 3R.

2.2 LIGHTING CONTACTORS

- A. Manufacturers:
 - 1. Automatic Switch Co.
 - 2. Cutler-Hammer
 - 3. Square D Model
 - 4. Substitutions: Section 01 60 00 - Product Requirements
- B. Product Description: NEMA ICS 2, magnetic lighting contactor.
- C. Configuration: Mechanically held, 2 wire control.
- D. Coil Operating Voltage: 120 volts, 60 Hertz unless noted otherwise.
- E. Poles: To match circuit configuration and control function.
- F. Contact Rating: Conductor overcurrent protection, considering derating for continuous loads.
- G. Enclosure: NEMA ICS 6, to meet conditions. Fabricate enclosure from [steel finished with manufacturer's standard gray enamel.
 - 1. Interior Dry Locations: Type 1.
 - 2. Exterior Locations: Type 3R.

2.3 SWITCHES

- A. Manufacturers:
 - 1. Hubbell Incorporated
 - 2. Leviton Manufacturing Co., Inc.
 - 3. Pass and Seymour/Legrand
 - 4. Substitutions: Section 01 60 00 - Product Requirements

- B. Wall Switch: Industrial Grade non-pilot light toggle switches for overriding relays.
 - 1. Color: Ivory
- C. Key Switch: Spade key type. Match non-key switch ratings.

2.4 SWITCH PLATES

- A. Manufacturers:
 - 1. Hubbell Incorporated
 - 2. Leviton Manufacturing Co., Inc.
 - 3. Pass and Seymour/Legrand
 - 4. Substitutions: Section 01 60 00 - Product
- B. Product Description: Specification Grade.
 - 1. Material: Brushed Formula 302 Stainless Steel

2.5 OCCUPANCY SENSOR <S>

- A. Manufacturers:
 - 1. Douglas Lighting Controls
 - 2. MYTECH Corporation
 - 3. Novitas
 - 4. Watt Stopper
 - 5. Substitutions: Section 01 60 00 - Product Requirements
- B. Compatible with modular relay panels. Capable of being wired directly to Class 2 wiring without auxiliary components or devices.
- C. Separate sensitivity and time delay adjustments with LED indication of sensed movement. User adjustable time-delay: 30 seconds to 12 minutes.
- D. Furnish with manual override.
- E. Operation: Silent.
- F. Room Sensors: As required to provide full coverage of area in which sensor is applied.
- G. Corridor and Hallway Sensors:
 - 1. Capable of detecting motion a minimum 14 feet wide and 80 feet long with one sensor mounted 10 feet above floor.
 - 2. Capable of being wired in master-slave configuration to extend area of coverage.

2.6 PHOTOCELLS

- A. Manufacturers:
 - 1. Douglas Lighting Controls
 - 2. MYTECH Corporation
 - 3. Novitas
 - 4. Watt Stopper
 - 5. Substitutions: Section 01 60 00 - Product Requirements
- B. General: Consist of sensor mounted with separate control-calibration module. Sensor connected to control-calibration module via single shielded conductor with maximum distance of 500 feet. Control unit powered by 24 VAC.

- C. Control-Calibration Module: Furnish with the following:
 - 1. Capable of being switched between 4 measurement ranges.
 - 2. Separate trip points for high and low response settings.
 - 3. Momentary contact device to override photocell relays.
 - 4. Three minute time delay between switching outputs to avoid nuisance tripping.
- D. Sensor Devices: Each sensor employs photo diode technology to allow linear response to daylight within illuminance range.
 - 1. Exterior Lighting: Hooded sensor, horizontally mounted, employing flat lens, and working range 1-10 footcandles in 10 percent increments. Entire sensor encased in optically clear epoxy resin.

2.7 PHOTOCELL CONTROL UNIT

- A. Manufacturers:
 - 1. Douglas Lighting Controls
 - 2. MYTECH Corporation
 - 3. Novitas
 - 4. Watt Stopper
 - 5. Substitutions: Section 01 60 00 - Product Requirements
- B. Product Description: Photodiode control unit with PHOTOCELL ENABLE and MASTER OVERRIDE inputs for remote control, 3 minute time delay, and with selectable ranges for 1-10 footcandle.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Mount switches, occupancy sensors, and photocells as indicated on Drawings, and as required for proper and intended operation.
- B. Install wiring in accordance with Section 26 05 19
- C. Use only properly color coded, stranded wire. Install wire sizes as indicated on Drawings. Install wire in conduit in accordance with Section 26 05 33
- D. Label each low voltage wire clearly indicating connecting relay panel. Refer to Section 26 05 53
- E. Wire numbered relays in panel to control power to each load. Install relays to be accessible. Allow space around relays for ventilation and circulation of air.
- F. Identify power wiring with circuit breaker number controlling load. When multiple circuit breaker panels are feeding into relay panel, label wires to indicate originating panel designation.
- G. Label each low voltage wire with relay number at each switch or sensor.

3.2 MANUFACTURER'S FIELD SERVICES

- A. Section 01 40 00 - Quality Requirements: Requirements for manufacturer's field services.

- B. Furnish services for minimum of one day for check, test, and start-up. Perform the following services:
 - 1. Check installation of panelboards.
 - 2. Test operation of remote controlled devices.
 - 3. Repair or replace defective components.

3.3 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for starting and adjusting.
- B. Test each system component after installation to verify proper operation.
- C. Test relays, contactors, and switches after installation to confirm proper operation.
- D. Confirm correct loads are recorded on directory card in each panel, utilizing actual room names.

3.4 DEMONSTRATION

- A. Section 01 70 00 - Execution and Closeout Requirements : Requirements for demonstration and training.
- B. Demonstrate operation of the following system components:
 - 1. Operation of each type of occupancy sensors. Demonstrate for all zones.
 - 2. Operation of each type of photocell. Demonstrate for all zones.
- C. Furnish 4 hours to instruct Owner's personnel in operation and maintenance of system. Schedule training with Owner, provide at least 7 days notice to Architect/Engineer of training date.

END OF SECTION

SECTION 26 20 00 – LOW-VOLTAGE ELECTRICAL TRANSMISSION

PART 1 - GENERAL

1.1 SCOPE

Work of this Section shall be in accordance with the intent of the Contract Documents and shall include the following principal items:

Electrical Distribution Equipment
Panelboards

1.2 REFERENCED STANDARDS

NFPA 70 - National Electrical Code
NFPA 101 - Life Safety Code

PART 2 - PRODUCTS

2.1 ELECTRICAL DISTRIBUTION EQUIPMENT

2.1.1 All power and lighting distribution equipment specified herein shall be by the same manufacturer.

2.1.2 All electrical distribution equipment shall be UL labeled. Model numbers indicated are based on Square D equipment.

2.1.3 Acceptable manufacturers: Square D, General Electric, Cutler-Hammer, or Siemens.

2.2 PANELBOARDS <S>

2.2.1 Provide panelboards rated and sized as indicated in the schedule and shown on the plans.

	<u>Square D</u>	<u>General Electric</u>
Up to 240 Volts	NQOD	AL

2.2.2 Construction features shall include minimum 5" wide gutters, dead front construction, electroplated current carrying parts; UL listed terminals suitable for conductors specified; flush front hinged door-in-door construction with continuous piano hinge and with cylinder tumbler type locks (all keys alike); circuit directory and frame, code gauge steel, galvanized and baked enamel finished. Metal factory nameplate listing as a minimum voltage, phase, amps, wire and affixed with metal fasteners (screws or rivets) shall be required. Paper tags only are not allowed.

2.2.3 Circuit breakers shall be toggle action with quick-make, quick-break mechanism. Trip indication shall be by breaker handle taking a position between ON and OFF. All multiple breakers shall be common trip with a single handle. Minimum interrupting rating of breakers shall be 10,000 AIC. Refer to the drawings regarding higher ratings for circuit breakers. Provide Class A ground fault detection type breakers where indicated on the drawings.

	<u>Square D</u>
Up to 240 Volts Panels	QO

PART 3 - EXECUTION

3.1 ELECTRICAL SERVICE AND METERING PROVISIONS

3.1.1 Provide electrical service and metering provisions as indicated on the drawings. This contractor

shall verify the electrical service with the serving power company prior to rough-in and coordinate the installation,

notifying the Engineer of discrepancies and/or requirements unique to this job that are not indicated on the plans.

3.1.2 The contractor shall provide all materials and labor shown on the drawings and/or required for the complete installation except as specifically indicated to be by the serving utility.

3.1.3 Where there is a charge for utility furnished items, it shall be paid by the contractor.

3.2 ELECTRICAL LOAD BALANCING

Contractor shall be responsible for balancing electrical loads at each panel so that neutral current flow is reduced to the lowest possible level and all phase legs are as equally balanced as possible. Contractor shall relocate circuit breakers or individual branch circuits as required to accomplish electrical load balance. After load balancing is complete, it shall be verified with the facility fully powered and operating in its intended manner.

3.3 GROUNDING

3.3.1 Electrical grounding shall conform to Article 250 of the N.E.C. Neutral conductors, cable shields and sheaths, metallic conduits, junction boxes enclosures and all conductive non-current carrying parts of equipment shall be grounded.

3.3.2 Ground rods shall be copper clad steel minimum 5/8" diameter by 8' long driven into the ground at least 8' 6".

3.4 TERMINATION LUGS

Contractor shall coordinate size of termination lugs in all equipment with conductor sizes indicated on plan. Contractor shall notify equipment vendor of special lug requirements.

END OF SECTION

SECTION 26 27 26 - WIRING DEVICES

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes wall switches; wall dimmers; receptacles; multioutlet assembly; and device plates and decorative box covers.
- B. Related Sections:
 - 1. Section 26 05 33 - Raceway and Boxes for Electrical Systems: Outlet boxes for wiring devices.
 - 2. Section 26 05 34 - Floor Boxes for Electrical Systems: Service fittings for receptacles installed on floor boxes.

1.2 REFERENCES

- A. National Electrical Manufacturers Association:
 - 1. NEMA WD 1 - General Requirements for Wiring Devices.
 - 2. NEMA WD 6 - Wiring Devices-Dimensional Requirements.

1.3 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Submittal procedures.
- B. Product Data: Submit manufacturer's catalog information showing dimensions, colors, and configurations.
- C. Samples: Submit two samples of each wiring device and wall plate illustrating materials, construction, color, and finish.

1.4 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

1.5 EXTRA MATERIALS

- A. Section 01 70 00 - Execution and Closeout Requirements: Spare parts and maintenance products.
- B. Furnish two of each style, size, and finish wall plate.

PART 2 PRODUCTS <S><OM>

2.1 WALL SWITCHES

- A. Toggle switches: Specifications grade, AC only, 20A 120-277V rating, full size handle (framed toggle not acceptable), side and back wired (screw terminal only; pressure terminal not acceptable). The type switch shall be indicated on the drawings.

	<u>Hubbell</u>	<u>Leviton</u>	<u>P & S</u>
single pole	HBL 1221	1221-2	20AC1
3-way	HBL 1223	1223-2	20AC3
4-way	HBL 1224	1224-2	20AC4
Pilot light	HBL 1221-PL	1221-PLR	20AC1-RPL

Acceptable manufacturers: Arrow Hart, Bryant, G.E., Hubbell, Leviton, or P & S.

2.2 WALL DIMMERS

- A. Manufacturers:
 - 1. Substitutions: Section 01 60 00 - Product Requirements.
- B. Product Description: NEMA WD 1; Semiconductor dimmer for incandescent lamps.
- C. Body and Handle: Ivory plastic with linear slide.
- D. Voltage: 120 volts.
- E. Power Rating: As required for circuit load.
- F. Accessory Wall Switch: Match dimmer appearance.

2.3 RECEPTACLES

- A. Duplex receptacle: Specification grade, AC, 15A 125V rating, automatic grounding clip, side and back wired (screw terminals):

	<u>Hubbell</u>	<u>Leviton</u>	<u>P & S</u>
standard	HBL 5252I	5252-I	5252-I
safety	HBL 8200SG	5262-SG	TR62H
isolated ground	IG5262	5262-IG	IG6200
GFCI	_____	_____	_____

Acceptable manufacturers: Arrow Hart, Bryant, G.E., Hubbell, Leviton, or P & S.

2.4 WALL PLATES

- A. Manufacturers:
 - 1. Substitutions: Section 01 60 00 - Product Requirements.
- B. Decorative Cover Plate: Brushed Formula 302 Stainless Steel.
- C. Jumbo Cover Plate: Brushed Formula 302 Stainless Steel.
- D. Weatherproof Cover Plate: Provide cast aluminum weatherproof device plates with hinged cover for each outlet for exterior receptacles as indicated. When outdoor receptacle is permanently in use (heat tape, etc.) provide a cover listed for wet locations "open".

	<u>Hubbell</u>	<u>Leviton</u>	<u>P & S</u>
standard	WP26	6196	CA26GV

Acceptable manufacturers: Bell, Hubbell, Leviton, P & S, Perfectline, Arrow Hart, or G.E.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify outlet boxes are installed at proper height.
- C. Verify wall openings are neatly cut and completely covered by wall plates.
- D. Verify branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.

3.2 PREPARATION

- A. Clean debris from outlet boxes.

3.3 INSTALLATION

- A. Install devices plumb and level.

*Wiring devices, and other equipment shall, unless noted otherwise, be mounted as follows:

Fire alarm signals:	80" above the highest floor level or 6" below the ceiling, whichever is lower, $\pm 1/16$ " vertical alignment.
Fire alarm pull stations:	4'-0" above floor to centerline $\pm 1/16$ " vertical alignment.
Receptacles:	16" above floor or 6" above working surface unless noted otherwise on plan, $\pm 1/16$ " vertical alignment.
Thermostats	4'-0" above floor, $\pm 1/16$ " vertical alignment.
Switches:	4'-0" above floor to centerline of toggle switch, $\pm 1/16$ " vertical alignment.
Telephone outlets:	Same as receptacles, $\pm 1/16$ " vertical alignment.
Clock outlets:	12" below ceiling or 12'0" above floor whichever is less, $\pm 1/16$ " vertical alignment.
Panelboards:	6'6" to top above finished floor.

(* All dimensions are to bottom of device unless noted otherwise.)

- B. Install switches with OFF position down.
- C. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.

- D. Do not share neutral conductor on load side of dimmers.
- E. Install receptacles with grounding pole on top.
- F. Connect wiring device grounding terminal to outlet box with bonding jumper and branch circuit equipment grounding conductor.
- G. Install brushed Formula 302 stainless steel decorative plates on switch, receptacle, and blank outlets in finished areas.
- H. Connect wiring devices by wrapping solid conductor around screw terminal. Install stranded conductor for branch circuits 10 AWG and smaller. When stranded conductors are used in lieu of solid, use crimp on fork terminals for device terminations. Do not place bare stranded conductors directly under device screws.
- I. Use jumbo size brushed Formula 302 stainless steel plates for outlets installed in masonry walls.
- J. Install brushed Formula 302 stainless steel plates on outlet boxes and junction boxes in unfinished areas, above accessible ceilings, and on surface mounted outlets.

3.4 INTERFACE WITH OTHER PRODUCTS

- A. Coordinate locations of outlet boxes provided under Section 26 05 33 to obtain mounting heights as specified and as indicated on drawings.
- B. Install wall switch 48 inches above finished floor.
- C. Install convenience receptacle 18 inches above finished floor.
- D. Install convenience receptacle 6 inches above counter.
- E. Install dimmer 48 inches above finished floor.

3.5 FIELD QUALITY CONTROL

- A. Section 01 40 00 - Quality Requirements: Field inspecting, testing, adjusting, and balancing.
- B. Inspect each wiring device for defects.
- C. Operate each wall switch with circuit energized and verify proper operation.
- D. Verify each receptacle device is energized.
- E. Test each receptacle device for proper polarity.
- F. Test each GFCI receptacle device for proper operation.

3.6 ADJUSTING

- A. Section 01 70 00 - Execution and Closeout Requirements: Testing, adjusting, and balancing.
- B. Adjust devices and wall plates to be flush and level.

3.7 CLEANING

- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Clean exposed surfaces to remove splatters and restore finish.

END OF SECTION

SECTION 26 50 00 – LIGHTING

PART 1 - GENERAL

1.1 SUMMARY:

- A. Section includes interior luminaires, lamps, ballasts, and accessories.

1.2 SUBMITTALS:

- A. Product Data: Submit dimensions, ratings, and performance data.

PART 2 – PRODUCTS

2.1 LIGHTING FIXTURES AND LAMPS: <S>

- 2.1.1 Provide fixtures including interior and exterior fixtures and emergency type fixtures as indicated on the plans by cross-hatching and described in the schedule.

- 2.1.2 Fixtures shall be complete with lamps as indicated, ballasts, internal wiring, brackets, fittings, lenses, louvers, guards, reflectors, pole supports and accessories as required, indicated or detailed.

2.2 LED LIGHTING: <S>

- A. Lighting fixtures with LED light sources shall meet the following fixture and light source requirements:
 - 1. LED Color Temperature – Interior 3500K, exterior 4000K, CRI > 70
 - 2. Line Voltage – Universal Voltage 120-277 volts: See plans for exact voltage.
 - 3. Governmental Standards – LM79 and LM80 Compliant
 - 4. Expected Lamp Life – LED Life Rating (L70 B10) to be 60,000 hours to 100,000 hours; Defined as time of operation (in hours) to 30% lumen depreciation (i.e. 70% lumen maintenance), derived from Luminaire in-situ temperature measurement testing (i.e. LED chip package temperature (TS) measurement obtained with the LED chip package operating in given luminaire and in a given stabilized ambient environment) under UL 1598 environments and directly correlated to LED package manufacturers IESNA LM-80-08 data. Predicted (L70 B10) Limits (@ 25°C luminaire ambient operating environment): Greater than 60,000 hours @ 350mA Drive Current
 - 5. Driver – Components must be fully encased in potting material for moisture resistance, and must comply with IEC and FCC standards
 - 6. Surge Protection – Surge protection must be provided including separate surge protection built into electronic driver.
- B. Mechanical – Luminaire LED system components to be low copper aluminum, with high performance heat sink(s) designed specifically for LED luminaires. No active cooling features (Fans, etc.). Luminaire configuration must allow for modular upgradability and/or field repair of all electrical components (i.e. LED modules, Driver(s), etc.). Drivers and vertical light bars must be all mounted to a twist-lock tool-less assembly for ease of installation and trouble-shooting.

PART 3 EXECUTION

3.1 INSTALLATION:

- 3.1.1 Install suspended luminaires using pendants supported from swivel hangers.
- 3.1.2 Locate recessed ceiling luminaires as indicated on Drawings and reflected ceiling plan.
- 3.1.3 Install surface mounted ceiling luminaires plumb and adjust to align with building lines and with each other. Secure to prevent movement.
- 3.1.4 Install concrete bases in accordance with Section 03 30 00 for lighting poles at locations as indicated on Drawings.
- 3.1.5 Install poles plumb.
- 3.1.6 Provide emergency egress lighting as required by NFPA 101. Provide point by point footcandle plots (2'-0" X 2'-0" grid pattern) with lighting fixture shop drawing submittal of all means of egress indicating required levels have been provided. Provide (10) spare emergency battery packs (1400 lumen minimum) for installation as directed by Architect or authority having jurisdiction.
<S>
- 3.1.7 Installation methods for each fixture shall be as indicated or detailed and as recommended by the fixture manufacturer for the application. Supports such as mounting brackets, hangers, clamps, etc., shall be provided in the best practical manner consistent with good workmanship and appearance. Fixtures shall be independently supported from the building structure, at each corner of fixture.
- 3.1.8 Any fixture damaged during construction prior to final acceptance of the project shall be replaced or repaired to the satisfaction of the Architect.
- 3.1.9 Contractor shall note architectural finish schedules, reflected ceiling plan and existing conditions and furnish proper mounting accessories or trim as required to properly mount each fixture type.
- 3.1.10 Recessed fixtures shall be provided with mounting frames or rings and shall finish flush to the ceiling without light leaks. Fixtures shall be connected by means of 3/8" flexible metal conduit (max 6'-0" length) from outlet boxes mounted above or alongside the fixture. Wire size in runouts to individual fixtures may be reduced to #14 AWG on 120 volt circuits and #16 AWG on 277 volt circuits.
- 3.1.11 Fixtures exposed to outdoor temperatures shall be rated for 0 degree Fahrenheit operation.
- 3.1.12 Adjustable fixtures both inside and outside shall be adjusted by the contractor to illuminate the intended area at the direction of the owner. Adjustment shall be during the hours of darkness.
- 3.1.13 Provide 10% minimum of each type of exit light fixture along with extra materials and labor for installation as directed by architect, engineer, or fire marshal.
- 3.2 ADJUSTING:
 - 3.2.1 Aim and adjust luminaires.
 - 3.2.2 Relamp luminaires, lighting units, and exit signs with failed lamps at Substantial Completion.
 - 3.2.3 Provide 10% spare lamps and ballasts to owner at substantial completion.

END OF SECTION

DIVISION 31
EARTHWORK

SECTION 31 01 05
SOIL EROSION AND SEDIMENT CONTROL

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes but is not limited to the following:

1. Rip Rap
2. Silt Fences
3. Outfall Control Structure
4. Seeding
5. Curled Wood Matting
6. Mulching
7. Maintenance and Removal of All Sediment and Erosion Control Measures

B. Related Documents

1. Erosion Control Details included in the Construction Drawings.
2. Basic Erosion Control Plan developed by the Engineer.
4. Contractor's Detailed Storm Water Pollution Prevention Plan.
5. U.S. Environmental Protection Agency (EPA) and Detailed Pollution Prevention Plan developed by the Contractor.
6. 2003 EPA Construction General Permit

1.2 SUBMITTALS

A. General: Submit to the Owner's Representative the following:

1. Product data and descriptive literature for all pre-manufactured erosion control devices.
2. Laboratory certification of materials to be used.
3. Seed certifications.
4. The Contractor shall prepare and submit Contractor's detailed Storm Water Pollution Prevention Plan and Notice of Intent (N.O.I.) directly to the EPA prior to starting work.
5. Photographs of erosion control measures (e.g. silt fencing, gravel pad entrance, etc.) taken at three (3) different times during construction.

1.3 OPERATIONS AND MAINTENANCE

A. Operations

1. Construction period erosion control shall be provided by a coordinated program of measures in compliance with 2003 EPA Construction General Permit. The Contractor shall provide temporary stabilization measures where areas are exposed during clearing and grubbing, earthwork and any other element of work with the potential of soil loss.
2. Permanent control measures shall eliminate or minimize soil erosion measures after construction. This shall be accomplished by constructing the proposed site improvements, including roadways, parking areas, and buildings, and by seeding and mulching and matting the remaining exposed soil to produce a healthy stand of grass.
3. The purpose of temporary control measures is to eliminate or minimize soil erosion during construction.
4. Temporary erosion and sedimentation controls include, but are not limited to silt fences and rock check dams. Temporary controls shall be constructed as to ensure that sedimentation pollution will be either eliminated or maintained within acceptable limits as established by regulatory requirements or applicable permit conditions.

5. Contractor is responsible for providing effective temporary erosion and sediment control measures during construction or until final controls become effective.
6. Work shall not commence until appropriate erosion control devices are in place. All permanent erosion control features shall be incorporated into the project at the earliest practical time.

B. Maintenance

1. Maintenance of the erosion and sedimentation control facilities shall be the responsibility of the Contractor. Maintenance shall include the inspection of facilities after each significant rainfall event and on a periodic basis. Immediately after a storm event, erosion and sedimentation facilities and measures shall be cleaned, repaired and replaced as needed. Silt fences shall be inspected and restored to an upright and effective position after storms or at any time they are observed to be in need of maintenance. Contractor shall maintain the erosion and sedimentation control facilities until permanent protections are in place.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Seeding and mulching shall conform to Section 32 92 00.
- B. Rip Rap in accordance with Item 711 of LaDOT Standard Specifications for Roads and Bridges – 2016.
- C. Silt fences, rock filter dams, and other temporary erosion controls shall meet the requirements of LaDOT.
- D. Curled Wood Matting:
 1. Curled wood matting shall be placed on areas to receive grass that are steeper than 4:1 and as requested by the Owner's Representative in areas that continue to erode after seeding and mulching have occurred. This shall be at no additional cost to the Owner.
- E. Filter Fabric: Geotextile fabric shall conform with Item 1019 – LaDOT Standard Specifications for Roads and Bridges – 2016.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Submit a schedule at the preconstruction conference for providing the soil erosion and sediment control measures required by the plans and specifications.
 1. Incorporate the project's permanent erosion control features into the project at the earliest possible time. Perform and schedule clearing and grubbing and earthwork operations that allow permanent erosion control features to follow as soon as possible.
 2. Seed and Mulch: Install seed and mulch as required in Section 32 92 00.
 3. Curled Wood Matting: Curled wood matting shall be placed on areas to receive grass that are steeper than 4:1 and as requested by the Owner's Representative in areas that continue to erode after seeding and mulching have occurred. This shall be at no additional cost to the Owner.
 4. Maintain all sediment and erosion control facilities as required to assure their effective and continued function.
 5. Install temporary erosion controls in accordance with project details and LaDOTD standard details as necessary.
 6. Completely remove all sediment and erosion control measures not required for subsequent construction at the completion of each phase of construction. Restore all disturbed areas to the satisfaction of the Owner's Representative before acceptance.

END OF SECTION 31 01 05

SECTION 31 11 00
CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Removal of surface debris, existing paving and obstructions not noted to remain.
 - 2. Removal of plant life and grass.
 - 3. Grubbing roots.
 - 4. Topsoil excavation.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.1 SITE CLEARING

- A. Remove vegetation, debris, and obstructions from areas of structures, walks, and paving.
- B. Apply herbicide to remaining stumps and plant life to inhibit growth.
- C. Strip existing topsoil from areas of structures, walks, and paving. Stockpile on site for reuse in accordance with notes on Civil Drawings.
- D. Grub out roots and underground obstructions to minimum depth of 12 inches.
- E. Remove waste material from site as it accumulates. Comply with applicable codes and ordinances regarding waste transportation and disposal.

END OF SECTION 31 11 00

SECTION 31 20 00
EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the following:
 - 1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns and grasses, and exterior plants.
 - 2. Subgrade and Base Course for concrete walks, pavements.
 - 3. Excavating and backfilling for utility trenches.

1.2 DEFINITIONS

- A. Backfill: Soil material used to fill an excavation.
 - 1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
 - 2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Aggregate layer placed between the subgrade course and paving.
- C. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- D. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
 - 1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions changes in the Work.
 - 2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Architect. Unauthorized excavation, as well as remedial work directed by Architect, shall be without additional compensation.
- E. Fill: Soil materials used to raise existing grades.
- F. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- G. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.
- H. Topsoil: Topsoil is defined as friable clay loam surface soil containing humus organic matter. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2 inch in diameter, and without weeds, roots, and other objectionable material.
- I. Utilities: On-site underground pipes, conduits, ducts, and cables, as well as underground services within buildings.

1.3 PROJECT CONDITIONS

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Select Fill: Sandy clay or clayey sand possessing a liquid limit no greater than thirty-five (35) and a plasticity index ranging between five (5) and eighteen (18). Select fill shall be free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.

2.2 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility. Tape shall have a minimum strength of 1750 psi lengthwise and 1500 psi crosswise. The tape shall be manufactured with integral wires, foil backing, or other means to enable detection by a metal detector when tape is buried up to 3 feet deep. The tape shall be of a type specifically manufactured for marking and locating underground utilities. The metallic core of the tape shall be encased in a protective jacket or provided with other means to protect it from corrosion. Tape color shall be as specified in Table 1 and shall bear a continuous printed inscription describing the specific utility.

Table 1 Tape Color

a. Red:	Electric
b. Blue:	Water
c. Yellow:	Gas, Oil, Dangerous Materials
d. Orange:	Telephone, Telegraph, Police, and Fire Communications
e. Green:	Gravity Sewer Main

- B. Tracer Wire: Tracer wire shall be #10 AWG solid insulated copper wire and shall be provided in sufficient length to be continuous over each separate run of pressurized non metallic pipe, i.e., gas and water lines. Wire splices shall be made with 3-M splice kits and coated with mastic.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 31 Section "Site Clearing."
- C. Protect and maintain erosion and sedimentation controls, which are specified in Division 31 Section "Site Clearing." during earthwork operations.

3.2 EXCAVATION

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
 - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.3 EXCAVATION FOR STRUCTURES

- A. Excavate to elevations and dimensions indicated to within a tolerance of plus or minus 1 inch (25 mm). If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections
 - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

3.4 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.5 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit, unless otherwise indicated.
 - 1. Clearance: As indicated on plans.
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones, roots, debris, and sharp objects along trench subgrade.
 - 1. Excavate trenches 6 inches (150 mm) deeper than elevation required to allow for bedding course.

3.6 SUBGRADE INSPECTION

- A. Proof-roll subgrade below the building foundation and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.7 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi (17.2 MPa), may be used when approved by Architect.
 - 1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

3.8 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
 - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.9 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

- C. Backfill trenches excavated under footings and within 18 inches (450 mm) of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete shall be 3800 psi compressive strength at 28 days.
- D. Provide 4-inch- (100-mm-) thick, concrete-base slab support for piping or conduit less than 30 inches (750 mm) below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches (100 mm) of concrete before backfilling or placing roadway subbase.
- E. Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch (25 mm) in any dimension, to a height of 12 inches (300 mm) over the utility pipe or conduit.
 - 1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
- F. Place and compact final backfill of satisfactory soil to final subgrade elevation.
- G. Install warning tape directly above utilities, 12 inches (300 mm) below finished grade, except 6 inches (150 mm) below subgrade under pavements and slabs.

3.10 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
 - 1. Under grass and planted areas, use satisfactory soil material.
 - 2. Under walks and pavements, use satisfactory soil material as indicated on plans.
 - 3. Under steps and ramps, use engineered fill.

3.11 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.12 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
 - 1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill or fill soil material at 95 percent.
 - 2. Under walkways, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 95 percent.
 - 3. Under lawn or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 95 percent.
 - 4. For utility trenches, compact each layer of initial and final backfill soil material at 95 percent.

3.13 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - 1. Lawn or Unpaved Areas: Plus or minus 1 inch (25 mm).
 - 2. Walks: Plus or minus 1/2 inch (13 mm).
 - 3. Pavements: Plus or minus 1/2 inch (13 mm).
- C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch (13 mm) when tested with a 10-foot (3-m) straightedge.

3.14 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place base course under pavements and walks as follows:
 - 1. Shape base course to required crown elevations and cross-slope grades.
 - 2. Place base course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
 - 3. Compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

3.15 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing. Owner shall bear the complete cost for testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.
- D. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.
- E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained. Contractor shall bear the cost for all retest(s).

3.16 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.17 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 31 20 00

SECTION 31 31 16
TERMITE CONTROL

PART 1- GENERAL

1.1 SUMMARY

- A. Section includes treatment of new buildings for termite control.

1.2 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data and application instructions.
- B. Warranty: Furnish written certification that applied soil poisoning treatment will prevent infestation of subterranean termites and that if subterranean termite activity is discovered during warranty period, Contractor will re-treat soil and repair or replace damage caused by termite infestation.
 - 1. Provide warranty for a period of five (5) years from date of treatment, signed by applicator and Contractor.
 - 2. Perform annual inspections of the building at no additional cost to the Owner to monitor treatment adequacy as required to maintain the warranty.

1.3 QUALITY ASSURANCE

- A. Engage a Louisiana licensed professional pest control operator, for application of soil treatment solution.

PART 2 - PRODUCTS

2.1 MIXES

- A. Soil Treatment Solution: Use emulsible concentrate insecticide for dilution with water, specially formulated to prevent termite infestation. Use only solutions approved by EPA, DEQ and other regulating authorities. Use only soil treatment solutions which are not injurious to planting.
- B. Working Solution: Solutions shall contain any one of the following chemicals at the listed minimum concentration:
 - 1. Cypermethrin .25%- 1.00%
 - 2. Permethrin .5% - 2.00%
 - 3. Imidacloprid .05%- .10%
 - 4. Bifenthrin .06%- .12%

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Do not apply soil treatment solution until excavating, filling and grading operations are completed, except as otherwise required in construction operations.

- B. Apply treatment solution directly to exposed areas prior to installation of finishes, except as otherwise required in construction operations.

3.2 PREPARATION

- A. Trench around the entire perimeter of the structure(s) to be treated 4" to 6" deep adjacent to the foundation walls.
- B. Remove foreign matter which could decrease effectiveness of treatment on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and foundations. Toxicant may be applied before placement of compacted fill under slabs, if recommended by toxicant manufacturer.

3.3 APPLICATION

- A. Apply soil treatment to soil at all locations required to prevent termite infestation.
- B. Apply treatment one gallon per five linear feet of trench. As soil is replaced, apply again at a rate of one gallon per ten linear feet.
- C. Apply soil treatment solution at rates recommended by soil toxicant manufacturer.
- D. To insure penetration, do not apply soil treatment to frozen or excessively wet soils or during inclement weather. Comply with handling and application instructions of soil toxicant manufacturer.
- E. Apply chemical to exposed plumbing trap areas in sufficient amounts to flood the trap area. Where traps are not accessible and providing access is impractical, treat by drilling through the concrete slab and pressure treat.
- F. Rod under or pressure treat through the slab and thoroughly treat all areas below expansion joints, cracks, or other voids in the slab. When the slab is drilled, the holes must be no more than 24" apart along the area being treated. Repair all drills openings to match finish conditions.
- F. Reapply soil treatment solution to areas disturbed by subsequent excavation or other construction activities following application.
- H. Allow not less than 12 hours for drying after application, before beginning concrete placement or other construction activities.

3.4 PROTECTION

- A. Post signs in areas of application warning workers that soil poisoning has been applied. Remove signs when areas are covered by other construction.

END OF SECTION 31 31 16

DIVISION 32
EXTERIOR IMPROVEMENTS

SECTION 32 92 00
TURF AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes topsoil, fertilizer and seeding of all areas disturbed by construction activities.

1.2 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver materials in original unopened containers showing weight, analysis and name of manufacturer. Store in a manner as to not impair effectiveness.
- B. Frozen or muddy topsoil not acceptable.

1.3 JOB CONDITIONS

- A. Use topsoil stripped from site by excavation and rough grading operations and stockpiled on site. Provide, from off the site, any additional topsoil required.
- B. Areas to receive product shall be free from clumps of dirt over three (3) inches in diameter. Surface shall be smooth and not contain depressions that will hold water.

1.4 GUARANTEE

- A. Where seeding is performed in topsoil and is fertilized, the Contractor shall guarantee a good stand of grass by watering, mowing, regrading and reseeding eroded areas and otherwise maintaining lawn areas to the satisfaction of the Architect, until final acceptance. Any areas which fail to show a uniform stand shall be reseeded at Contractor's expense with same materials originally specified. Repeat reseeding if necessary until all affected areas are accepted by Architect.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Topsoil: Fertile, friable, natural topsoil of loamy character, without admixture of subsoil material, obtained from a well drained, arable site, free from heavy clay, coarse sand, stones, plants, roots, stocks and other foreign materials.
- B. Fertilizer: Commercial Fertilizer "A" containing 10% nitrogen, 6% phosphoric acid and 4% potash by weight. One quarter of nitrogen shall be in form of nitrates, one quarter in form of ammonia salt and one half in form of organic nitrogen.
- C. Phosphoric acid shall be from super-phosphate, bone or tankage. Potash shall be in form of sulphate of potash. Availability of various elements shall conform to standards of the Association of Official Agricultural Chemists. Commercial Type: 12-12-12 may also be used.
- D. Sod: Clean, strongly rooted, uniformly sized strips of 2 year old Bermuda, Centipede, St. Augustine or other approved Southern specie grass, machine stripped not more than 24 hours prior to laying.
- E. Grass Seed: A blend of predominantly Bermuda grass seed, with approximately 10% Anurse-grass≡ seeds, complying with standards of Official Seed Analysis of North America, for 95% purity, 25% germination and 1% (max.) weed seed, recommended by producer for full sun exposure of lawns in geographic location of project.

PART 3 - EXECUTION

3.1 LIMITS OF TOPSOIL AND GRASS SEED LAWNS

- A. Provide topsoil, fertilizer and seeding at all areas disturbed by construction activities of this contract.

3.2 LIMITS OF SOD LAWNS

- A. Provide sod lawns ten (10) feet out from new buildings and five (5) feet out from new sidewalks and paving.

3.3 PREPARATION

- A. Before depositing and spreading topsoil, rake subsoil surface clean of stones, debris or rubbish and loosen to a depth of 3". Do not spread topsoil until subgrade has been approved by Architect.
- B. Spread, rake, compact and otherwise manipulate topsoil to form a settled thickness of 4" conforming to required grades.
- C. Remove hard clods, stiff clay, sods, stones, roots, sticks and any other debris over 2".
- D. Do not spread topsoil in muddy or frozen condition.
- E. After topsoil has been spread, apply fertilizer at rate of twenty pounds per one thousand square feet.

3.4 PLANTING SEED LAWNS

- A. In areas where topsoil has not been stripped, cultivate to a depth of 6", add specified soil amendments and mix thoroughly into top 4" of soil, tilling surface to a level, fine texture.
- B. In areas where topsoil has been stripped, loosen subgrade to depth of 4", spread 2" depth of topsoil, till to mix topsoil with subsoil, spread additional 2" depth of topsoil, add specified soil amendments and mix thoroughly into top 4" of topsoil, till surface to level, fine texture.
- C. Sow grass seed uniformly in two directions in the quantity recommended by the seed producer, except as otherwise indicated. Rake seed lightly into top 1/8" of lawn surface. Water thoroughly with fine spray.
- D. Protect seeded areas against erosion by spreading straw to a uniform loose depth of 1-1/2".

3.5 PLANTING SOD LAWNS

- A. In areas where topsoil has not been stripped, cultivate to a depth of 6", add specified soil amendments and mix thoroughly into top 4" of soil, tilling surface to a level, fine texture.
- B. In areas where topsoil has been stripped, loosen subgrade to a depth of 4", spread 2" depth of topsoil, till to mix topsoil with subsoil, spread additional 2" depth of topsoil, add specified soil amendments and mix thoroughly into top 4" of topsoil, till surface to level, fine texture.
- C. Grade and roll prepared surface, water thoroughly but do not create muddy soil condition.
- D. Lay sod strips with tight joints, roll or tamp lightly, and water thoroughly.

3.6 FIELD QUALITY ASSURANCE

- A. Final inspection to determine acceptance of seeded areas shall be Architect upon request by Contractor.

END OF SECTION 32 92 00

ATTACHMENTS

CSPP

AC 150/5370-2G

OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION

**RUSTON REGIONAL AIRPORT
RUSTON, LOUISIANA**



**CONSTRUCTION SAFETY AND PHASING PLAN
FOR THE
10-UNIT T-HANGAR**

FAA AIP No. 3-22-0082-027-2026
KSA Project No. 103712

MARCH 2026

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**RUSTON REGIONAL AIRPORT
10-UNIT T-HANGAR
CONSTRUCTION SAFETY AND PHASING PLAN**

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ATTACHMENTS

- A. PROJECT LAYOUT
- B. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

I. COORDINATION

A. Meetings

1. Pre-Design Meeting

A pre-design meeting was held. The meeting provided clarification on the project scope and design requirements for the proposed project.

2. Pre-Bid Meeting

A pre-bid meeting in accordance with FAA AC 150/5370-12B will be held. During the Pre-Bid Meeting, the Consulting Engineer will summarize key features for this design. Contractors will also be given an opportunity to ask project related questions.

3. Pre-Construction Meeting

A pre-construction meeting in accordance with FAA AC 150/5370-12B will be held prior to the issuance of the Notice to Proceed. The Airport Staff, Consulting Engineer, Resident Project Representative (RPR), Prime Contractor and all Sub-Contractors will be required to attend the meeting.

4. Construction Progress Meetings

Construction progress meetings will be held every other week throughout the duration of the project. Occasionally, at the discretion of the Airport, the meeting may be forgone. The Airport Staff, the Prime Contractor, and the Resident Project Representative (RPR) are required to attend every construction progress meeting. The Consultant Engineer will attend meetings as they see fit or as requested by the Airport. The Contractor will be responsible for discussing the following subject matters during each meeting:

- Updated Project Schedule
- Explanation for any delays
- Safety/Security
- Project Coordination
- Construction Issues
- Review of Submittals
- Review of Request for Information (RFI)
- Review of Change Orders
- Environmental Issues
- Erosion Control
- Quality Assurance Test Results and Concerns
- Pertinent Information for Record Drawings
- Review of Pay Application
- Other General Discussions

Additional meetings will be held prior to the completion of the following construction tasks. The Airport Staff, Consultant Engineer, RPR, Prime Contractor, and any Sub-Contractor associated with performing said work will be required to attend said meeting.

- Pre-Pave meeting for paving operations.
- Prior to the start of any construction phase.

B. Scope

This project involves construction of a 10-Unit T-Hangar on the southwest side of the airfield at RSN. The 10-Unit T-Hangar will be located between the recently completed hangar access taxilanes constructed under an FY 2024 grant.

C. Any changes to the CSPP shall be sent to the FAA.

II. PHASING

Attachment A provides proposed limits of each construction phase. The following information summarizes the construction activity.

Duration: 120 days

Estimated Start Date: September 2026

Estimated Completion Date: December 2026

Tasks

- Mobilization
- Establish Staging and Stockpile Area
- Establish Contractor's Access Route
- Install/maintain low profile barricades
- Perform utility locates
- Construct 10-Unit T-Hangar
- Clean all paved surfaces to remove FOD upon completion of this phase
- Remove low-profile barricades and open newly installed pavement

III. AREAS AND OPERATIONS AFFECTED BY CONSTRUCTION ACTIVITY

Operational Requirements	Normal Operations	Project Impact
Runway 18-36	6,002' x 100', ADG B-II	Open
Runway 18 Approach Procedures	Non-Precision, PAPI	Open
Runway 36 Approach Procedures	Non-Precision, PAPI, ODAL	Open
Taxiway A	40' wide, TDG II	Open

A. Mitigation of Effects

1. There are no anticipated disruptions to essential utilities. The Contractor will be required to locate all utilities prior to construction.
2. The Ruston Regional Airport was consulted during the project design. Coordination with the Ruston Regional Airport will continue throughout the construction project duration to ensure that the Ruston Regional Airport is up-to-date on closed pavements.

IV. PROTECTION OF NAVIGATIONAL AIDS (NAVAIDS)

- A.** RUNWAY 18-36 NAVAIDS – All proposed work will be conducted outside of the operational areas of the airfield. Thus, no NAVAIDS will be impacted by the proposed work.
- B.** The FAA ATO will be notified by the Construction Manager of any construction impact at least 45 days prior to the scheduled shutdown.

V. CONTRACTOR ACCESS

A. General

Airport security is a vital part of the Contractor's responsibilities during the course of this project to ensure that all parties remain safe and the airport remains secure throughout the project. The following security guidelines, rules, and regulations of the Airport's operation department shall be followed by the Contractor and the Contractor's employees, subcontractors, suppliers, and all representatives at all times throughout the project duration. The Contractor shall be directly responsible for any and all fines or penalties levied against the Airport as a result of any breach of security or safety caused by the Contractor or previously stated representatives.

B. Airport Operations Area

The Airport Operations Area (AOA) is defined as any portion of the Airport property normally secured against unauthorized entry. The AOA includes all areas specifically reserved for the operations of aircraft and aircraft support equipment and personnel. Generally, the AOA is defined as all paved and unpaved areas inside the airport perimeter fence and includes but is not limited to Aprons, Taxiways, Runways, and Runway and Taxiway Safety Areas. The Contractor shall not leave openings in the perimeter security fence at any time. No vehicle or equipment shall move within the AOA unless the vehicle is lighted or flagged for daytime activity and lighted for night time activity.

C. Contractor's Entrance Gate

The Contractor shall provide parking outside the AOA for their employees' personal automobiles. At the completion of this project, any damage by the Contractor shall be repaired to the satisfaction of the Engineer at no additional cost to the Owner. Repairs shall include, but are not limited to, regrading, reseeding, or repaving any damaged areas.

The Contractor shall be responsible for all movement through the Contractor's entrance gate. Only authorized personnel and vehicles shall be allowed to enter the AOA through the Contractor's entrance gate. Pedestrian walkthroughs are not allowed through the vehicular gate. The Contractor shall ensure that the gate is closed after each authorized personnel enters or exits. The gate may not be left open and unattended at any point during the construction duration. The Airport may request a duplicate key to operate the Contractor's gate in case of emergency.

If construction activities dictate that the Contractor's entrance gate is to remain open, such as during hauling or paving operations, a full-time watch guard may be used to secure the gate, upon approval of the Airport.

D. Contractor's Plant Site, Storage, and Office Area

The Contractor will be held responsible for any damage or deterioration in areas allowed for Contractor's use. The Contractor will also be responsible for maintenance and dust control of the areas for the duration of the project.

The Contractor may negotiate with the Airport for use of open airport space. The areas used by the Contractor may be subject to rental rates and fees determined by the Airport.

Any areas occupied by the Contractor and his forces will be required to be completely restored by the Contractor at his expense. All restoration shall be to the satisfaction of the Airport. Restoration activities shall be completed in accordance with applicable technical specifications.

E. Vehicle Escort

All vehicles responsible to the Contractor entering the AOA shall be escorted by an approved Contractor escort vehicle from the point of AOA entry to the construction site. The escort vehicle shall be clearly identified with standard FAA specified markings and/or flags.

F. Challenging Unauthorized Personnel or Vehicles

The Contractor and all Contractor employees are responsible for challenging any person or vehicle found on the AOA or other non-public area who is not under escort of an approved Contractor escort vehicle. The challenge shall consist of notifying the person that he is within a restricted area, and informing the person of an appropriate exit route. Should the unauthorized person refuse to exit the restricted area, the Airport shall be immediately be notified for further action.

G. Two-Way Radio Communications

Communication will be required at a frequency of 122.7 MHz for ground control. Radio contact shall be required when construction operations are in the vicinity of, or when crossing any active runway, taxiway, apron, or as directed by the Airport. The Contractor shall be required to provide a sufficient number of radios to maintain communication in all areas of work.

H. Contractor's Safety Plan

Contractor will be required to submit a Construction Safety Plan as part of the submittal process before starting construction. The Construction Safety Plan shall be adhered to at all times. The airport reserves the right to amend the Construction Safety Plan at any time if concerns arise.

VI. WILDLIFE MANAGEMENT

A. Trash

1. All waste or spoil materials shall be disposed of off the airport property in a licensed landfill.
2. The Contractor shall maintain a clean and safe construction work area. Clean-up operations shall be completed daily.

B. Standing Water

1. Each construction area shall be shaped to allow drainage of surface water during each work operation.
2. If necessary, surface water shall be pumped immediately from each construction area.

C. Tall Grass and Seed

1. The seed mixture specified is Bermuda and is compliant with the Airport's Wildlife Hazard Management Plan.
2. The Airport will mow and maintain all areas outside of the construction work limits. The Contractor shall mow areas within the construction work limits. Grass will be kept to a maximum height of 12 inches.

D. Fencing and Gating

1. The Contractor shall equip temporary gates with locks to prevent access by animals and

unauthorized people and maintain security during construction.

E. Wildlife Sightings

1. The Construction Manager will immediately notify the Airport if any wildlife is sighted on the airfield.

VII. FOREIGN OBJECT DEBRIS (FOD) MANAGEMENT

- A.** The Contractor shall provide a FOD plan prior to beginning work and is subject to the approval of the Construction Manager and Airport.
- B.** The Contractor shall provide a motorized mechanical sweeper at the beginning of the project and shall sweep all active pavements adjacent to construction activities on a routine basis and as directed by the RPR.
- C.** All excavated material, debris, etc. shall be cleaned from the site at least on a daily basis and more often if required by the Construction Manager or Engineer. No material may be left in any area used by the Contractor in such a way that the material could be blown onto the movement area and cause a FOD hazard.
- D.** To control dust and/or blowing debris, any soil, debris or loose material shall immediately be swept up and removed.

VIII. HAZARDOUS MATERIALS (HAZMAT) MANAGEMENT

- A.** At the preconstruction meeting, the Contractor shall discuss the fueling operations and precautions for all equipment on site. Potential hazardous wastes include fuel, paints, solvents, asphalts, and other items needed for construction.
- B.** Any spills that occur on site shall be brought to the attention of the Construction Manager and the Airport staff immediately. The Contractor shall also notify the Construction Manager and Airport staff of any and all required remedial work and follow appropriate methods for cleaning up the contaminated site. The Contractor shall also make sure the Airport staff is in attendance to witness the cleanup and provide written documentation to the Airport stating the remedial work is complete per EPA regulations and AC 150/5320-15A (12.2.4) verifying state and local requirements are met. AC 150/5320-15A (12.19) also establishes spill prevention and response procedures for airport owned facilities including regular visual inspections, adopting good housekeeping practices, and reducing and reusing process materials to minimize waste generation on site.
- C.** The Contractor should provide the Construction Manager with a list of all materials being delivered to the construction area and maintain MSDS sheets for such materials on the airport site. Materials shall be stored on site for a minimal period of time prior to their use on the project.

IX. NOTIFICATION OF CONSTRUCTION ACTIVITIES

A. Airports Contact List:

Ruston Regional Airport

701 E. Tennessee Ave. Avenue
Ruston, LA 71270
Phone:

(318) 242-7703

- John Freeman
Email: jfreeman@ruston.org

B. Consultants Contact List:

KSA Engineers, Inc.

1111 Hawn Avenue
Shreveport, LA 71107
Phone:

(318) 221-7501

- Jonathan Farmer, P.E. – Project Manager
Mobile: (318) 294-9662
Email: jfarmer@ksaeng.com

1111 Hawn Avenue
Shreveport, LA 71107
Phone:

(318) 221-7501

- John Selmer, AIA – Project Architect
Mobile:
Email: jselmer@ksaeng.com

C. Contractors Contact List:

The Contractor shall list the names of individuals that will be responsible for specific items on the construction site. The names that are listed shall be given to the Sponsor as well as posted on a bulletin board on the project. There is 911 emergency service at the Airport and shall be posted on the bulletin board.

The following are contacts and names that need to be identified:

Contractor's Contact Information:

Name _____
Address _____

Phone _____
Fax _____

Project Superintendent:	_____	Cell Phone: _____
Superintendent:	_____	Cell Phone: _____
24-Hour Contact:	_____	Cell Phone: _____
Gate Guard:	_____	Cell Phone: _____
Lab/Field Supervisor:	_____	Cell Phone: _____
Paving Supervisor:	_____	Cell Phone: _____
Safety Officer:	_____	Cell Phone: _____
Quality Control Officer:	_____	Cell Phone: _____
Job Site Environmental Officer:	_____	Cell Phone: _____

Subcontractor information shall be available to the Airport, and Construction Manager as well.

D. NOTAMs

1. Airport management will issue all NOTAMs through the eNOTAM system.
2. The Construction Manager will verify that all NOTAMs are published prior to permitting initiation of construction activities, including equipment and personnel access to the affected areas.

E. Emergency Notification Procedures

1. In the event of an emergency, the Contractor shall immediately contact 911 and then the Airport Emergency contact at (318) 251-8620.

F. Aircraft Rescue and Firefighting (ARFF) Notification

1. During Airport Emergencies, all ARFF vehicles shall have the immediate right of way at all times and may traverse any and all of the known roadways throughout the airfield. The Contractor and his Sub-contractors shall immediately yield right-of-way to any and all Airport ARFF personnel and equipment.
2. The Owner and Engineer shall be notified in writing at least ninety-six (96) hours in advance of any emergency route, water line, or fire hydrant that will be out of service.

G. FAA Notification

1. The Contractor will notify the Consulting Engineer, ninety-six hours (96) in advance of any work around NAVAIDs or shutdowns affecting NAVAIDS.

X. INSPECTION REQUIREMENTS

A. Daily Inspection

1. The Contractor, RPR, Construction Manager, and Airport staff will perform onsite inspection throughout the project, with immediate remedy of any deficiencies, whether caused by negligence, oversight, or project scope change.
2. The Contractor will identify a Safety Officer that will be required to inspect on a daily basis, all barricades, flashers, and closed runway lighting and markings prior to work commencing and prior to leaving the work site. The Contractor will notify the RPR that all inspections have been completed.
3. The RPR will conduct a Daily Safety Inspection in accordance with the checklist from AC 150/5370-2G (Attachment B of this document).

B. Periodic Inspections

1. The Airport staff, Construction Manager, RPR, and Contractor will inspect all closed paved surfaces prior to opening to air traffic operations.
2. Prior to a final inspection, the FAA will inspect the site to ensure conformance with Federal design and construction requirements.
3. Airport staff, the Construction Manager, the RPR, and the Contractor will participate in a project final inspection. During this inspection, the project site shall be clean and free of all debris related to the project construction.

XI. UNDERGROUND UTILITIES

The locations of known underground utilities are shown in the construction plan set and are approximate in location.

- A. The Contractor must perform utility locates before construction begins to ensure uninterrupted operation of navigation aids and provide to the Construction Manager and Airport staff documentation demonstrating the performance of the locates.
- B. The Contractor shall notify all utility companies involved to have their utilities located and marked in the field. All underground utilities shall then be uncovered to verify location and elevation before construction begins. The Contractor shall coordinate with the utility owner if the utility inspector must be on site when

locating or excavating near utilities.

- C. Any damaged facilities shall be replaced or repaired in accordance with FAA Specifications or as directed by the Construction Manager.

XII. PENALTIES

A. Construction Suspension

The Airport staff will immediately suspend all construction if and when a Contractor or Subcontractor employee enters the Air Operations Area outside of the designated work area or if any unescorted construction vehicle operates on any active Air Operations Area's surface. Construction may resume only when the discrepancy is corrected and additional training is completed to the satisfaction of the Airport staff.

B. Expulsion of Non-Compliant Employees

The Airport staff may permanently prohibit any consultant or contract employee acting in violation with airport rules and regulation from entering or working on airport property.

XIII. SPECIAL CONDITIONS

A. Airport Emergencies

1. Contractor shall monitor any weather conditions, aircraft emergencies, unexpected emergencies and other elements that may cause safety on the project to be jeopardized.
2. Airport staff will immediately clear all construction personnel of all runways and approach areas upon monitoring a distress call.
3. If an aircraft accident occurs, all construction personnel will immediately vacate the AOA until Airport Staff provide permission to resume access to the work area.

B. On-Site Burning and Blasting

On-Site burning and blasting is prohibited.

XIV. RUNWAY AND TAXIWAY VISUAL AIDS

The required temporary lighting consists of the low-profile barricades which will be used to delineate the construction site as shown in Attachment A.

XV. MARKING AND SIGNS FOR ACCESS ROUTES

No temporary roadway markings will be required. Haul routes and other activities on the Airport by the Contractor and Subcontractors shall be coordinated with and approved in advance by the Airport staff. Temporary traffic signs to delineate the haul route shall meet the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) standards, including but not limited to the frangible and height requirements.

XVI. HAZARD MARKING AND LIGHTING

A. Barricades

Low profile water filled barricades with the MUTCD standard reflective orange and white marking with the 20"min x 20"min flags mounted on the center of the barricade will be used to delineate the construction site. The barricades shall also be required to have flashing red caution lights. The barricades shall be spaced no more than 20 feet apart where shown on the safety plan. The barricades

shall be weighed against prop wash and capable of withstanding up to 100 MPH wind forces. Flashing red caution lights shall be battery operated and shall maintain such intensity so as to be readily identified from distances of at least 200 feet during darkness.

XVII. PROTECTION OF RUNWAY AND TAXIWAY SAFETY AREAS

A. Runway Safety Area (RSA)

No construction activities or material stockpile shall occur within an active RSA. The RSA is 150 feet wide and extends 300 feet beyond the runway end.

B. Runway Object Free Area (ROFA)

No material stockpile shall occur within an active ROFA. The ROFA is 500 feet wide and extends 300 feet beyond the runway end.

C. Taxiway Safety Area (TSA)

No construction activities or material stockpile shall occur within an active TSA. The TSA is 79 feet wide and centered on the taxiway.

D. Taxiway Object Free Area (TOFA)

No material stockpile shall occur within an active TOFA. The TOFA is 131 feet wide and centered on the taxiway.

E. Object Free Zone (OFZ)

No construction activities or material stockpile shall penetrate the OFZ.

F. Runway approach/departure surface

No construction activities or material stockpile shall penetrate the approach/departure surface.

G. Open Trenches

No open trenches will be permitted within an open RSA or TSA. The Contractor shall prominently mark any open trench or excavation at the construction site with lighted barricades.

H. Safety Information

Refer to Attachment A for safety details.

I. Jet Blast

The Contractor shall be aware of locations where jet blast may be an issue and make the necessary adjustments.

J. Electrical Lock Out/Tag Requirements

The Contractor is to prepare lockout/tag out plan and communicate the procedures to all staff.

XVIII. OTHER LIMITATIONS ON CONSTRUCTION

A. Construction Phasing

1. In order to maintain air traffic to the greatest extent possible, the Contractor shall construct the area of improvements according to the phases as described in the construction plan set.
2. Normal construction hours are 7:00 AM to 8:00 PM. Work performed beyond these hours requires approval by the Airport staff.

B. Prohibitions

1. The use of equipment over 40-feet is prohibited unless the Contractor submits a 7460-1 determination letter.
2. The use of flare pots is prohibited.
3. The use of open flame welding or torches is prohibited.
4. The use of electrical blasting caps is prohibited.

C. Restrictions

1. Any construction suspension required during specific airport operations will be coordinated by the Engineer, Owner, and Contractor during construction.
2. Seasonal construction restrictions will be coordinated by the Engineer, Owner, and the Contractor during construction.

ATTACHMENTS

ATTACHMENT A

PROJECT LAYOUT

ATTACHMENT B

CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

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.

Table D-1. Potentially Hazardous Conditions

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		

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.		



U.S. Department
of Transportation
**Federal Aviation
Administration**

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. Appendix A 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.

2. Guidance for the use of orange construction signs was added. See paragraph 2.18.4.2, Temporary Signs.
3. 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 2.22.3.4, 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 Appendix F 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 “←” 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.

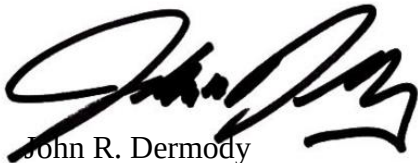
7 **Where to Find this AC.**

You can view a list of all ACs at

http://www.faa.gov/regulations_policies/advisory_circulars/. You can view the Federal Aviation Regulations at http://www.faa.gov/regulations_policies/faa_regulations/.

8 **Feedback on this AC.**

If you have suggestions for improving this AC, you may use the Advisory Circular Feedback form at the end of this AC.



John R. Dermody
Director of Airport Safety and Standards

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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 operations to maintain 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)¹ for each affected taxiway; designated approach visibility minimums;

¹ Find Taxiway Design Group information in AC 150/5300-13, 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 Take Required Measures to Revise Operations.

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 Appendix A 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 1.2.5).

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 Chapter 2, Construction Safety and Phasing Plans, and Chapter 3, Guidelines for Writing a CSPP. 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 AC 150/5370-12, 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 <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>. 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 https://oeaaa.faa.gov/oeaaa/external/content/AIRPORT_SPONSOR_STRATEGIC_EVENT_SUBMISSION_FORM.pdf, 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 <https://oeaaa.faa.gov/oeaaa/external/portal.jsp>.

- 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.
4. 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.
7. 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.
8. 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>.
9. 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 × 11 inch or 11 × 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 Chapter 3, Guidelines for Writing a CSPP. 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 2.22.3.
 - d. Taxiway Object Free Area (TOFA). Provide details for any continued aircraft operations while construction occurs within the TOFA. See paragraph 2.22.4.
 - 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 is necessary for any specific subject, the statement, “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.
4. 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).
 - b. 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.
- 8. 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.
- 10. 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.
- 13. 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).
- 15. 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 [AC 150/5370-12, *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 Appendix E for an example of a table showing temporary operations versus current operations. The tables in Appendix E 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 2.6.2.) 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 Figure 2-2.

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.

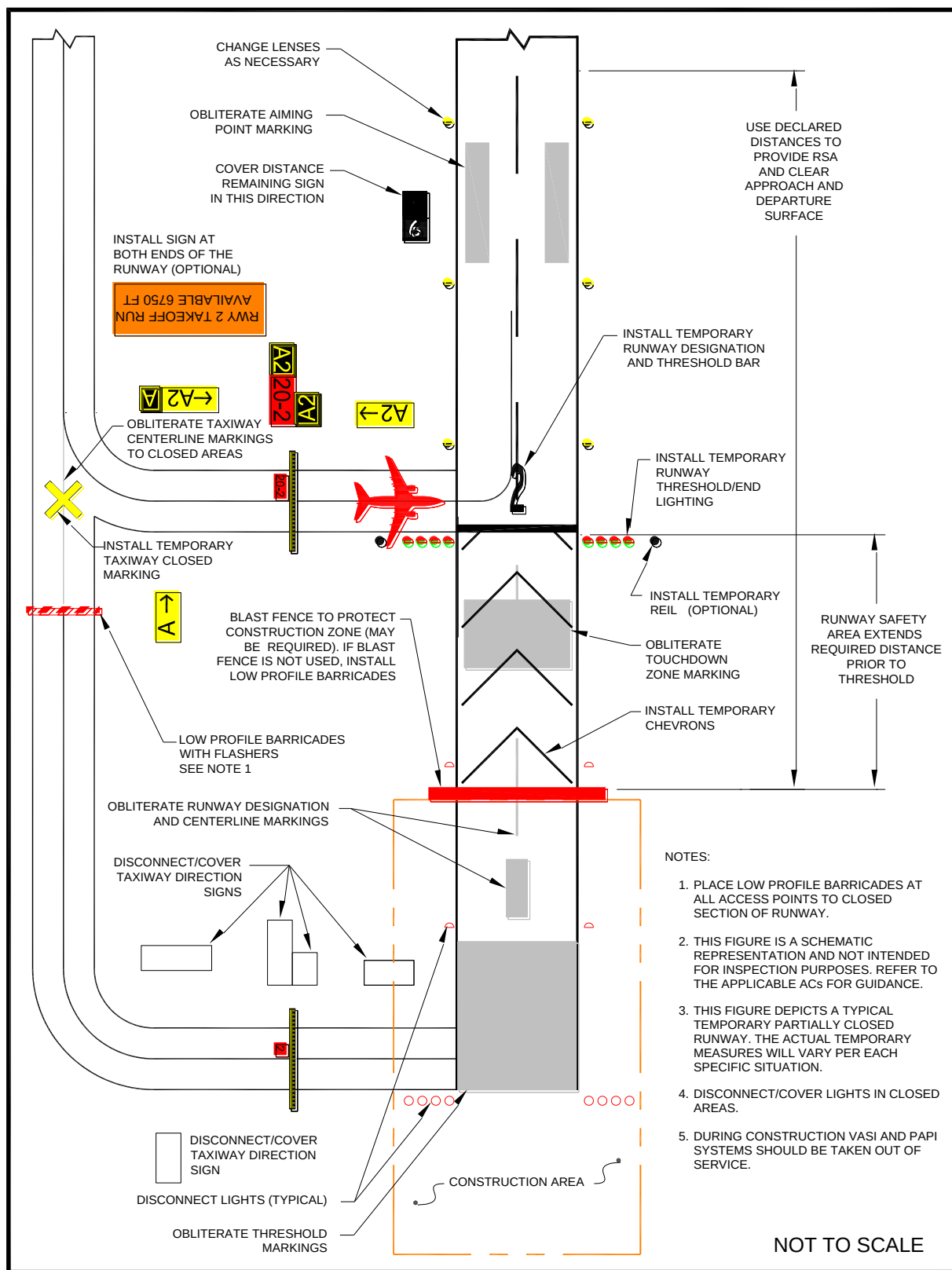
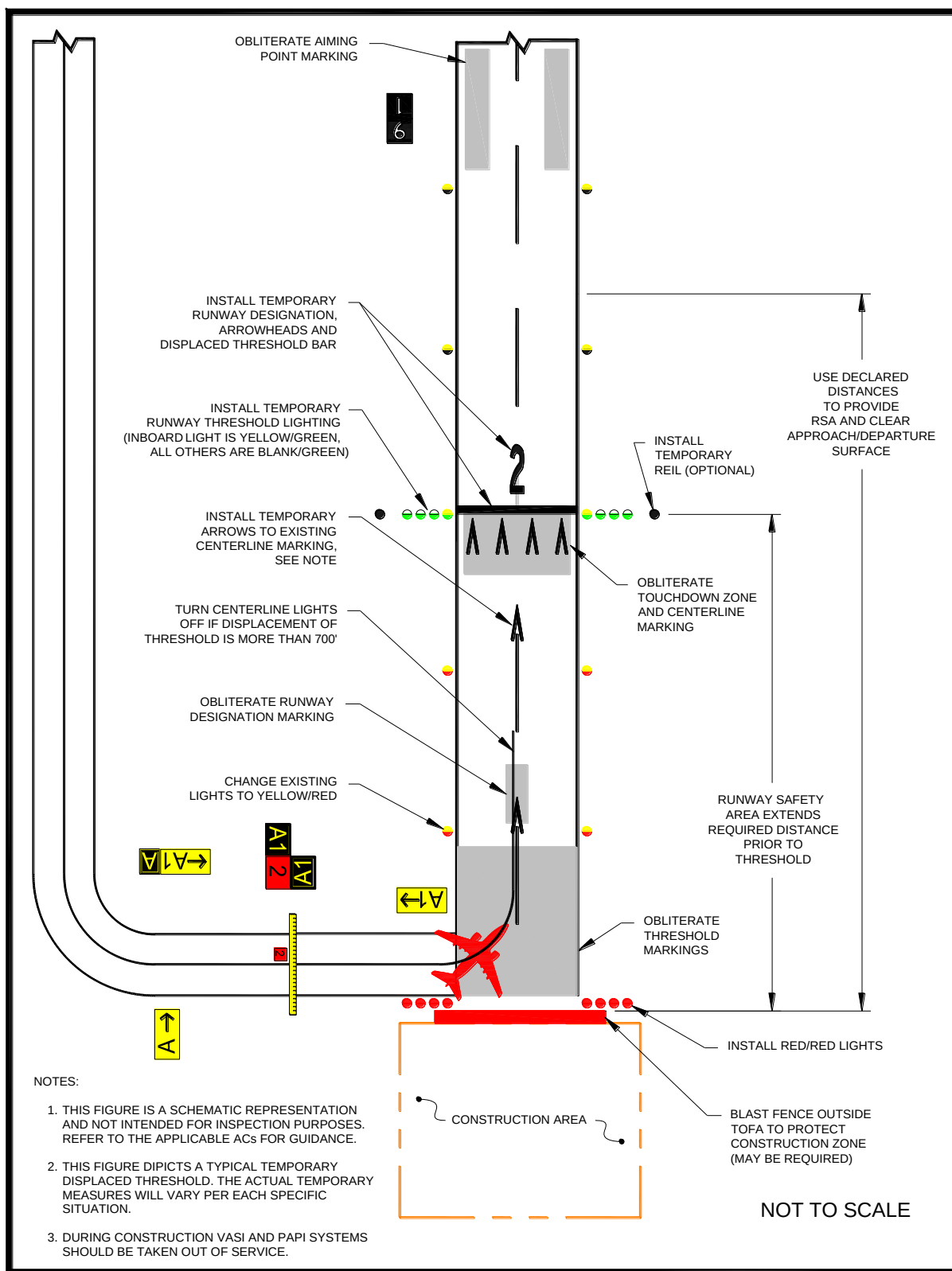
Figure 2-1. Temporary Partially Closed Runway

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 2.10 and 2.11.

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 AC 150/5210-5, *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 AC 150/5210-20, *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

3. 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 Areas Requiring Two-Way Radio Communication with the ATCT.

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 http://www.faa.gov/airports/runway_safety/publications/ (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 AC 150/5200-33, *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 AC 150/5370-10, *Standards for Specifying Construction of Airports*, Item T-901, Seeding. Contact the local office of the United States 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 Poorly Maintained Fencing and Gates.

See paragraph 2.9.2.10.1.

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 AC 150/5210-24, *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 AC 150/5320-15, *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 AC 150/5200-28, *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 2.7.1.1 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 Appendix A to download the form. Further guidance is available on the FAA web site at oeaaa.faa.gov.

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 Appendix A 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.
2. 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 Appendix D, Construction Project Daily Safety Inspection Checklist. See also AC 150/5200-18, 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 AC 150/5340-1, *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 2.18.2.1.2.)

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 AC 150/5340-1. An X is not used on a partially closed runway or a runway with a displaced threshold. See paragraph 2.7.1.1 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

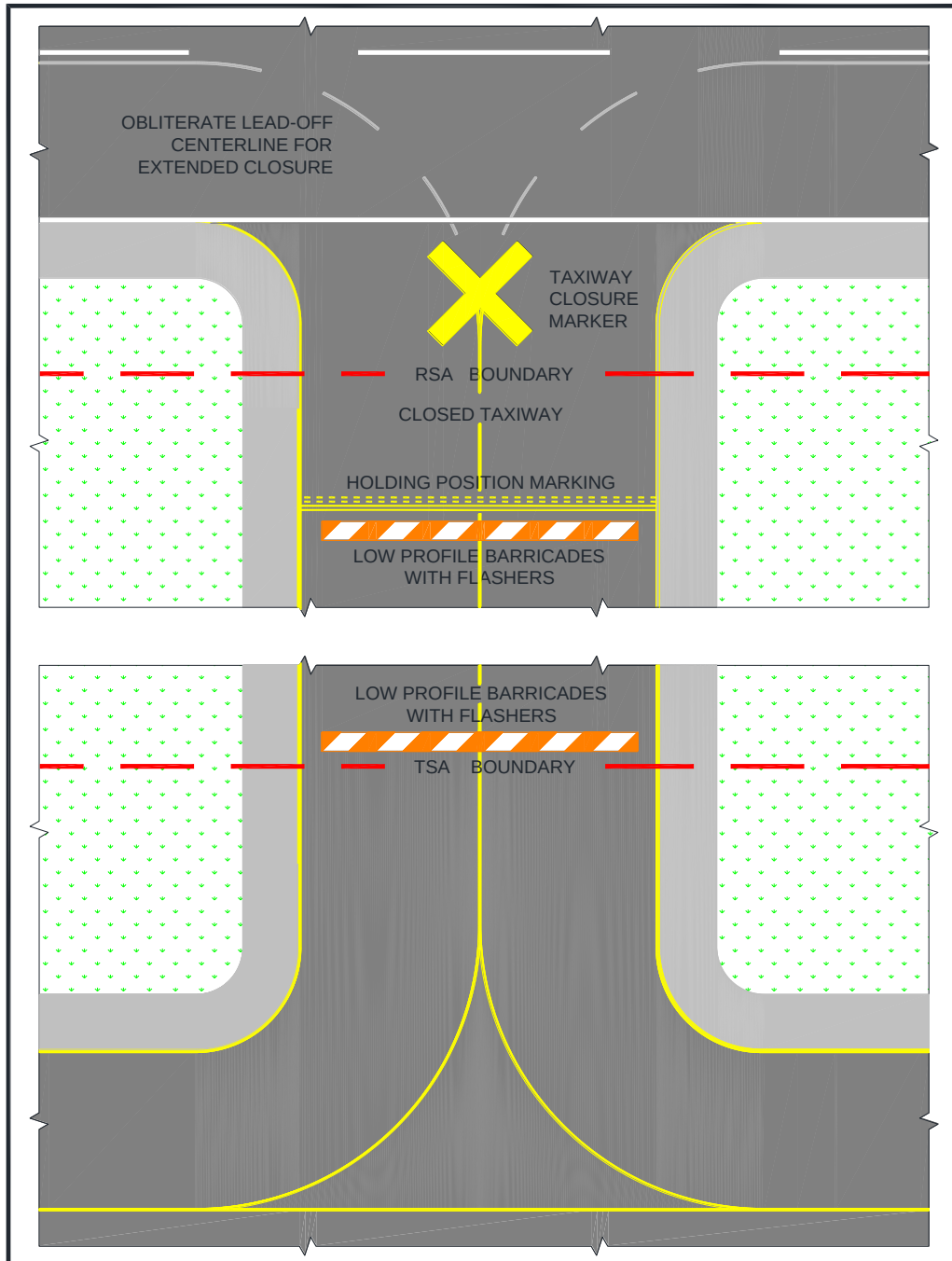


1. **Partially Closed Runways.** Pavement markings for temporary closed portions of the runway consist of a runway threshold bar, runway designation, and yellow chevrons to identify pavement areas that are unsuitable for takeoff or landing (see [AC 150/5340-1](#)). Obliterate or cover markings prior 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](#).
2. **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 [AC 150/5340-1](#). 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.** AC 150/5300-13 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.

Figure 2-4. Temporary Taxiway Closure



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 Temporarily Closed Airport.

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.

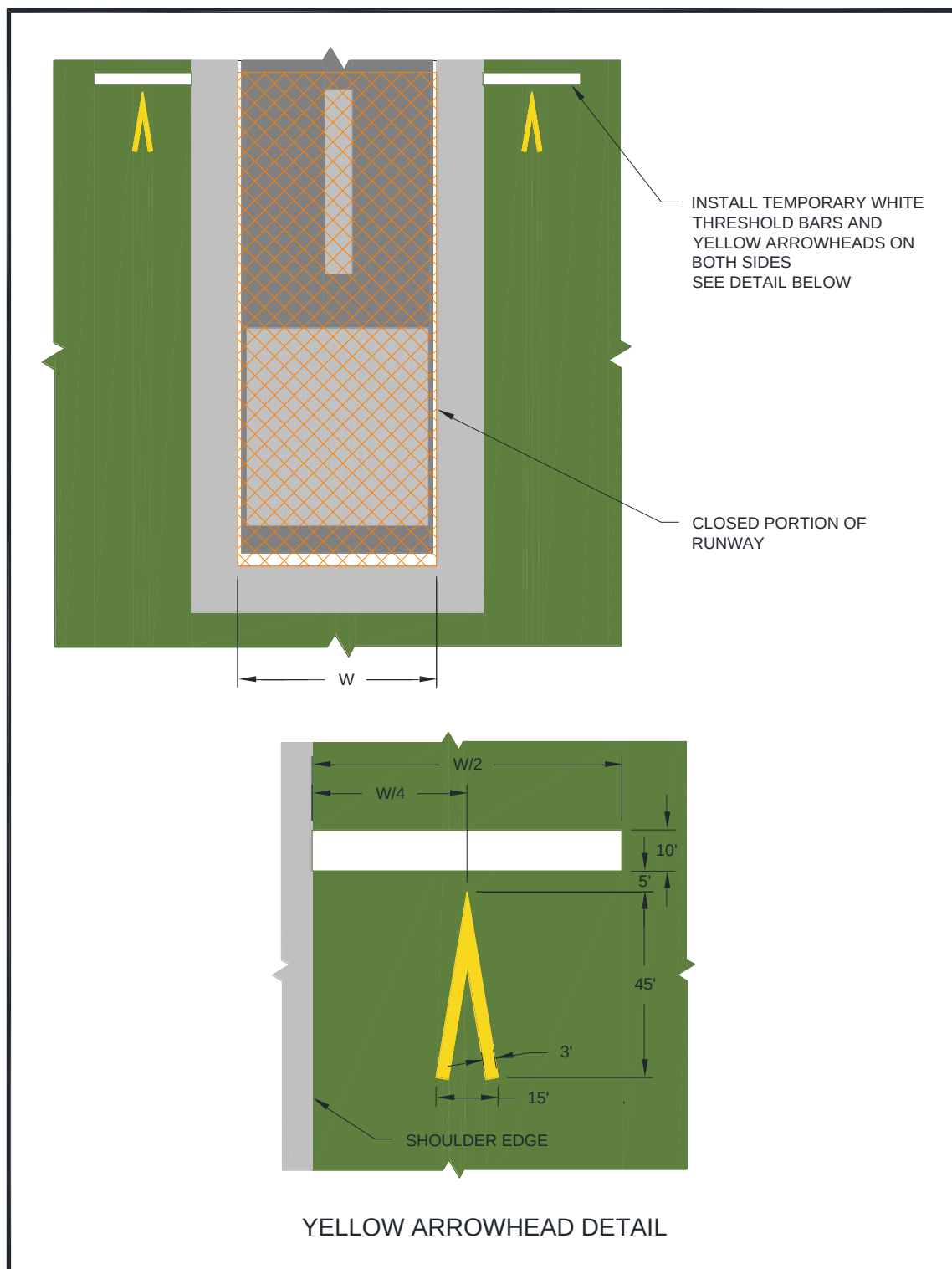
- 2.18.2.3 It may be necessary to remove or cover runway markings, including but not limited to, runway designation markings, threshold markings, centerline markings, edge stripes, touchdown zone markings and aiming point markings, depending on the length of construction and type of activity at the airport. 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 AC 150/5370-10), 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. AC

150/5340-1, Standards for Airport Markings, has additional guidance on temporary markings.

Figure 2-5. Temporary Outboard White Threshold Bars and Yellow Arrowheads



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 AC 150/5345-55, *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 AC 150/5340-30 for details on lighting displaced thresholds. See Figure 2-2.

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 AC 150/5345-39, 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 AC 150/5370-10.

2.18.3.3.6 Maintain threshold and edge lighting color and spacing standards as described in AC 150/5340-30. Battery powered, solar, or portable lights that meet the criteria in AC 150/5345-50 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 AC 150/5345-44, *Specification for Runway and Taxiway Signs*, and AC 150/5340-18, *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 Takeoff Run Available (TORA) signs.

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 AC 150/5340-18 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 AC 150/5220-23, *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 [AC 150/5370-10](#) 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 AC 150/5300-13. 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 2.13.5) 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 AC 150/5300-13). 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 AC 150/5300-13 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 AC 150/5300-13.) 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 AC 150/5300-13).

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.**

1. 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.
 - c. Marking and lighting meeting the provisions of paragraphs 2.18 and 2.20 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 2.18 and 2.20 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 AC 150/5300-13. 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:

2.23.1 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 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 AC 150/5370-10.

2.23.2 Restrictions.

- 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 3.9) 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 AC 150/5370-12. 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 3.8, 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 Appendix F 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 3.6 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 3.14 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 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 Two-Way Radio Communications.

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 be 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 3.10 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 3.15 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, AC 150/5320-15.

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 3.10. 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 3.10 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, AC 150/5340-1, *Standards for Airport Markings*; AC 150/5340-18, *Standards for Airport Sign Systems*; and AC 150/5340-30, 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 3.7 for project phasing requirements based on construction limitations as required.

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APPENDIX A. RELATED READING MATERIAL

Obtain the latest version of the following free publications from the FAA on its Web site at <http://www.faa.gov/airports/>.

Table A-1. FAA Publications

Number	Title and Description
<u>AC 150/5200-28</u>	<i>Notices to Airmen (NOTAMs) for Airport Operators</i> Guidance for using the NOTAM System in airport reporting.
<u>AC 150/5200-30</u>	<i>Airport Field Condition Assessments and Winter Operations Safety</i> Guidance for airport owners/operators on the development of an acceptable airport snow and ice control program and on appropriate field condition reporting procedures.
<u>AC 150/5200-33</u>	<i>Hazardous Wildlife Attractants On or Near Airports</i> Guidance on locating certain land uses that might attract hazardous wildlife to public-use airports.
<u>AC 150/5210-5</u>	<i>Painting, Marking, and Lighting of Vehicles Used on an Airport</i> Guidance, specifications, and standards for painting, marking, and lighting vehicles operating in the airport air operations areas.
<u>AC 150/5210-20</u>	<i>Ground Vehicle Operations to include Taxiing or Towing an Aircraft on Airports</i> Guidance to airport operators on developing ground vehicle operation training programs.
<u>AC 150/5300-13</u>	<i>Airport Design</i> 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.
<u>AC 150/5210-24</u>	<i>Airport Foreign Object Debris (FOD) Management</i> Guidance for developing and managing an airport foreign object debris (FOD) program

Number	Title and Description
<u>AC 150/5320-15</u>	<i>Management of Airport Industrial Waste</i> 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.
<u>AC 150/5340-1</u>	<i>Standards for Airport Markings</i> FAA standards for the siting and installation of signs on airport runways and taxiways.
<u>AC 150/5340-18</u>	<i>Standards for Airport Sign Systems</i> FAA standards for the siting and installation of signs on airport runways and taxiways.
<u>AC 150/5345-28</u>	<i>Precision Approach Path Indicator (PAPI) Systems</i> FAA standards for PAPI systems, which provide pilots with visual glide slope guidance during approach for landing.
<u>AC 150/5340-30</u>	<i>Design and Installation Details for Airport Visual Aids</i> Guidance and recommendations on the installation of airport visual aids.
<u>AC 150/5345-39</u>	<i>Specification for L-853, Runway and Taxiway Retroreflective Markers</i>
<u>AC 150/5345-44</u>	<i>Specification for Runway and Taxiway Signs</i> FAA specifications for unlighted and lighted signs for taxiways and runways.
<u>AC 150/5345-53</u>	<i>Airport Lighting Equipment Certification Program</i> Details on the Airport Lighting Equipment Certification Program (ALECP).
<u>AC 150/5345-50</u>	<i>Specification for Portable Runway and Taxiway Lights</i> 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.
<u>AC 150/5345-55</u>	<i>Specification for L-893, Lighted Visual Aid to Indicate Temporary Runway Closure</i>

Number	Title and Description
<u>AC 150/5370-10</u>	<i>Standards for Specifying Construction of Airports</i> Standards for construction of airports, including earthwork, drainage, paving, turfing, lighting, and incidental construction.
<u>AC 150/5370-12</u>	<i>Quality Management for Federally Funded Airport Construction Projects</i>
EB 93	<i>Guidance for the Assembly and Installation of Temporary Orange Construction Signs</i>
FAA Order 5200.11	<u>FAA Airports (ARP) Safety Management System (SMS)</u> 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	<i>Grasses Attractive to Hazardous Wildlife</i> Guidance on grass management and seed selection.
FAA Form 7460-1	<u>Notice of Proposed Construction or Alteration</u>
FAA Form 7480-1	<u>Notice of Landing Area Proposal</u>
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 <http://www.ecfr.gov/>.

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 <http://mutcd.fhwa.dot.gov/>.

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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 https://oeaaa.faa.gov .) The form may be downloaded at http://www.faa.gov/airports/resources/forms/ , or filed electronically at: https://oeaaa.faa.gov .
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 http://www.faa.gov/airports/resources/forms/ .
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
AOA	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, <i>Certification of Airports</i> .
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 <u>AC 150/5300-13</u> .
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 Chapter 2. 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.

Table C-1. CSPP Checklist

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
General Considerations					
Requirements for predesign, prebid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	<u>2.5</u>				
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.	<u>2.5.3</u>				
Areas and Operations Affected by Construction 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>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Approach/departure surfaces affected by heights of temporary objects are addressed.	<u>2.7.1.5</u>				
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.	<u>2.7.2.1</u>				
Detours for ARFF and other airport vehicles are identified.	<u>2.7.2.2</u>				
Maintenance of essential utilities and underground infrastructure is addressed.	<u>2.7.2.3</u>				
Temporary changes to air traffic control procedures are addressed.	<u>2.7.2.4</u>				
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.	<u>2.8</u>				
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, 2.13.5.3.1, 2.18.1</u>				
Contractor Access					
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.	<u>2.9.1</u>				
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, Painting, Marking and Lighting of Vehicles Used on an Airport</u> , 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>				
Wildlife Management					
The airport operator's wildlife management procedures are addressed.	<u>2.10</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
Foreign Object Debris Management					
The airport operator’s FOD management procedures are addressed.	<u>2.11</u>				
Hazardous Materials Management					
The airport operator’s hazardous materials management procedures are addressed.	<u>2.12</u>				
Notification of Construction 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.	<u>2.13</u>				
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>				
A list of ATCT managers on duty is included.	<u>2.13.1</u>				
A list of authorized representatives to the OCC is included.	<u>2.13.2</u>				
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, 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>				
Inspection Requirements					
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>				
Underground Utilities					
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 Conditions					
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 Aids - Marking, Lighting, Signs, and Visual NAVAIDs					
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, 2.18.4.2, 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> , <i>Design and Installation Details for Airport Visual Aids</i> ; <u>AC 150/5345-50</u> , <i>Specification for Portable Runway and Taxiway Lights</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , 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> , <i>Specification for Runway and Taxiway Signs</i> ; <u>AC 150/5340-18</u> , <i>Standards for Airport Sign Systems</i> ; and <u>AC 150/5345-53</u> , <i>Airport Lighting Certification Program</i> , is specified.	<u>2.18.4</u>				
Marking and Signs For Access 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 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?			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.	<u>2.20.2.1</u>				
Red lights meeting the luminance requirements of the State Highway Department are specified.	<u>2.20.2.2</u>				
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.	<u>2.20.2.5</u>				
Markings for temporary closures are specified.	<u>2.20.2.5</u>				
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 Lighting for Nighttime Construction					
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.	<u>2.21</u>				
Protection of Runway and Taxiway Safety Areas					
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	<u>2.22.3.5</u>				

Coordination	Reference	Addressed?			Remarks
		Yes	No	NA	
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.	<u>2.22.3</u>				
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.	<u>2.22.6</u>				
Other Limitations on Construction					
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.	<u>2.23.1.2</u>				
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.

Table D-1. Potentially Hazardous Conditions

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		

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.		

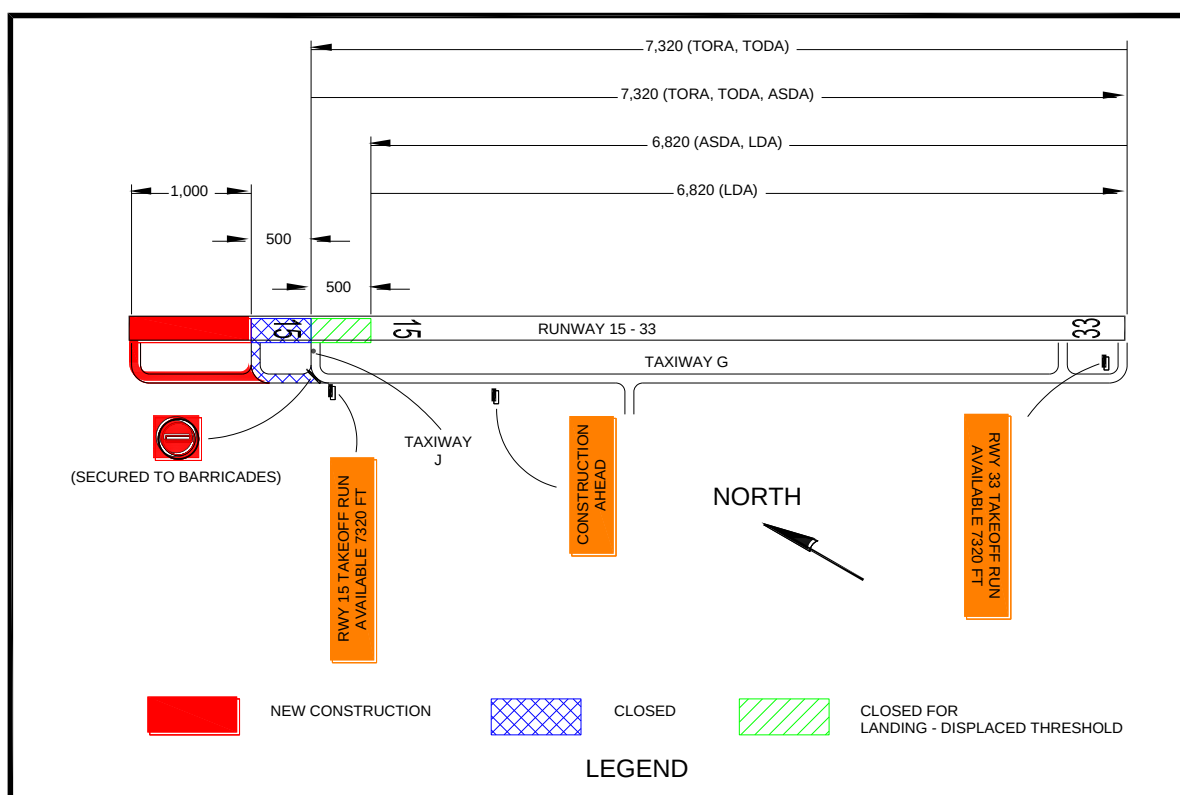
Item	Action Required (Describe)	No Action Required (Check)
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity 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](#).

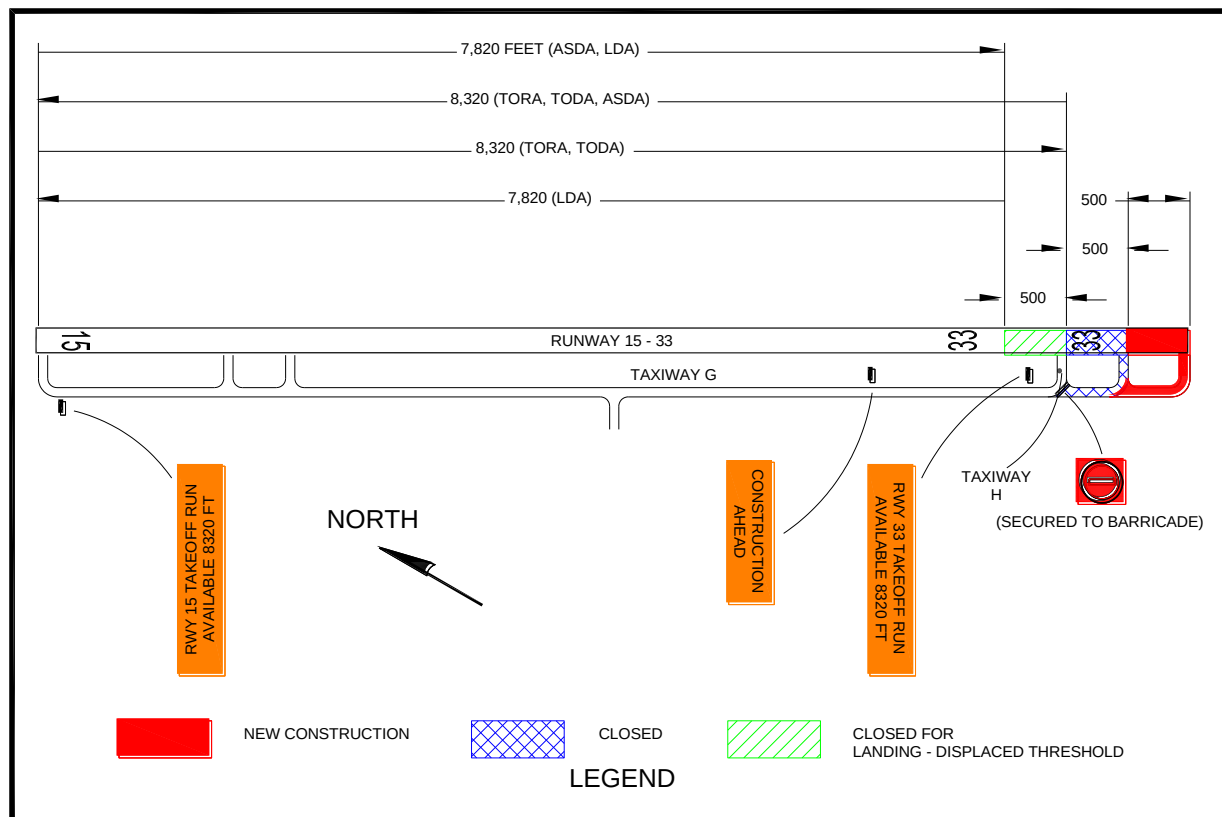
Figure E-1. Phase I Example

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.

Figure E-3. Phase III Example

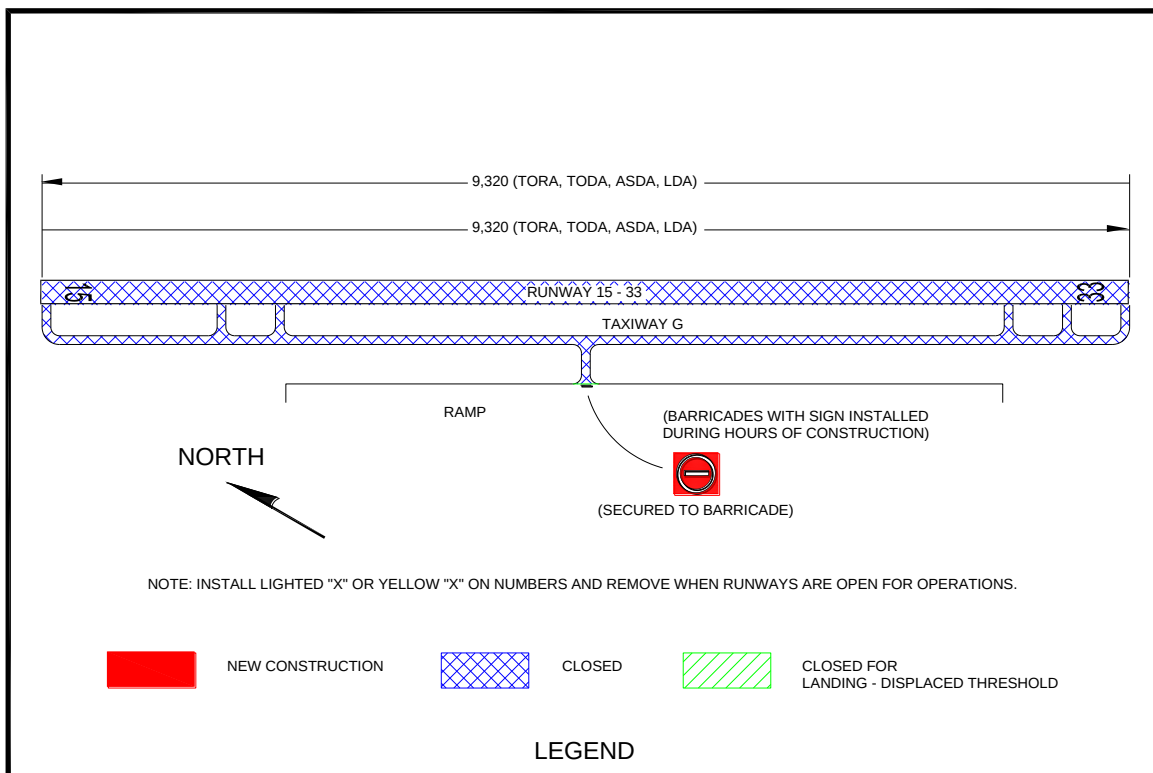


Table E-1. Operational Effects Table

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
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	$\frac{3}{4}$ mile	$\frac{3}{4}$ mile	$\frac{3}{4}$ mile	1 mile

Note: Proper coordination with Flight Procedures group is necessary to maintain instrument approach procedures during construction.

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
Runway 15 Declared Distances	TORA	7,820	7,320	8,320	9,320
	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 Declared Distances	TORA	7,820	7,320	8,320	9,320
	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 Procedures		LOC only	LOC only	LOC only	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 33 Approach Procedures		ILS	ILS	ILS	LOC only
		RNAV	RNAV	RNAV	RNAV
		VOR	VOR	VOR	VOR
Runway 15 NAVAIDs		LOC	LOC	LOC	LOC
Runway 33 NAVAIDs		ILS, MALSR	ILS, MALSR	ILS, MALSR	LOC, MALSR
Taxiway G ADG		IV	III	IV	IV
Taxiway G TDG		4	4	4	4
ATCT (hours open)		24 hours	24 hours	24 hours	0500 - 2000
ARFF Index		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:

Table E-2. Runway and Taxiway Edge Protection

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*

*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:

Table E-3. Protection Prior to 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*	Minimum Distance to Threshold Based on Required Approach Slope*	
				ft	: 1
				ft	: 1
				ft	: 1
				ft	: 1

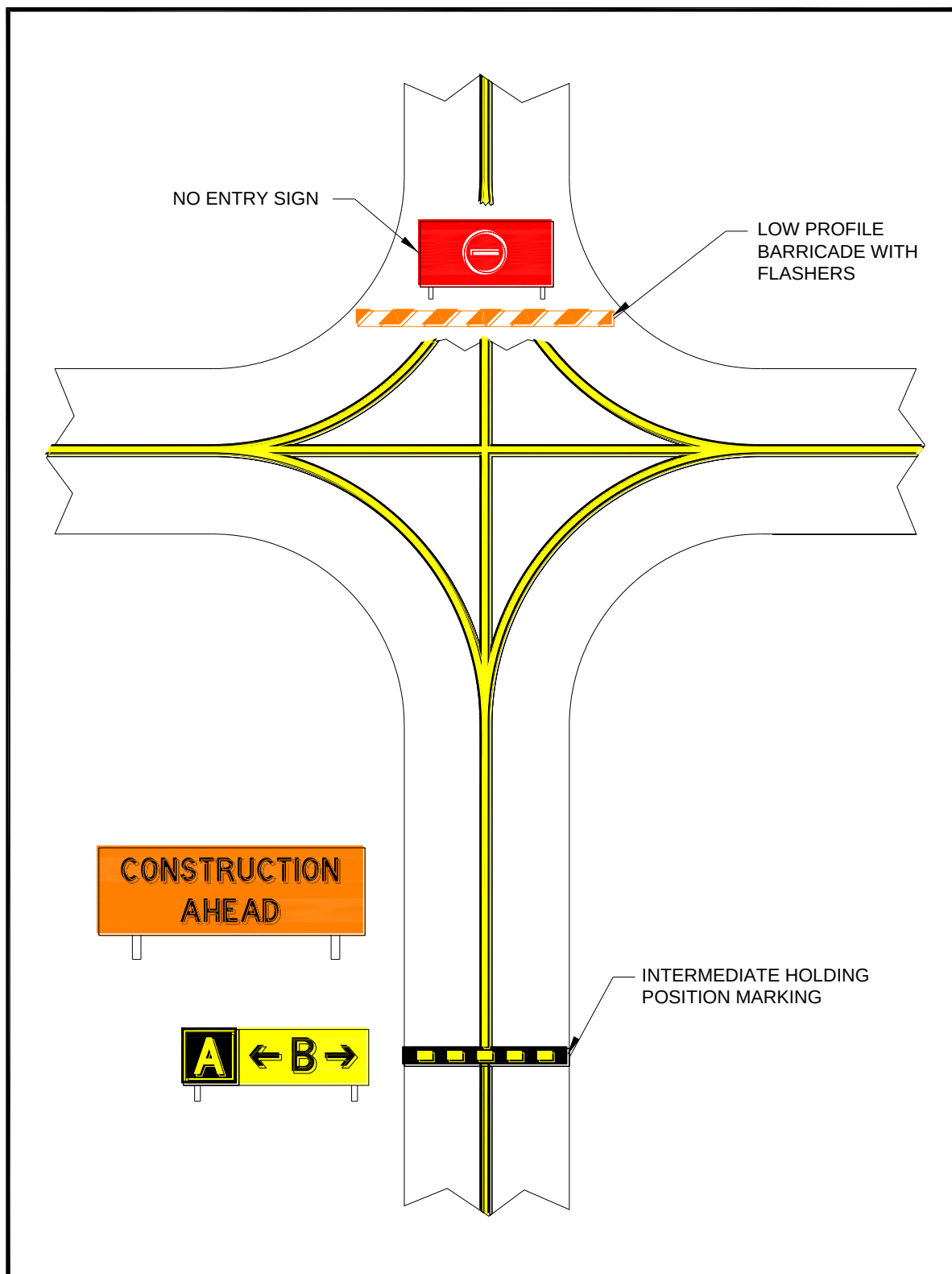
*See AC 150/5300-13 to complete the chart for a specific runway.

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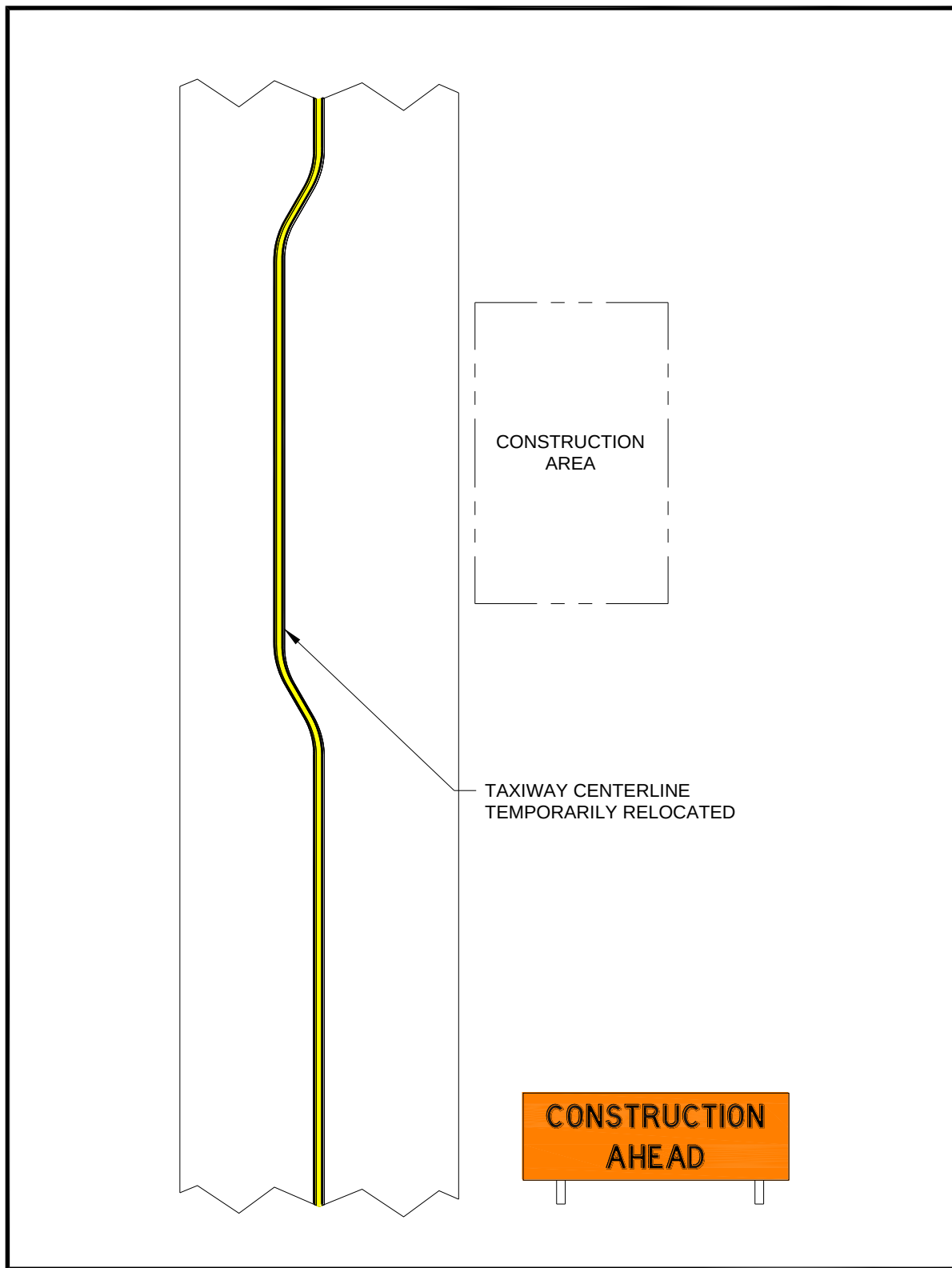
APPENDIX F. ORANGE CONSTRUCTION SIGNS

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.

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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.

Subject: AC 150/5370-2G

Date: _____

Please check all appropriate line items:

- ☐ An error (procedural or typographical) has been noted in paragraph _____ on page _____.
- ☐ Recommend paragraph _____ on page _____ be changed as follows:
- _____
- _____
- _____
- ☐ In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)
- _____
- _____
- _____
- ☐ Other comments:
- _____
- _____
- _____
- ☐ I would like to discuss the above. Please contact me at (phone number, email address).
- _____

Submitted by: _____

Date: _____