03A

Letting November 9, 2018

Notice to Bidders, Specifications and Proposal

Illinois Department of Transportation

Springfield, Illinois 62764

Contract No. ED018
Edgar County Airport
Paris, Illinois
Edgar County
Illinois Project No. PRG-4144
SBG Project No. 3-17-SBGP-99/105/111/120/133

(Printed by authority of the State of Illinois)

Illinois Department of Transportation

NOTICE TO BIDDERS

1. **TIME AND PLACE OF OPENING BIDS.** Electronic bids are to be submitted to the electronic bidding system (iCX-Integrated Contractors Exchange). All bids must be submitted to the iCX system prior to 10:00 a.m. on November 9, 2018, at which time the bids will be publicly opened from the iCX SecureVault.

2. **DESCRIPTION OF WORK**. The proposed improvement is identified and advertised for bids in the Invitation for Bids as:

   Contract No. ED018
   Edgar County Airport
   Paris, Illinois
   Edgar County
   Illinois Project No. PRG-4144
   SBG Project No. 3-17-SBGP-99/105/111/120/133

   Apron Expansion and Relocate/Upgrade Fuel Facility

   For engineering information, please contact Barry S. Stolz, P.E. of Hanson Professional Services, Inc. at 314.942.5288.

3. **INSTRUCTIONS TO BIDDERS**.

   (a) This Notice, the invitation for bids, proposal and letter of award shall, together with all other documents in accordance with Article 10-18 of the Illinois Standard Specifications for Construction of Airports, become part of the contract. Bidders are cautioned to read and examine carefully all documents, to make all required inspections, and to inquire or seek explanation of the same prior to submission of a bid.

   (b) State law, and, if the work is to be paid wholly or in part with Federal-aid funds, Federal law requires the bidder to make various certifications as a part of the proposal and contract. By execution and submission of the proposal, the bidder makes the certification contained therein. A false or fraudulent certification shall, in addition to all other remedies provided by law, be a breach of contract and may result in termination of the contract.

4. **AWARD CRITERIA AND REJECTION OF BIDS**. This contract will be awarded within 60 calendar days to the lowest responsive and responsible bidder considering conformity with the terms and conditions established by the Department in the rules, Invitation for Bids and contract documents. The issuance of plans and proposal forms for bidding based upon a prequalification rating shall not be the sole determinant of responsibility. The Department reserves the right to determine responsibility at the time of award, to reject any or all proposals, to readvertise the proposed improvement, and to waive technicalities.

5. **PRE-BID CONFERENCE.** N/A

6. **DISADVANTAGED BUSINESS POLICY.** The DBE goal for this contract is 5.0%.

7. **SPECIFICATIONS AND DRAWINGS.** The work shall be done in accordance with the Illinois Standard Specifications for Construction of Airports, the Special Provisions dated September 21, 2018, and the Construction Plans dated September 21, 2018 as approved by the Illinois Department of Transportation, Division of Aeronautics.

8. **BIDDING REQUIREMENTS AND BASIS OF AWARD.** When alternates are included in the proposal, the following shall apply:

   a. Additive Alternates

      (1) Bidders must submit a bid for the Base Bid and for all Additive Alternates.

      (2) Award of this contract will be made to the lowest responsible qualified bidder computed as follows:

      The lowest aggregate amount of (i) the Base Bid plus (ii) any Additive Alternate(s) which the Department elects to award.

      The Department may elect not to award any Additive Alternates. In that case, award will be to the lowest responsible qualified bidder of the Base Bid.

   b. Optional Alternates

      (1) Bidders must submit a bid for the Base Bid and for either Alternate A or Alternate B or for both Alternate A and Alternate B.

      (2) Award of this contract will be made to the lowest responsible qualified bidder computed as follows:

      The lower of the aggregate of either (i) the Base Bid plus Alternate A or (ii) the Base Bid plus Alternate B.

9. **CONTRACT TIME.** The Contractor shall complete all work within the specified contract time. Any calendar day extension beyond the specified contract time must be fully justified, requested by the Contractor in writing, and approved by the Engineer, or be subject to liquidated damages.

   The contract time for this contract is 83 calendar days.

10. **INDEPENDENT WEIGHT CHECKS.** The Department reserves the right to conduct random unannounced independent weight checks on any delivery for bituminous, aggregate or other pay item for which the method of measurement for payment is based on weight. The weight checks will be accomplished by selecting, at random, a loaded truck and obtaining a loaded and empty weight on an independent scale. In addition, the department may perform random weight checks by obtaining loaded and empty truck weights on portable scales operated by department personnel.

11. **MATERIAL COST ADJUSTMENTS.** Federal Aviation Administration rules prohibit the use of escalation clauses for materials. Therefore, the Illinois Department of Transportation, Division of Aeronautics cannot offer any material cost adjustment provisions for projects that utilize Federal Funds.

12. **GOOD FAITH COMPLIANCE.** The Illinois Department of Transportation has made a good faith effort to include all statements, requirements, and other language required by federal and state law and by various offices within federal and state governments whether that language is required by law or not. If anything of this nature has been left out or if additional language etc. is later required, the bidder/contractor shall cooperate fully with the Department to modify the contract or bid documents to correct the deficiency. If the change results in increased operational costs, the Department shall reimburse the contractor for such costs as it may find to be reasonable.

By Order of the
Illinois Department of Transportation

Randall S. Blankenhorn,
Secretary

Illinois Department of Transportation

Division of Aeronautics
Proposal Bid Bond

Sponsor _____ Item No. _____

IL Proj. No. _____ SBG Pr. No. _____ Letting Date _____

KNOW ALL MEN BY THESE PRESENTS, That We _____

_____

as PRINCIPAL, and _____

_____ as SURETY, are held jointly, severally and firmly bound unto the SPONSOR identified above, in the penal sum of 5 percent of the total bid price, or for the amount specified in Section 6, Proposal Guaranty of the Proposal Document, whichever is the lesser sum, well and truly to be paid unto said SPONSOR, for the payment of which we bind ourselves, our heirs, executors, administrators, successors and assigns.

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH, that whereas, the PRINCIPAL has submitted a bid proposal to the SPONSOR through its AGENT, the State of Illinois, Department of Transportation, Division of Aeronautics, for the improvement designated by the Transportation Bulletin Item Number and Letting Date indicated above.

NOW, THEREFORE, if the SPONSOR through its AGENT shall accept the bid proposal of the PRINCIPAL; and if the PRINCIPAL shall, and as specified in the bidding and contract documents, submit a DBE Utilization Plan that is accepted and approved by the AGENT; and if, after the award by AGENT on behalf of SPONSOR, the PRINCIPAL shall enter into a contract in accordance with the terms of the bidding and contract documents, including evidence of the required insurance coverages and providing such bond as specified with good and sufficient surety for the faithful performance of such contract and for the prompt payment of labor and material furnished in the prosecution thereof; or if, in the event of the failure of the PRINCIPAL to make the required DBE submission or to enter into such contract and to give the specified bond, the PRINCIPAL pays to the SPONSOR the difference not to exceed the penalty hereof between the amount specified in the bid proposal and such larger amount for which the SPONSOR may contract with another party to perform the work covered by said bid proposal, then this obligation shall be null and void. otherwise. it shall remain in full force and effect.

IN THE EVENT the SPONSOR acting through its AGENT determines the PRINCIPAL has failed to comply with any requirement as set forth in the preceding paragraph, then SURETY shall pay the penal sum to the SPONSOR within fifteen (15) days of written demand therefor. If SURETY does not make full payment within such period of time, the AGENT may bring an action to collect the amount owed. SURETY is liable to the SPONSOR and to the AGENT for all its expenses, including attorney's fees, incurred in any litigation in which SPONSOR or AGENT prevail either in whole or in part.

In TESTIMONY WHEREOF, the said PRINCIPAL and the said SURETY have caused this instrument to be signed by their respective officers _____ day of _____ A.D., _____ .

PRINCIPAL **SURETY**

_____ _____
(Company Name) (Company Name)

By _____ By: _____
(Signature & Title) (Signature of Attorney-in-Fact)

Notary Certification for Principal and Surety

STATE OF ILLINOIS,
County of _____

I, _____ , a Notary Public in and for said County, do hereby certify that

_____ and _____
(Insert names of individuals signing on behalf of PRINCIPAL & SURETY)

who are each personally known to me to be the same persons whose names are subscribed to the foregoing instrument on behalf of PRINCIPAL and SURETY, appeared before me this day in person and acknowledged respectively, that they signed and delivered said instrument as their free and voluntary act for the uses and purposes therein set forth.

Given under my hand and notarial seal this _____ day of _____ A.D. _____

My commission expires _____ _____
Notary Public

In lieu of completing the above section of the Proposal Bid Form, the Principal may file an Electronic Bid Bond. By signing the proposal and marking the check box next to the Signature and Title line below, the Principal is ensuring the identified electronic bid bond has been executed and the Principal and Surety are firmly bound unto the SPONSOR through its AGENT under the conditions of the bid bond as shown above.

_____ _____ _____
Electronic Bid Bond ID# Company / Bidder Name Signature and Title

AER 356B (Rev. 06/16/17)

ILLINOIS DEPARTMENT OF TRANSPORTATION
DIVISION OF AERONAUTICS

REQUIRED CONTRACT PROVISIONS FOR STATE FUNDED AIRPORT CONSTRUCTION PROJECTS

The following provisions are State of Illinois requirements and are in addition to the REQUIRED CONTRACT PROVISIONS FOR AIRPORT IMPROVEMENT PROGRAM AND FOR OBLIGATED SPONSORS

DISADVANTAGED BUSINESS POLICY

NOTICE: This proposal contains the special provision entitled "Disadvantaged Business Participation." Inclusion of this Special Provision in this contract satisfies the obligations of the Department of Transportation under federal law as implemented by 49 CFR 23 and under the Illinois "Minority and Female Business Enterprise Act."

POLICY: It is public policy that the businesses defined in 49 CFR Part 23 shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with State or Federal funds. Consequently, the requirements of 49 CFR Part 23 apply to this contract.

OBLIGATION: The Contractor agrees to ensure that the businesses defined in 49 CFR Part 23 have the maximum opportunity to participate in the performance of this contract. In this regard, the Contractor shall take all necessary and reasonable steps, in accordance with 49 CFR Part 23, to ensure that the said businesses have the maximum opportunity to compete for and perform portions of this contract. The Contractor shall not discriminate on the basis of race, color, national origin, or sex in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

The Contractor shall include the above Policy and Obligation statements of this Special Provision in every subcontract, including procurement of materials and leases of equipment.

DBE/WBE CONTRACTOR FINANCE PROGRAM: On contracts where a loan has been obtained through the DBE/WBE Contractor Finance Program, the Contractor shall cooperate with the Department by making all payments due to the DBE/WBE Contractor by means of a two-payee check payable to the Lender (Bank) and the Borrower (DBE/WBE Contractor).

BREACH OF CONTRACT: Failure to carry out the requirements set forth above and in the Special Provision shall constitute a breach of contract and may result in termination of the contract or liquidated damages as provided in the special provision.

SPECIAL PROVISION FOR DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)
Effective: September 1, 2000
Revised: April 2, 2018

FEDERAL OBLIGATION. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR Part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR Part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

CONTRACTOR ASSURANCE. The Contractor makes the following assurance and agrees to include the assurance in each subcontract that the Contractor signs with a subcontractor.

> 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 in the award and administration of contracts funded in whole or in part with federal or state funds. 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:
>
> (a) Withholding progress payments;
>
> (b) Assessing sanctions;
>
> (c) Liquidated damages; and/or
>
> (d) Disqualifying the Contractor from future bidding as non-responsible.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR Part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined that the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. The determination is based on an assessment of the type of work, the location of the work, and the availability of DBE companies to do a part of the work. The assessment indicates that, in the absence of unlawful discrimination, and in an arena of fair and open competition, DBE companies can be expected to perform 5.0% of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set for in this Special Provision:

(a) The bidder documents that enough DBE participation has been obtained to meet the goal or,

(b) The bidder documents that a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

DBE LOCATOR REFERENCES. Bidders shall consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217) 785-4611, or by visiting the Department's website at:
http://www.idot.illinois.gov/doing-business/certifications/disadvantaged-business-enterprise-certification/il-ucp-directory/index.

BIDDING PROCEDURES. Compliance with this Special Provision is required prior to the award of the contract and the failure of the low bidder to comply will render the bid not responsive.

In order to assure the timely award of the contract, the low bidder shall submit:

(a) The bidder shall submit a DBE Utilization Plan on completed Department forms SBE 2025 and 2026.

(1) The final Utilization Plan must be submitted within five calendar days after the date of the letting in accordance with subsection (a)(2) of Bidding Procedures.

(2) To meet the five day requirement, the bidder may send the Utilization Plan electronically by scanning and sending to **DOT.DBE.UP@illinois.gov** or faxing to (217) 785-1524. The subject line must include the bid Item Number and the Letting date. The Utilization Plan should be sent as one .pdf file, rather than multiple files and emails for the same Item Number. It is the responsibility of the bidder to obtain confirmation of email or fax delivery.

Alternatively, the Utilization Plan may be sent by certified mail or delivery service within the five calendar day period. If a question arises concerning the mailing date of a Utilization Plan, the mailing date will be established by the U.S. Postal Service postmark on the certified mail receipt from the U.S. Postal Service or the receipt issued by a delivery service when the Utilization Plan is received by the Department. It is the responsibility of the bidder to ensure the postmark or receipt date is affixed within the five days if the bidder intends to rely upon mailing or delivery to satisfy the submission day requirement. The Utilization Plan is to be submitted to:

Illinois Department of Transportation
Bureau of Small Business Enterprises
Contract Compliance Section
2300 South Dirksen Parkway, Room 319
Springfield, Illinois 62764

The Department will not accept a Utilization Plan if it does not meet the five day submittal requirement and the bid will be declared not responsive. In the event the bid is declared not responsive due to a failure to submit a Utilization Plan or failure to comply with the bidding procedures set forth herein, the Department may elect to cause the forfeiture of the penal sum of the bidder's proposal guaranty, and may deny authorization to bid the project if re-advertised for bids. The Department reserves the right to invite any other bidder to submit a Utilization Plan at any time for award consideration.

(b) The Utilization Plan shall indicate that the bidder either has obtained sufficient DBE participation commitments to meet the contract goal or has not obtained enough DBE participation commitments in spite of a good faith effort to meet the goal. The Utilization Plan shall further provide the name, telephone number, and telefax number of a responsible official of the bidder designated for purposes of notification of Utilization Plan approval or disapproval under the procedures of this Special Provision.

(c) The Utilization Plan shall include a DBE Participation Commitment Statement, Department form SBE 2025, for each DBE proposed for the performance of work to achieve the contract goal. For bidding purposes, submission of the completed SBE 2025 forms, signed by the DBEs and scanned or faxed to the bidder will be acceptable as long as the original is available and provided upon request. All elements of information indicated on the said form shall be provided, including but not limited to the following:

(1) The names and addresses of DBE firms that will participate in the contract;

(2) A description, including pay item numbers, of the work each DBE will perform;

(3) The dollar amount of the participation of each DBE firm participating. The dollar amount of participation for identified work shall specifically state the quantity, unit price, and total subcontract price for the work to be completed by the DBE. If partial pay items are to be performed by the DBE, indicate the portion of each item, a unit price where appropriate and the subcontract price amount;

(4) DBE Participation Commitment Statements, form SBE 2025, signed by the bidder and each participating DBE firm documenting the commitment to use the DBE subcontractors whose participation is submitted to meet the contract goal;

(5) If the bidder is a joint venture comprised of DBE companies and non-DBE companies, the Utilization Plan must also include a clear identification of the portion of the work to be performed by the DBE partner(s); and,

(6) If the contract goal is not met, evidence of good faith efforts; the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor is selected over a DBE for work on the contract.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan submitted by the apparent successful bidder is approved. All information submitted by the bidder must be complete, accurate and adequately document that enough DBE participation has been obtained or document that good faith efforts of the bidder, in the event enough DBE participation has not been obtained, before the Department will commit to the performance of the contract by the bidder. The Utilization Plan will be approved by the Department if the Utilization Plan documents sufficient commercially useful DBE work to meet the contract goal or the bidder submits sufficient documentation of a good faith effort to meet the contract goal pursuant to 49 CFR Part 26, Appendix A. The Utilization Plan will not be approved by the Department if the Utilization Plan does not document sufficient DBE participation to meet the contract goal unless the apparent successful bidder documented in the Utilization Plan that it made a good faith effort to meet the goal. This means that the bidder must show that all necessary and reasonable steps were taken to achieve the contract goal. Necessary and reasonable steps are those which, by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not successful. The Department will consider the quality, quantity, and intensity of the kinds of efforts that the bidder has made. Mere *pro forma* efforts, in other words, efforts done as a matter of form, are not good faith efforts; rather, the bidder is expected to have taken genuine efforts that would be reasonably expected of a bidder actively and aggressively trying to obtain DBE participation sufficient to meet the contract goal.

(a) The following is a list of types of action that the Department will consider as part of the evaluation of the bidder's good faith efforts to obtain participation. These listed factors are not intended to be a mandatory checklist and are not intended to be exhaustive. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases, and will be considered by the Department.

(1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBE companies that have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBE companies to respond to the solicitation. The bidder must determine with certainty if the DBE companies are interested by taking appropriate steps to follow up initial solicitations.

(2) Selecting portions of the work to be performed by DBE companies in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime Contractor might otherwise prefer to perform these work items with its own forces.

(3) Providing interested DBE companies with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.

(4) a. Negotiating in good faith with interested DBE companies. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBE companies that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBE companies to perform the work.

b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBE companies is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable. In accordance with subsection (c)(6) of the above Bidding Procedures, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

(5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.

(6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.

(7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.

(8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.

(b) If the Department determines that the apparent successful bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided that it is otherwise eligible for award. If the Department determines that the bidder has failed to meet the requirements of this Special Provision or that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan that the bid is not responsive. The notification shall include a statement of reasons for the determination. If the Utilization Plan is not approved because it is deficient as a technical matter, unless waived by the Department, the bidder will be notified and will be allowed no more than a five calendar day period in order to cure the deficiency.

(c) The bidder may request administrative reconsideration of a determination adverse to the bidder within the five working days after the receipt of the notification date of the determination by delivering the request to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764 (Telefax: (217) 785-1524). Deposit of the request in the United States mail on or before the fifth business day shall not be deemed delivery. The determination shall become final if a request is not made and delivered. A request may provide additional written documentation or argument concerning the issues raised in the determination statement of reasons, provided the documentation and arguments address efforts made prior to submitting the bid. The request will be forwarded to the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person in order to consider all issues of documentation and whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for reconsideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

CALCULATING DBE PARTICIPATION. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR Part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines are provided in 49 CFR Part 26.55, the provisions of which govern over the summary contained herein.

(a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.

(b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.

(c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the prime Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.

(d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:

(1) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.

(2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission is receives as a result of the lease arrangement.

(e) DBE as a material supplier:

(1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.

(2) 100 percent goal credit for the cost of materials of supplies obtained from a DBE manufacturer.

(3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a DBE regular dealer or DBE manufacturer.

CONTRACT COMPLIANCE. Compliance with this Special Provision is an essential part of the contract. The Department is prohibited by federal regulations from crediting the participation of a DBE included in the Utilization Plan toward either the contract goal or the Department's overall goal until the amount to be applied toward the goals has been paid to the DBE. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan. After approval of the Utilization Plan and award of the contract, the Utilization Plan and individual DBE Participation Statements become part of the contract. If the Contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal. All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the DBE Participation Commitment Statement.

(a) NO AMENDMENT. No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be submitted to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764. Telephone number (217) 785-4611. Telefax number (217) 785-1524.

(b) CHANGES TO WORK. Any deviation from the DBE condition-of-award or contract plans, specifications, or special provisions must be approved, in writing, by the Department as provided elsewhere in the Contract. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract. Where the revision includes work committed to a new DBE subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A or AER 260A, must be signed and submitted. If the commitment of work is in the form of additional tasks assigned to an existing subcontract, than a new Request for Approval of Subcontractor shall not be required. However, the Contractor must document efforts to assure that the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.

(c) SUBCONTRACT. The Contractor must provide DBE subcontracts to IDOT upon request. Subcontractors shall ensure that all lower tier subcontracts or agreements with DBEs to supply labor or materials be performed in accordance with this Special Provision.

(d) ALTERNATIVE WORK METHODS. In addition to the above requirements for reductions in the condition of award, additional requirements apply to the two cases of Contractor-initiated work substitution proposals. Where the contract allows alternate work methods which serve to delete or create underruns in condition of award DBE work, and the Contractor selects that alternate method or, where the Contractor proposes a substitute work method or material that serves to diminish or delete work committed to a DBE and replace it with other work, then the Contractor must demonstrate one of the following:

(1) That the replacement work will be performed by the same DBE (as long as the DBE is certified in the respective item of work) in a modification of the condition of award; or

(2) That the DBE is aware that its work will be deleted or will experience underruns and has agreed in writing to the change. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so; or

(3) That the DBE is not capable of performing the replacement work or has declined to perform the work at a reasonable competitive price. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so.

(e) TERMINATION AND REPLACEMENT PROCEDURES. The Contractor shall not terminate or replace a DBE listed on the approved Utilization Plan, or perform with other forces work designated for a listed DBE except as provided in this Special

Provision. The Contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the Contractor obtains the Department's written consent as provided in subsection (a) of this part. Unless Department consent is provided for termination of a DBE subcontractor, the Contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the DBE in the Utilization Plan.

As stated above, the Contractor shall not terminate or replace a DBE subcontractor listed in the approved Utilization Plan without prior written consent. This includes, but is not limited to, instances in which the 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. Written consent will be granted only if the Bureau of Small Business Enterprises agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate or replace the DBE firm. Before transmitting to the Bureau of Small Business Enterprises any request to terminate and/or substitute a DBE subcontractor, the Contractor shall give notice in writing to the DBE subcontractor, with a copy to the Bureau, of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor shall give the DBE five days to respond to the Contractor's notice. The DBE so notified shall advise the Bureau and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Bureau should not approve the Contractor's action. If required in a particular case as a matter of public necessity, the Bureau may provide a response period shorter than five days.

For purposes of this paragraph, good cause includes the following circumstances:

(1) The listed DBE subcontractor fails or refuses to execute a written contract;

(2) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;

(3) The listed DBE subcontractor fails or refuses to meet the prime Contractor's reasonable, nondiscriminatory bond requirements;

(4) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;

(5) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1200 or applicable state law.

(6) You have determined that the listed DBE subcontractor is not a responsible contractor;

(7) The listed DBE subcontractor voluntarily withdraws from the projects and provides to you written notice of its withdrawal;

(8) The listed DBE is ineligible to receive DBE credit for the type of work required;

(9) A DBE owner dies or becomes disabled with the result that the listed DBE subcontractor is unable to complete its work on the contract;

(10) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the prime Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the prime Contractor can self-perform the work for which the DBE contractor was engaged or so that the prime Contractor can substitute another DBE or non-DBE contractor after contract award.

When a DBE is terminated, or fails to complete its work on the Contract for any reason the Contractor shall make a good faith effort to find another DBE to substitute for the original DBE to perform at least the same amount of work under the contract as the terminated DBE to the extent needed to meet the established Contract goal. The good faith efforts shall be documented by the Contractor. If the Department requests documentation under this provision, the Contractor shall submit the documentation within seven days, which may be extended for an additional seven days if necessary at the request of the Contractor. The Department shall provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated.

(f) FINAL PAYMENT. After the performance of the final item of work or delivery of material by a DBE and final payment therefore to the DBE by the Contractor, but not later than thirty calendar days after payment has been made by the Department to the Contractor for such work or material, the Contractor shall submit a DBE Payment Agreement on Department form SBE 2115 to the Resident Engineer. If full and final payment has not been made to the DBE, the DBE Payment Agreement shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes that the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the Utilization Plan performed by the DBE companies indicated in the Utilization Plan and after good faith efforts are reviewed, the Department may deduct from contract payments to the Contractor the amount of the goal not achieved as liquidated and ascertained damages. The Contractor may request an administrative reconsideration of any amount deducted as damages pursuant to subsection (h) of this part.

(g) ENFORCEMENT. The Department reserves the right to withhold payment to the Contractor to enforce the provisions of this Special Provision. Final payment shall not be made on the contract until such time as the Contractor submits sufficient

documentation demonstrating achievement of the goal in accordance with this Special Provision or after liquidated damages have been determined and collected.

(h) RECONSIDERATION. Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor my request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of "Good Faith Effort Procedures" of this Special Provision, except a final decision that a good faith effort was not made during contract performance to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department. The result of the reconsideration process is not administratively appealable to the U.S. Department of Transportation.

SPECIAL PROVISION FOR WEEKLY DBE TRUCKING REPORTS (BDE)
Effective: June 2, 2012
Revised: April 2, 2015

The Contractor shall submit a weekly report of Disadvantaged Business Enterprise (DBE) trucks hired by the Contractor or subcontractors (i.e. not owned by the Contractor or subcontractors) that are used for DBE goal credit.

The report shall be submitted to the Resident Engineer on Division of Aeronautics Form "AER 723" within ten business days following the reporting period. The reporting period shall be Monday through Sunday for each week reportable trucking activities occur.

Any costs associated with providing weekly DBE trucking reports shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed.

SPECIAL PROVISION FOR SUBCONTRACTOR MOBILIZATION PAYMENTS
Revised: April 1, 2011

To account for the preparatory work and the operations necessary for the movement of subcontractor personnel, equipment, supplies, and incidentals to the project site and for all other work or operations that must be performed or costs incurred when beginning work approved for subcontracting according to Section 80-01 of the Standard Specifications, the Contractor shall make a mobilization payment to each subcontractor.

This mobilization payment shall be made at least 14 days prior to the subcontractor starting work. The amount paid shall be equal to 3 percent of the amount of the subcontract reported on form AER 260A submitted for the approval of the subcontractor's work.

The mobilization payment to the subcontractor is an advance payment of the reported amount of the subcontract and is not a payment in addition to the amount of the subcontract; therefore, the amount of the advance payment will be deducted from future progress payments.

This provision shall be incorporated directly or by reference into each subcontract approved by the Department

SPECIAL PROVISION FOR PAYMENTS TO SUBCONTRACTORS
Revised: January 1, 2006

Federal regulations found at 49 CFR §26.29 mandate the Department to establish a contract clause to require Contractors to pay subcontractors for satisfactory performance of their subcontracts and to set the time for such payments.

State law also addresses the timing of payments to be made to subcontractors and material suppliers. Section 7 of the Prompt Payment Act, 30 ILCS 540/7, requires that when a Contractor receives any payment from the Department, the Contractor shall make corresponding, proportional payments to each subcontractor and material supplier performing work or supplying material within 15 calendar days after receipt of the Department payment. Section 7 of the Act further provides that interest in the amount of two percent per month, in addition to the payment due, shall be paid to any subcontractor or material supplier by the Contractor if the payment required by the Act is withheld or delayed without reasonable cause. The Act also provides that the time for payment required and the calculation of any interest due applies to transactions between subcontractors and lower-tier subcontractors and material suppliers throughout the contracting chain.

This Special Provision establishes the required federal contract clause, and adopts the 15 calendar day requirement of the State Prompt Payment Act for purposes of compliance with the federal regulation regarding payments to subcontractors. This contract is subject to the following payment obligations.

When progress payments are made to the Contractor according to Article 90-07 of the Standard Specifications, the Contractor shall make a corresponding payment to each subcontractor and material supplier in proportion to the work satisfactorily completed by each subcontractor and for the material supplied to perform any work of the contract. The proportionate amount of partial payment due to each subcontractor and material supplier throughout the contracting chain shall be determined by the quantities measured or otherwise determined as eligible for payment by the Department and included in the progress payment to the Contractor. Subcontractors and material suppliers shall be paid by the Contractor within 15 calendar days after the receipt of payment from the Department. The Contractor shall not hold retainage from the subcontractors. These obligations shall also apply to any payments made by subcontractors and material suppliers to their subcontractors and material suppliers; and to all payments made to lower tier

subcontractors and material suppliers throughout the contracting chain. Any payment or portion of a payment subject to this provision may only be withheld from the subcontractor or material supplier to whom it is due for reasonable cause.

This Special Provision does not create any rights in favor of any subcontractor or material supplier against the State or authorize any cause of action against the State on account of any payment, nonpayment, delayed payment, or interest claimed by application of the State Prompt Payment Act. The Department will not approve any delay or postponement of the 15 day requirement except for reasonable cause shown after notice and hearing pursuant to Section 7(b) of the State Prompt Payment Act. State law creates other and additional remedies available to any subcontractor or material supplier, regardless of tier, who has not been paid for work properly performed or material furnished. These remedies are a lien against public funds set forth in Section 23(c) of the Mechanics Lien Act, 770 ILCS 60/23(c), and a recovery on the Contractor's payment bond according to the Public Construction Bond Act, 30 ILCS 550.

SPECIAL PROVISION FOR SUBCONTRACTOR AND DBE PAYMENT REPORTING (BDE)
Effective: April 2, 2018

Subcontractor and Disadvantaged Business Enterprise Payment Reporting

The Contractor shall report all payments made to the following parties:

(a) first tier subcontractors;

(b) lower tier subcontractors affecting disadvantaged business enterprise (DBE) goal credit;

(c) material suppliers or trucking firms that are part of the Contractor's submitted DBE utilization plan.

The report shall be made through the Department's on-line subcontractor payment reporting system within 21 days of making the payment.

SPECIAL PROVISION FOR ADDITIONAL STATE REQUIREMENTS FOR FEDERAL-AID CONSTRUCTION CONTRACTS
Effective: February 1, 1969
Revised: January 1, 2017

EQUAL EMPLOYMENT OPPORTUNITY

In the event of the Contractor's noncompliance with the provisions of this Equal Employment Opportunity Clause, the Illinois Human Rights Act, or the Illinois Department of Human Rights Rules and Regulations, the Contractor may be declared ineligible for future contracts or subcontracts with the State of Illinois or any of its political sub-divisions or municipal corporations, and the contract may be cancelled or voided in whole or in part, and such other sanctions or penalties may be imposed or remedies invoked as provided by statute or regulation.

During the performance of this Contract, the Contractor agrees as follows:

(1) That it will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service; and further that it will examine all job classifications to determine if minority persons or women are underutilized and will take appropriate affirmative action to rectify any such underutilization.

(2) That, if it hires additional employees in order to perform this contract or any portion hereof, it will determine the availability (in accordance with the Illinois Department of Human Rights Rules and Regulations) of minorities and women in the area(s) from which it may reasonably recruit and it will hire for each job classification for which employees are hired in such a way that minorities and women are not underutilized.

(3) That, in all solicitations or advertisements for employees placed by it or on its behalf, it will state that all applicants will be afforded equal opportunity without discrimination because of race, color, religion, sex, sexual orientation, marital status, order of protection status, national origin or ancestry, citizenship status, age, physical or mental disability unrelated to ability, military status, or an unfavorable discharge from military service.

(4) That it will send to each labor organization or representative of workers with which it has or is bound by a collective bargaining or other agreement or understanding, a notice advising such labor organization or representative of the Contractor's obligations under the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations. If any labor organization or representative fails or refuses to cooperate with the Contractor in its efforts to comply with such Act and Rules and Regulations, the Contractor will promptly so notify the Illinois Department of Human Rights and IDOT and will recruit employees from other sources when necessary to fulfill its obligations thereunder.

(5) That it will submit reports as required by the Illinois Department of Human Rights Rules and Regulations, furnish all relevant information as may from time to time be requested by the Illinois Department of Human Rights or IDOT, and in all respects comply with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

(6) That it will permit access to all relevant books, records, accounts, and work sites by personnel of IDOT and the Illinois Department of Human Rights for purposes of investigation to ascertain compliance with the Illinois Human Rights Act and the Illinois Department of Human Rights Rules and Regulations.

(7) That it will include verbatim or by reference the provisions of this clause in every subcontract it awards under which any portion of the contract obligations are undertaken or assumed, so that the provisions will be binding upon the subcontractor. In the same manner as with other provisions of this contract, the Contractor will be liable for compliance with applicable provisions of this clause by subcontractors; and further it will promptly notify IDOT and the Illinois Department of Human Rights in the event any subcontractor fails or refuses to comply with these provisions. In addition, the Contractor will not utilize any subcontractor declared by the Illinois Human Rights Commission to be ineligible for contracts or subcontracts with the State of Illinois or any of its political subdivisions or municipal corporations.

SPECIAL PROVISION FOR NPDES CERTIFICATION

In accordance with the provisions of the Illinois Environmental Protection Act, the Illinois Pollution Control Board Rules and Regulations (35 Ill. Adm. Code, Subtitle C, Chapter I), and the Clean Water Act, and the regulations thereunder, this certification is required for all construction contracts that will result in the disturbance of one or more acres total land area.

The bidder certifies under penalty of law that he/she understands the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR100000) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

The Airport Owner or its Agent will:

1) prepare, sign and submit the Notice of Intent (NOI)

2) conduct site inspections and complete and file the inspection reports

3) submit Incidence of Non-Compliance (ION) forms

4) submit Notice of Termination (NOT) form

Prior to the issuance of the Notice-to-Proceed, for <u>each</u> erosion control measure identified in the Storm Water Pollution Prevention Plan, the contractor or subcontractor responsible for the control measure(s) must sign the above certification (forms to be provided by the Department).

SPECIAL PROVISION FOR COMPLETION TIME VIA CALENDAR DAYS

It being understood and agreed that the completion within the time limit is an essential part of the contract, the bidder agrees to complete the work within 83 calendar days, unless additional time is granted by the Engineer in accordance with the provisions of the specifications. In case of failure to complete the work on or before the time named herein, or within such extra time as may have been allowed by extensions, the bidder agrees that the Department of Transportation shall withhold from such sum as may be due him/her under the terms of this contract, the costs, as set forth in Section 80-09 Failure to Complete on Time of the Standard Specifications, which costs shall be considered and treated not as a penalty but as damages due to the State from the bidder by reason of the failure of the bidder to complete the work within the time specified in the contract.

State of Illinois
Department of Transportation

SPECIAL PROVISION
FOR
SECTION 80 PROSECUTION AND PROGRESS

This Special Provision amends the provisions of the Standard Specifications for Construction of Airports, adopted April 1, 2012 and shall be construed to be a part thereof, superseding any conflicting provisions thereof applicable to the work under the contract.

80-09 FAILURE TO COMPLETE ON TIME.

DELETE: “See contract documents for current schedule of deductions.”

ADD:

Schedule of Deductions for Each Day of Overrun in Contract Time			
Original Contract Amount		Daily Charges	
From More Than	To and Including	Calendar Day	Work Day
$ 0	$ 100,000	$ 475	$ 675
100,000	500,000	750	1,050
500,000	1,000,000	1,025	1,425
1,000,000	3,000,000	1,275	1,725
3,000,000	6,000,000	1,425	2,000
6,000,000	12,000,000	2,300	3,450
12,000,000	And over	6,775	9,525

State of Illinois
Department of Transportation

SPECIAL PROVISION
FOR
SECTION 90 MEASUREMENT AND PAYMENT

This Special Provision amends the provisions of the Standard Specifications for Construction of Airports, adopted April 1, 2012 and shall be construed to be a part thereof, superseding any conflicting provisions thereof applicable to the work under the contract.

90-07 PARTIAL PAYMENTS.

DELETE: The entire section.

ADD: Partial payments will be made to the Contractor at least once each month as the work progresses. The payments will be based upon estimates, prepared by the Resident Engineer, 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 the Section 90-08 PAYMENT FOR MATERIALS ON HAND. From the amount of partial payment so determined on Federal-Aid projects, there shall be deducted an amount up to ten percent of the cost of the completed work which shall be retained until all conditions necessary for financial closeout of the project are satisfied. The amount of the estimate approved as due for payment will be vouchered by the Department and presented to the State Comptroller for payment. No amount less than $1,000.00 will be approved for payment other than the final payment. A final voucher for under $5.00 shall not be paid except through electronic funds transfer. (15 ILCS 405/9(b-1))

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, except when such excess quantities have been determined by the Engineer to be a part of the final quantity for the item of work in question.

No partial payment shall bind the Department 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 Section 90-09 ACCEPTANCE AND FINAL PAYMENT.

Progress payments may be reduced by liens filed pursuant to Section 23(c) of the Mechanics Lien Act, 770 ILCS 60/23(c).

If a Contractor or subcontractor has defaulted on a loan issued under the Department's Disadvantaged Business Revolving Loan Program (20 ILCS 2705/2705-610) progress payments may be reduced pursuant to the terms of that loan agreement. In such cases, the amount of the estimate related to the work performed by the Contractor or subcontractor, in default of the loan agreement, will be offset, in whole or in part, and vouchered by the Department to the Working Capital Revolving Fund or designated escrow account. Payment for the work shall be considered as issued and received by the Contractor or subcontractor on the date of the offset voucher. Further, the amount of the offset voucher shall be a credit against the Department's obligation to pay the Contractor, the Contractor's obligation to pay the subcontractor, and the Contractor's or subcontractor's total loan indebtedness to the Department. The offset shall continue until such time as the entire loan indebtedness is satisfied. The Department will notify the Contractor and Fund Control Agent in a timely manner of such offset. The Contractor or subcontractor shall not be entitled to additional payment in consideration of the offset.

In accordance with 49 USC § 47111, the Department will not make payments totaling more than 90 percent of the contract until all conditions necessary for financial closeout of the project are satisfied.

The failure to perform any requirement, obligation, or term of the contract by the Contractor shall be reason for withholding any progress payments until the Department determines that compliance has been achieved.

90-10 TRUST AGREEMENT OPTION.

DELETE: The entire section.

APPENDIX A – FEDERAL AVIATION ADMINISTRATION (FAA) REQUIRED CONTRACT PROVISIONS

A1 ACCESS TO RECORDS AND REPORTS

A1.1 CONTRACT CLAUSE

ACCESS TO RECORDS AND REPORTS

The Contractor must maintain an acceptable cost accounting system. The Contractor agrees to provide the sponsor, 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 AFFIRMATIVE ACTION REQUIREMENTS

A2.1 SOLICITATION CLAUSE

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY

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

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

The following goal for female utilization in each construction craft and trade shall apply to all Contractors holding Federal and federally-assisted construction contracts and subcontracts in excess of $10,000. The goal is applicable to the Contractor's total on-site construction workforce, regardless of whether or not part of that workforce is performing work on a Federal, federally assisted or nonfederally related construction contact or subcontract.

AREA COVERED (STATEWIDE)

Goals for Women apply nationwide.

GOAL

	Goal (percent)
Female Utilization.....	6.9

Until further notice, the following goals for minority utilization in each construction craft and trade shall apply to all Contractors holding Federal and federally-assisted construction contracts and subcontracts in excess of $10,000 to be performed in the respective geographical areas. The goals are applicable to the Contractor's total on-site construction workforce, regardless of whether or not part of that workforce is performing work on a Federal, federally-assisted or nonfederally related construction contract or subcontract.

Economic Area	Goal (percent)
056 Paducah, KY: Non-SMSA Counties - IL - Hardin, Massac, Pope KY - Ballard, Caldwell, Calloway, Carlisle, Crittenden, Fulton, Graves, Hickman, Livingston, Lyon, McCracken, Marshall	5.2
080 Evansville, IN: Non-SMSA Counties - IL - Edwards, Gallatin, Hamilton, Lawrence, Saline, Wabash, White IN - Dubois, Knox, Perry, Pike, Spencer KY - Hancock, Hopkins, McLean, Mublenberg, Ohio, Union, Webster	3.5
081 Terre Haute, IN: Non-SMSA Counties - IL - Clark, Crawford IN - Parke	2.5
083 Chicago, IL: SMSA Counties: 1600 Chicago, IL - IL - Cook, DuPage, Kane, Lake, McHenry, Will	19.6

3740 Kankakee, IL - 9.1
IL - Kankakee

Non-SMSA Counties 18.4
IL - Bureau, DeKalb, Grundy, Iroquois, Kendall, LaSalle, Livingston, Putnam
IN - Jasper, Laporte, Newton, Pulaski, Starke

084 Champaign - Urbana, IL:
SMSA Counties:
1400 Champaign - Urbana - Rantoul, IL - 7.8
IL - Champaign

Non-SMSA Counties - 4.8
IL - Coles, Cumberland, Douglas, Edgar, Ford, Piatt, Vermilion

085 Springfield - Decatur, IL:
SMSA Counties:
2040 Decatur, IL - 7.6
IL - Macon

7880 Springfield, IL - 4.5
IL - Menard, Sangamon

Non-SMSA Counties 4.0
IL - Cass, Christian, Dewitt, Logan, Morgan, Moultrie, Scott, Shelby

086 Quincy, IL:
Non-SMSA Counties 3.1

IL - Adams, Brown, Pike
MO - Lewis, Marion, Pike, Ralls

087 Peoria, IL:
SMSA Counties:
1040 Bloomington - Normal, IL - 2.5
IL - McLean

6120 Peoria, IL - 4.4
IL - Peoria, Tazewell, Woodford

Non-SMSA Counties - 3.3
IL - Fulton, Knox, McDonough, Marshall, Mason, Schuyler, Stark, Warren

088 Rockford, IL:
SMSA Counties:
6880 Rockford, IL - 6.3
IL - Boone, Winnebago

Non-SMSA Counties - 4.6
IL - Lee, Ogle, Stephenson

098 Dubuque, IA:
Non-SMSA Counties - 0.5
IL - JoDaviess
IA - Atlamakee, Clayton, Delaware, Jackson, Winnesheik
WI - Crawford, Grant, Lafayette

099 Davenport, Rock Island, Moline, IA - IL:
SMSA Counties:
1960 Davenport, Rock Island, Moline, IA - IL - 4.6
IL - Henry, Rock Island
IA - Scott

Non-SMSA Counties - 3.4
IL - Carroll, Hancock, Henderson, Mercer, Whiteside
IA - Clinton, DesMoines, Henry, Lee, Louisa, Muscatine
MO - Clark

107 St. Louis, MO:
SMSA Counties:
7040 St. Louis, MO - IL - 14.7
IL - Clinton, Madison, Monroe, St. Clair
MO - Franklin, Jefferson, St. Charles, St. Louis, St. Louis City

Non-SMSA Counties - 11.4
IL - Alexander, Bond, Calhoun, Clay, Effingham, Fayette, Franklin, Greene,

Jackson, Jasper, Jefferson, Jersey, Johnson, Macoupin, Marion, Montgomery, Perry, Pulaski, Randolph, Richland, Union, Washington, Wayne, Williamson

MO - Bollinger, Butler, Cape Girardeau, Carter, Crawford, Dent, Gasconade, Iron, Lincoln, Madison, Maries, Mississippi, Montgomery, Perry, Phelps, Reynolds, Ripley, St. Francois, St. Genevieve, Scott, Stoddard, Warren, Washington, Wayne

These goals are applicable to all of the contractor's construction work (whether or not it is Federal or federally-assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from Contractor to Contractor or from project to project for the sole purpose of meeting the Contractor's goals shall be a violation of the contract, the Executive Order and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

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

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is Paris, Illinois; Edgar County.

A3 BREACH OF CONTRACT TERMS

A3.1 CONTRACT CLAUSE

This provision is required for all contracts that exceed the simplified acquisition threshold as stated in 2 CFR Part 200, Appendix II (A). This threshold is occasionally adjusted for inflation and is now equal to $150,000.

BREACH OF CONTRACT TERMS

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 the Contractor written notice that describes the nature of the breach and corrective actions the Contractor must undertake in order to avoid termination of the contract. 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 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.

A4 BUY AMERICAN PREFERENCE

A4.1 CONTRACT CLAUSE

(a) The Aviation Safety and Capacity Expansion Act of 1990 provides that preference be given to steel and manufactured products produced in the United States when funds are expended pursuant to a grant issued under the Airport Improvement Program (AIP).

(b) Any and all steel products used in the performance of this contract by the Contractor, subcontractors, producers, and suppliers are required to adhere to the Illinois Steel Products Procurement Act, which requires that all steel items be of 100 percent domestic origin and manufacture. Any products listed under the Federal Aviation Administration’s (FAA) nationwide approved list of “Equipment Meeting Buy American Requirements” shall be deemed as meeting the requirements of the Illinois Steel Products Procurement Act.

(c) The successful bidder will be required to assure that only domestic steel and domestically manufactured products will be used by the Contractor, subcontractors, producers, and suppliers in the performance of this contract. The North American Free Trade Agreement (NAFTA) specifically excluded federal grant programs such as the AIP. Therefore, NAFTA does not change the requirement to comply with the Buy American requirement in the Act. Exceptions to this are for products, other than steel, that:

(1) the FAA has determined, under the Aviation Safety and Capacity Expansion Act of 1990, are not produced in the United States in sufficient and reasonably available quantities or of a satisfactory quality;

(2) the FAA has determined, under the Aviation Safety and Capacity Expansion Act of 1990, that domestic preference would be inconsistent with the public interest;

(3) the FAA has determined that inclusion of domestic material will increase the cost of the overall project contract by more than 25 percent; or

(4) the FAA has determined, under the Aviation Safety and Capacity Expansion Act of 1990,

(i) the cost of components and subcomponents produced in the United States is more than 60 percent of the cost of all components of the facility or equipment, and

(ii) final assembly of the facility or equipment has occurred in the United States.

The FAA must grant waivers for any items that are included in these above exceptions. Bidders can review items already approved under the FAA nationwide approved list of "Equipment Meeting Buy American Requirements" on the FAA website, which do not require a specific FAA waiver.

All waivers are the responsibility of the Contractor, must be obtained prior to the Notice to Proceed, and must be submitted to the Illinois Division of Aeronautics for review and approval before being forwarded to the FAA. Any products used on the project that cannot meet the domestic requirement, and for which a waiver prior to the Notice to Proceed was not obtained, will be rejected for use and subject to removal and replacement with no additional compensation, and the contractor deemed non-responsive.

A5 CIVIL RIGHTS - GENERAL

A5.1 CONTRACT CLAUSE

GENERAL CIVIL RIGHTS PROVISIONS

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

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

A6 CIVIL RIGHTS – TITLE VI ASSURANCE

A6.1 CONTRACT CLAUSE

A6.1.1 Title VI Solicitation Notice

Title VI Solicitation Notice:

The Board of Edgar County, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. §§ 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

A6.1.2 Title VI Clauses for Compliance with Nondiscrimination Requirements

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:

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.

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

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.

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.

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.

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.

A6.1.3 Title VI List of Pertinent Nondiscrimination Acts and Authorities

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);

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, (42 U.S.C. § 4601), (prohibits unfair treatment of persons displaced or whose property has been acquired because of Federal or Federal-aid programs and projects);

Section 504 of the Rehabilitation Act of 1973, (29 U.S.C. § 794 *et seq*.), as amended, (prohibits discrimination on the basis of disability); and 49 CFR part 27;

The Age Discrimination Act of 1975, as amended, (42 U.S.C. § 6101 *et seq*.), (prohibits discrimination on the basis of age);

Airport and Airway Improvement Act of 1982, (49 USC § 471, Section 47123), as amended, (prohibits discrimination based on race, creed, color, national origin, or sex);

The Civil Rights Restoration Act of 1987, (PL 100-209), (Broadened the scope, coverage and applicability of Title VI of the Civil Rights Act of 1964, The Age Discrimination Act of 1975 and Section 504 of the Rehabilitation Act of 1973, by expanding the definition of the terms "programs or activities" to include all of the programs or activities of the Federal-aid recipients, sub-recipients and contractors, whether such programs or activities are Federally funded or not);

Titles II and III of the Americans with Disabilities Act of 1990, which prohibit discrimination on the basis of disability in the operation of public entities, public and private transportation systems, places of public accommodation, and certain testing entities (42 U.S.C. §§ 12131 – 12189) as implemented by Department of Transportation regulations at 49 CFR parts 37 and 38;

The Federal Aviation Administration's Non-discrimination statute (49 U.S.C. § 47123) (prohibits discrimination on the basis of race, color, national origin, and sex);

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which ensures non-discrimination against minority populations by discouraging programs, policies, and activities with disproportionately high and adverse human health or environmental effects on minority and low-income populations;

Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency, and resulting agency guidance, national origin discrimination includes discrimination because of limited English proficiency (LEP). To ensure compliance with Title VI, you must take reasonable steps to ensure that LEP persons have meaningful access to your programs (70 Fed. Reg. at 74087 to 74100);

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).

A7 CLEAN AIR AND WATER POLLUTION CONTROL

A7.1 CONTRACT CLAUSE

This provision is required for all contracts and lower tier contracts that exceed $150,000.

CLEAN AIR AND WATER POLLUTION CONTROL

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

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

A8 CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS

A8.1 CONTRACT CLAUSE

This provision applies to all contracts and lower tier contracts that exceed $100,000, and employ laborers, mechanics, watchmen, and guards.

CONTRACT WORKHOURS AND SAFETY STANDARDS ACT REQUIREMENTS

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 $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this clause.

3. 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.

A9 COPELAND “ANTI-KICKBACK” ACT

A9.1 CONTRACT CLAUSE

COPELAND “ANTI-KICKBACK” ACT

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

A10 DAVIS-BACON REQUIREMENTS

A10.1 CONTRACT CLAUSE

DAVIS-BACON REQUIREMENTS

1. Minimum Wages

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

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

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

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

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 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 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 which 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 *http://www.dol.gov/esa/whd/forms/wh347instr.htm* or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the Federal Aviation

Administration if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the applicant, sponsor, or owner, as the case may be, for transmission to the Federal Aviation Administration, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the sponsoring government agency (or the applicant, sponsor, or owner).

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) 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, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

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

(iii) Equal Employment Opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. Compliance with Copeland Act Requirements.

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

6. Subcontracts.

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

7. Contract Termination: Debarment.

A breach of the contract clauses in paragraph 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 U.S.C. 1001.

A11 DEBARMENT AND SUSPENSION

A11.1 CONTRACT CLAUSE

A11.1.1 Bidder or Offeror Certification

CERTIFICATION OF OFFERER/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.

A11.1.2 Lower Tier Contract Certification

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 verify each lower tier participant of a “covered transaction” under the project is not presently debarred or otherwise disqualified from participation in this federally assisted project. The successful bidder will accomplish this by:

1. Checking the System for Award Management at website: http://www.sam.gov
2. Collecting a certification statement similar to the Certificate Regarding Debarment and Suspension (Bidder or Offeror), above.
3. Inserting a clause or condition in the covered transaction with the lower tier contract

If the FAA 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.

A12 DISADVANTAGED BUSINESS ENTERPRISE

A12.1 REQUIRED PROVISIONS

A12.1.1 Solicitation Language (Solicitations that include a Project Goal)

The Owner’s award of this contract is conditioned upon Bidder or Offeror satisfying the good faith effort requirements of 49 CFR §26.53.

As a condition of bid responsiveness, the Bidder or Offeror must submit the following information with their proposal on the forms provided herein:

(1) The names and addresses of Disadvantaged Business Enterprise (DBE) firms that will participate in the contract;
(2) A description of the work that each DBE firm will perform;
(3) The dollar amount of the participation of each DBE firm listed under (1)
(4) Written statement from Bidder or Offeror that attests their commitment to use the DBE firm(s) listed under (1) to meet the Owner's project goal;
(5) If Bidder or Offeror cannot meet the advertised project DBE goal; evidence of good faith efforts undertaken by the Bidder or Offeror as described in appendix A to 49 CFR Part 26.

A12.1.2 Solicitation Language (Race/Gender Neutral Means)

The requirements of 49 CFR part 26 apply to this contract. It is the policy of the Board of Edgar County 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.

A12.1.3 Prime Contracts (Projects covered by DBE Program)

DISADVANTAGED BUSINESS ENTERPRISES

Contract Assurance (§ 26.13) - The Contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of Department of Transportation-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 Owner 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.

A13 DISTRACTED DRIVING

A13.1 CONTRACT CLAUSE

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 FAA 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 sub-grant.

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 $3,500 and involve driving a motor vehicle in performance of work activities associated with the project.

A14 ENERGY CONSERVATION REQUIREMENTS

A14.1 CONTRACT CLAUSE

ENERGY CONSERVATION REQUIREMENTS

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

A15 EQUAL EMPLOYMENT OPPORTUNITY (E.E.O.)

A15.1 MANDATORY CONTRACT CLAUSE

A15.1.1 E.E.O. Contract Clause

EQUAL OPPORTUNITY CLAUSE

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

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

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

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

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

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

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

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

A15.1.2 EEO Specification

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY
CONSTRUCTION CONTRACT SPECIFICATIONS

1. As used in these specifications:

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

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

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

d. "Minority" includes:

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

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

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

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

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

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

4. The contractor shall implement the specific affirmative action standards provided in paragraphs 7a through 7p of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered construction contractors performing construction work in a geographical area where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the Federal Register in notice form, and such notices may be obtained from any Office of Federal Contract Compliance

Programs office or from Federal procurement contracting officers. The contractor is expected to make substantially uniform progress in meeting its goals in each craft during the period specified.

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

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

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

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

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

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

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

e. Develop on-the-job training opportunities and/or participate in training programs for the area which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under 7b above.

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

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

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

i. Direct its recruitment efforts, both oral and written, to minority, female, and community organizations, to schools with minority and female students; and to minority and female recruitment and training organizations serving the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations, such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

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

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

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

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

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

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

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

8. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (7a through 7p). The efforts of a contractor association, joint contractor union, contractor community, or other similar groups of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under 7a through 7p of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has a positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.

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

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

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

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

13. The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph 7 of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

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

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

A16 FEDERAL FAIR LABOR STANDARDS ACT (FEDERAL MINIMUM WAGE)

A16.1 CONTRACT CLAUSE

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

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

A17 LOBBYING AND INFLUENCING FEDERAL EMPLOYEES

A17.1 CONTRACT CLAUSE

This provision is required for all contracts that exceed $100,000.

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, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

A18 PROHIBITION of SEGREGATED FACILITIES

A18.1 CONTRACT CLAUSE

PROHIBITION of SEGREGATED FACILITIES

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

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

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

A19 OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

A19.1 CONTRACT CLAUSE

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. Contractor must provide a work environment that is free from recognized hazards that may cause death or serious physical harm to the employee. The Contractor retains full responsibility to monitor its compliance and their subcontractor's compliance with the applicable requirements of the Occupational Safety and Health Act of 1970 (20 CFR Part 1910). Contractor must address any claims or disputes that pertain to a referenced requirement directly with the U.S. Department of Labor – Occupational Safety and Health Administration.

A20 PROCUREMENT OF RECOVERED MATERIALS

A20.1 CONTRACT CLAUSE

Procurement of Recovered Materials

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 of products containing the highest percentage of recovered materials for items designated by the Environmental Protection Agency (EPA) under 40 CFR Part 247 whenever:

a) The contract requires procurement of $10,000 or more of a designated item during the fiscal year; or,

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/epawaste/conserve/tools/cpg/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.

A21 RIGHT TO INVENTIONS

A21.1 CONTRACT CLAUSE

RIGHTS TO INVENTIONS

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 in the 37 CFR §401.14. Contractor must include this requirement in all sub-tier contracts involving experimental, developmental or research work.

A22 SEISMIC SAFETY

A22.1 CONTRACT CLAUSE

A22.1.1 Construction Contracts

Seismic Safety

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.

A23 TAX DELINQUENCY AND FELONY CONVICTIONS

A23.1 CONTRACT CLAUSE

CERTIFICATION OF OFFERER/BIDDER REGARDING TAX DELINQUENCY AND FELONY CONVICTIONS

Certifications

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

Note

If an applicant cannot comply with 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.

The applicant agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification in all lower tier subcontracts.

Term Definitions

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

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

A24 TERMINATION OF CONTRACT

A24.1 CONTRACT CLAUSE

A24.1.1 Termination for Convenience

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:

a) completed and acceptable work executed in accordance with the contract documents prior to the effective date of termination;

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;

reasonable and substantiated claims, costs and damages incurred in settlement of terminated contracts with Subcontractors and Suppliers; and

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.

A24.1.2 Termination for Default

Termination for Default (Construction)

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

A25 TRADE RESTRICTION CERTIFICATION

A25.1 CONTRACT CLAUSE

TRADE RESTRICTION CERTIFICATION

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

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

b. has not knowingly entered into any contract or subcontract for this project with a person that is a citizen or national of a foreign country included on the list of countries that discriminate against U.S. firms as published by the U.S.T.R; and

c. has not entered into any subcontract for any product to be used on the Federal on the project that is produced in a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R.

This certification concerns a matter within the jurisdiction of an agency of the United States of America and the making of a false, fictitious, or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code, Section 1001.

The Offeror/Contractor must provide immediate written notice to the Owner if the Offeror/Contractor learns that its certification or that of a subcontractor was erroneous when submitted or has become erroneous by reason of changed circumstances. The Contractor must require subcontractors provide immediate written notice to the Contractor if at any time it learns that its certification was erroneous by reason of changed circumstances.

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to an Offeror or subcontractor:

(1) who is owned or controlled by one or more citizens or nationals of a foreign country included on the list of countries that discriminate against U.S. firms published by the U.S.T.R. or
(2) whose subcontractors are owned or controlled by one or more citizens or nationals of a foreign country on such U.S.T.R. list or

(3) who incorporates in the public works project any product of a foreign country on such U.S.T.R. list;

Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by this provision. The knowledge and information of a contractor is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

The Offeror agrees that, if awarded a contract resulting from this solicitation, it will incorporate this provision for certification without modification in in all lower tier subcontracts. The contractor may rely on the certification of a prospective subcontractor that it is not a firm from a foreign country included on the list of countries that discriminate against U.S. firms as published by U.S.T.R, unless the Offeror has knowledge that the certification is erroneous.

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

A26 VETERAN'S PREFERENCE

A26.1 CONTRACT CLAUSE

VETERAN'S PREFERENCE

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

SECTION III

Edgar County Airport
Paris, Illinois

Apron Expansion and
Relocate/Upgrade Fuel Facility

Illinois Project No.: PRG-4144
SBG Project No.: 3-17-SBGP-99/105/111/120/133

Prepared By:

Engineering | Planning | Allied Services

Hanson Professional Services Inc.
1525 S. Sixth St.
Springfield, IL 62703

September 21, 2018

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FOREWORD

These Special Provisions, together with applicable Standard Specifications, Rules and Regulations, Contract Requirements for Airport Improvement Projects, Payroll Requirements and Minimum Wage Rates, which are hereto attached or which by reference are herein incorporated, cover the requirements of the State of Illinois, Department of Transportation (IDOT), Division of Aeronautics (IDA) for the following improvement project at the **Edgar County Airport, Paris, Illinois**, including the following:

SCOPE OF WORK

This project shall consist of the expansion of the aircraft apron, construction of a new fueling facility, including the relocation of one existing fuel tank. The project includes pavement removal and placement, earthwork grading and drainage, installation of airfield lighting items, pavement marking and erosion control items.

GOVERNING SPECIFICATIONS AND RULES AND REGULATIONS

The State of Illinois Department of Transportation, Division of Aeronautics, Standard Specifications for Construction of Airports, adopted April 1, 2012, shall govern the project, except as otherwise revised or noted in these Special Provisions. All references to IDOT Specifications refer to Standard Specifications for Road and Bridge Construction, Illinois Department of Transportation, adopted April 1, 2016, as revised. In the event of inconsistencies between the Standard Specifications and the Special Provisions, the Special Provisions shall govern. The Contractor shall maintain a minimum of one printed copy of the relevant sections of the Standard Specifications for Construction of Airports on the project site at all times. The Standard Specifications for Construction of Airports is available on line at the following address link:

http://www.idot.illinois.gov/
RESOURCES
Manuals & Guides

REFERENCES

The following Federal Aviation Administration Advisory Circulars are referenced on the Plans and/or Special Provision Specifications in regard to safety on airports. These Advisory Circulars are available on the FAA web site at:
http://www.faa.gov/regulations_policies/advisory_circulars

A. FAA AC No. 70/7460-1L (or most current issue) “Obstruction Marking and Lighting.”

B. FAA AC No. 150/5210-5D (or most current issue) “Painting, Marking, and Lighting of Vehicles Used on an Airport.”

C. FAA AC No. 150/5300-13A “AIRPORT DESIGN.”

D. FAA AC No. 150/5370-2G (or most current issue) “Operational Safety on Airports During Construction.”

DIVISION I – GENERAL PROVISIONS

SECTION 70. LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

70-10 BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS. Add the following paragraphs to this section:

"Runway and Taxiway closures are not anticipated for this project. The Runway and Taxiway lighting systems will have periods where the lighting systems are down and will probably require a Notice to Airmen (NOTAM). The Apron areas around the proposed construction area are anticipated to have some closures to accommodate work. Efforts shall be made to minimize any closures that affect access to hangars and/or aircraft operations.

The Contractor will close the respective Apron areas with barricades as shown on the Construction Safety and Phasing Plan Sheets within the project plan set. The Airport Manager will be responsible for issuing all Notice to Airmen (NOTAM) that affect airfield operations. All work shall be coordinated with the Airport Manager.

During construction, the Contractor must follow the procedures outlined on the Safety Plan that assures safe operating conditions for aircraft, as well as his personnel and equipment. The Airport Manager will, at all times, have jurisdiction over the safety of air traffic during construction. Whenever working within the proposed construction areas, it will be the Contractor's responsibility to place barricades as shown on the Plans or as directed by the Resident Engineer/Technician. The barricades on the airfield will be equipped with red-flashing or steady-burn lights and 20-in. square orange flags. The barricades will remain in place until the pavement areas are open for traffic. The barricades will be placed at intervals no greater than 15 ft.

The Contractor shall coordinate with the Airport and the Resident Engineer/Technician to turn off the runway and taxiway lighting circuits as well as the Navaids. When the runway is re-opened these circuits must be re-activated.

When a runway is closed the runway lighting system shall be shut off and the associated Navaids for that runway shall also be shut off.

Work within 58 feet of an active taxi-lane centerline shall require closure of that taxi-lane using barricades in accordance with the Construction Safety and Phasing Plan.

Work within 66 feet of an active taxiway centerline shall require closure of that taxiway using barricades in accordance with the Construction Safety and Phasing Plan.

All work included in opening and closing the runways, taxiways, and taxi-lanes will be considered incidental to the Project and no additional compensation will be allowed.

The Airport Manager shall be notified a minimum of **72 hours** in advance of any work that would require the closure of the runway, and a minimum of **48 hours** notice before the closure of any taxiway. It will be the responsibility of the Contractor to properly mark the closed runway, and when the runway is re-opened, to remove the marking. The appropriate marking for a closed runway is a cross at both ends of the runway. The legs of the cross will be 60 ft in length and 10 ft in width. The crosses will be constructed of any suitable, locally available

materials, such as fabric, plywood, or other similar material. They will be held in place in a manner locally determined to be suitable. The Contractor will be responsible for placing and removing the crosses as the runways are closed and opened. The Contractor will provide the Engineer with a proposed schedule of when and length of time for all closures. The Project Engineer must review and approve this schedule before any construction begins. The placement, maintenance and removal of the crosses will be considered as an incidental item to the contract and no additional compensation will be allowed.

Extreme care will be taken not to impose on the operations of any open runway or taxiway. The proposed Safety and Phasing Plan Sheets, as outlined on the Construction Plans and in the Special Provisions, will maximize safety and attempt to minimize disruption to Airport daily operations.

When the Contractor's vehicles are on Airport property, they shall be properly marked. The markings shall consist of a 3-ft sq. flag consisting of a checkered pattern of international orange and white squares of not less than 1 ft on each side displayed in full view above the vehicle. Contractor vehicles engaged in continuous hauling operations will not be required to display a flag.

The Contractor will be responsible for placing barricades and/or traffic cones at the locations shown on the Construction Plans, or as directed by the Airport Manager. It will be the Contractor’s responsibility to furnish and maintain the barricades equipped with red flashing or red, steady-burn lights and 20-in. sq. orange flags throughout the duration of this project.

The barricades and their maintenance will be considered as an incidental item to the contract, and no additional compensation will be allowed. Any cost of labor and equipment, which is necessary to insure safety at the Airport during the duration of the project, will be considered incidental to the contract, and no additional reimbursement for these items of work will be received.

All runway closures will be coordinated with the Airport Manager. The runway will be closed in accordance with the procedures set forth on the Proposed Safety and Phasing Plan Sheets. Prior to re-opening the runway the Contractor will insure the following:

1. All holes/trenches have been backfilled.
2. All equipment has been moved outside the Runway Safety Area.
3. All trucks have their beds lowered and all cranes have their booms lowered.
4. There is no material stockpiled within the Runway Object Free Area.
5. All active pavements have been swept of foreign material.
6. All lighting circuits associated with the pavement being re-opened are active and functioning correctly.
7. Representatives of the Contractor, Airport Manager and Resident Engineer/Technician shall inspect the pavement prior to re-opening. Anything noted will be corrected prior to re-opening.”

Add the following:

70-27 AIRPORT SECURITY NOTES. Airport security will be maintained at all times. The Contractor will monitor the site access to the proposed job site to insure no one will enter the access gate that is not authorized to be on the construction site or on the air side of the airport.

70-28 MAINTAINING OPERATION OF AIRFIELD LIGHTING AND NAVAIDS. Shut down of airfield lighting and/or Navaids shall only be permitted during day light hours and must be coordinated with and approved by the Airport Manager. All airfield lighting and navaid circuits shall be operational at night fall. The Contractor shall not leave the runway lighting, taxiway lighting, or any other airfield lighting circuit inoperable overnight. The Contractor shall provide temporary cable connections (in unit duct) and any manual operations of airfield lighting to keep them in operation overnight. The Contractor shall secure, identify, and place temporary exposed wiring in conduit, duct, or unit duct to prevent electrocution and fire ignition sources in conformance with the requirements of FAA AC 150/5370-2 (current issue in effect) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".

70-29 SITE INSPECTION. The Contractor shall be responsible for an on-site inspection prior to submitting a bid on this project. Upon receipt of a bid, it shall be assumed that the Contractor is fully familiar with the construction site.

70-30 SAFETY PLAN COMPLIANCE DOCUMENT. Prior to the issuance of a construction Notice-to-Proceed (NTP), the Contractor shall be responsible for preparing and submitting a Safety Plan Compliance Document in accordance with FAA Advisory Circular 150/5370-2G, paragraph 2.4.2, or equivalent section in subsequent/current issue. The Airport Director shall approve this document and submit to the Division of Aeronautics for approval prior to the NTP issuance.

END OF SECTION 70

SECTION 80. PROSECUTION AND PROGRESS

80-13 CONTRACTOR'S ACCESS TO AIRFIELD. Add the following to this section:

The Contractor's personnel and equipment shall not traverse outside the designated work areas to other locations on the Airport. The designated haul route will be the only vehicular access to the construction site. It will be the responsibility of the Contractor to maintain the proposed haul route and equipment parking area for the duration of the project.

The Contractor will be responsible for obtaining any permits necessary to use the State/County/Township/City roads. All work required in complying with the above requirement will be considered incidental to the Contract, and no additional compensation will be allowed.

Failure to use the prescribed haul routes and equipment parking area or adhere to the safety requirements will result in the suspension of work.

Add the following:

80-14 EMPLOYEE PARKING. The Contractor's employees shall park their personal vehicles in the designated Equipment Parking Area as shown on the Proposed Safety and Phasing Plan Sheets. The Contractor will transport the workers from the parking area to the work area. Only Contractor vehicles needed for construction will be allowed outside of the proposed equipment parking area. No employee vehicle will be allowed onto the proposed construction site.

80-15 EQUIPMENT PARKING AND MATERIAL STORAGE. The Contractor will be allowed to park equipment and store material in the Proposed Equipment Parking Area shown on the Safety and Phasing Plan Sheets. The Contractor will maintain this area throughout the duration of the project and restore it to its original condition upon completion of the project. This work will be considered incidental to the Contract and no additional compensation will be allowed.

END OF SECTION 80

DIVISION II PAVING CONSTRUCTION DETAILS

ITEM AR150510 ENGINEER'S FIELD OFFICE

DESCRIPTION

150-1.1 Add the following to this section:

"A cellular telephone will be required for exclusive use by the Resident Engineer/Technician for the duration of this project. The cellular telephone shall be hand-held and portable, and shall be approved by the Resident Engineer/Technician. The Resident Engineer/Technician will use this cellular telephone for project related phone calls only. The Contractor will be responsible for all charges associated with this cellular telephone. Upon completion of the project the cellular telephone will be returned to the Contractor."

CONSTRUCTION METHODS

150-2.1

Revise the following in the list of equipment and furniture required in the office:

"B. Delete this item

C. One two-drawer legal letter size filing cabinet with lock and an Underwriter's Laboratories insulated file device 350 degrees one hour rating.

H. A cellular telephone with voicemail and a functional internet Wi-Fi device such as a mobile hot spot providing hi-speed broadband internet access to the field office. Dial up, or equivalent, internet service will not be acceptable.

J. Delete this item.

Add the following to the list of equipment and furniture required in the office:

(N) One lockable cabinet or closet that is large enough in which a nuclear density machine may be stored.

(O) High-speed internet access shall be provided to the field office by the Contractor via modem, if phone or cable connections are available. If they are not, the contractor shall provide a wireless Aircard, or similar; internet access method which shall be approved by the Resident Engineer/Technician. Dial up, or equivalent, internet service will not be acceptable.

BASIS OF PAYMENT

150-3.1 Add the following to this section:

"The cellular telephone and associated charges will be included in the contract unit price per lump sum for Engineer's Field Office. This price shall include all utility costs and shall reflect the salvage value of the building or buildings, equipment, and furniture which remain the property of

the Contractor after release by the Engineer, except the Project Engineer's firm will pay that portion of the monthly long distance, monthly local telephone, and online data usage that, when combined, exceed $250.

Payment will be made under:

Item AR150510 Engineer's Field Office - per lump sum."

END OF ITEM AR150510

ITEM 150520 MOBILIZATION

BASIS OF PAYMENT

150-3.1 Add the following to this section:

"Payment will be made under:

Item AR150520 Mobilization - per lump sum."

END OF ITEM 150520

ITEM AR150540 HAUL ROUTE

DESCRIPTION

150540-1.1. This item of work shall consist of the construction/utilization, maintenance, and restoration of the proposed haul route and equipment parking area that are needed to provide access to the proposed construction area as shown on the Construction Plans. The entrance to the project site will be a route coming off the airport entrance road. The Contractor will access the site as shown on the Proposed Safety and Phasing Plan sheets of the Construction Plan Set.

The proposed equipment parking area will also be utilized as shown on the Proposed Safety and Phasing Plan sheets of the Construction Plan Set. The Contractor's personnel will park their personal vehicles in this area and be transported to the construction site by a Contractor vehicle.

CONSTRUCTION METHODS

150540-2.1. In accordance with section 50-04 of the Standard Specifications, it is the Contractor's responsibility to obtain permission and any applicable permits to use the roads (federal, state, county, city, township) leading to the airport construction site.

The Contractor shall utilize the haul route and equipment parking and material storage areas to provide all weather access to the construction site. The haul route and equipment parking and material storage areas will be maintained so as not to cause delays to the proposed construction. Any temporary additions to the haul route outside of the existing pavements will be made of any suitable aggregate material to provide an all-weather haul route, and temporary drainage pipes shall be installed as necessary to maintain existing drainage patterns. Upon completion of the project; the aggregate material and any temporary drainage pipes will be removed.

Restoration: The haul route, parking and material storage area shall be restored to their original condition and configuration. The disturbed turf areas that are outside of the proposed seeding and mulching limits will be regraded to drain, seeded and mulched in accordance with Item 901 - Seeding and Item 908 - Mulching. The restoration of these areas will be considered as part of this item.

Safety: All traffic control, safety, and permitting requirements associated with the construction and use of the haul routes are the responsibility of the Contractor.

BASIS OF PAYMENT

150540-3.1. Payment will be made at the contract unit price per lump sum for utilizing, maintaining and restoring the haul route and equipment parking area as specified. This price shall be full compensation for furnishing, installing, maintaining and restoration; for all labor, equipment, and incidentals necessary to complete this item of work.

Payment will be made under:

Item AR150540 Haul Route - per lump sum

END OF ITEM AR150540

ITEM 152 UNCLASSIFIED EXCAVATION

CONSTRUCTION METHODS

152-2.2 EXCAVATION. The compaction control tests to be used shall be in accordance with Item 611 Compaction Control Tests, for aircraft weighing less than 60,000 pounds.

152-2.6 FORMATION OF EMBANKMENT. The compaction control tests to be used shall be in accordance with Item 611 Compaction Control Tests, for aircraft weighing less than 60,000 pounds.

Add the following to this section:

"The areas adjacent to the proposed pavement shall be cultivated/disked to the satisfaction of the Resident Engineer/Technician prior to placement of additional material. Following placement these areas will require light compaction to the satisfaction of the Resident Engineer/Technician."

152-2.8 HAUL. Add the following to this section:

"The Contractor shall take special precautions when hauling excavated material so as not to create deep ruts in the hauling areas adjacent to the site. All existing graded or turfed areas outside of the construction limits which are disturbed or rutted by the Contractor during the hauling operation shall be regraded and returfed (according to specifications 901 and 908) at his own expense to the satisfaction of the Resident Engineer/Technician."

METHOD OF MEASUREMENT

152-3.1. Contractor shall also refer to the Earthwork Quantity Summary table and associated notes on Plan Sheet No. 2 of the project plan set for additional information.

BASIS OF PAYMENT

152-4.2. Add the following to this section:

"Payment will be made under:

Item AR152410 Unclassified Excavation - per cubic yard"

END OF ITEM 152

ITEM 155 LIME TREATED SUBGRADE

BASIS OF PAYMENT

155-8.1 Add the following to this section:

"Payment will be made under:

Item AR155540 By-Product Lime – per ton
Item AR155616 Soil Processing–16" – per square yard."

END OF ITEM 155

ITEM AR156510 SILT FENCE

DESCRIPTION

This item of work shall consist of a filter fence as partial implementation of a Stormwater Pollution Prevention Plan (SWPPP).

The measures of the Plan are shown on the Construction Plans, and shall be constructed in accordance with the Illinois Environmental Protection Agency (IEPA) Standards and Specifications for soil erosion and sediment control.

MATERIALS

SILT FENCE. The proposed silt fence fabric shall consist of woven or non-woven filaments of polypropylene, polyester, or polyethylene. Non-woven fabric may be needle-punched, heat-bonded, resin-bonded, or combination thereof. The filaments in the silt fence fabric must be dimensionally stable (i.e., to each other), resistant to delamination, and must be free from any chemical treatment or coating that might significantly reduce porosity and permeability. The fabric shall be resistant to ultraviolet radiation. The fabric shall comply with the following physical properties:

Physical Properties (English)	Ground Stabilization	Silt Filter Fence Fabric
Grab tensile strength (lbs) - ASTM D 4632[1/]	200 (min.)	200 (min.)
Grab elongation @ break (%) – ASTM D 4632[1/]	12 (min.)	12 (min.)
Burst strength (psi) - ASTM D 751[2/]	250 (min.)	250 (min.)
Trapezoidal tear strength (lbs) ASTM D 4533[2/]	75	--------
Width (ft)	--------	3.5 (min.)
Weight (oz/sq. yd.) - ASTM D 3776	4.0 (min.)	4.0 (min.)
Apparent Opening Size (AOS) Sieve No. – ASTM D 4751[2/]	--------	30 (max.)(non-woven) 50 (max.)(woven)

1/For woven fabric, test results shall be referenced to orientation with warp or weave, whichever the case may be. Both woven and non-woven fabric shall be tested wet.
2/Test results may be obtained by manufacturer's certification.

Physical Properties (Metric)	Ground Stabilization	Silt Filter Fence Fabric
Grab tensile strength (N) - ASTM D 4632[1/]	900 (min.)	900 (min.)
Grab elongation @ break (%) – ASTM D 4632[1/]	12 (min.)	12 (min.)
Burst strength (kPa) - ASTM D 751 [2/]	1720 (min.)	1720 (min.)
Trapezoidal tear strength (N) ASTM D 4533 [2/]	335	--------
Width (m)	--------	1 (min.)
Weight (g/m^2) - ASTM D 3776	135 (min.)	135 (min.)
Apparent Opening Size (AOS) Sieve No. – ASTM D4751[2/]	--------	600 µm (max.) (non-woven) 300 µm (max.)(woven)

1/For woven fabric, test results shall be referenced to orientation with warp or weave, whichever the case may be. Both woven and non-woven fabric shall be tested wet.
2/Test results may be obtained by manufacturer's certification.

CONSTRUCTION METHODS

SILT FENCE. The proposed erosion control fencing shall be constructed prior to start of grading operations at the locations shown on the Plans. The erosion control fencing shall be constructed to intercept sheet flow of water borne silt and sediment, and prevent it from leaving the area of construction. The barrier shall be constructed according to manufacturer's specifications, where appropriate.

The stakes for the fence barrier shall be a minimum of 48 in. long and made of 2 in. x 2 in. hardwood.

The silt fence will be removed once a stand of grass has been established on the site.

BASIS OF PAYMENT

Payment will be made at the contract unit bid price for Silt Fence. This price shall be full compensation for constructing all proposed erosion control measures, maintaining all erosion control structures for the duration of the project, and removal of all structures at the completion of the project. This price shall constitute full compensation for erosion control structures, and for furnishing all materials, labor, equipment, and other incidentals necessary to complete this item of work.

Payment will be made under:
Item AR156510 Silt Fence - per lin. ft

END OF ITEM AR156510

ITEM AR156511 DITCH CHECK

DESCRIPTION

This item of work shall consist of ditch checks as partial implementation of a Stormwater Pollution Prevention Plan.

The measures of the Plan are shown on the Construction Plans and shall be constructed in accordance with the Illinois Environmental Protection Agency (IEPA) Standards and Specifications for soil erosion and sediment control.

MATERIALS

Temporary ditch checks shall be constructed with manufactured products on IDOT's list of approved materials, or from rolled excelsior blanket to the diameter of 15-inches measured at point of overflow, or as shown on the Construction Plans. All manufactured products, including the excelsior blanket, shall be manufactured in the USA of 100% domestic materials.

CONSTRUCTION METHODS

The ditch checks within the work area shall be placed as detailed on the construction plans. The temporary ditch checks will be installed as soon as possible following the final grading of the proposed ditch and maintained through construction.

The ditch check will be removed once a stand of grass has been established on the site.

BASIS OF PAYMENT

Payment will be made at the contract unit bid price for Ditch Check. This price shall be full compensation for furnishing required material and constructing a ditch check as a proposed erosion control measure, maintaining the ditch check for the duration of the project, and its removal once a strand of grass has been established on the site.

Payment will be made under:

Item AR156511 Ditch Check - per each

END OF ITEM AR156511

ITEM AR156530 TEMPORARY SEEDING

DESCRIPTION

This item of work shall consist of temporary seeding as a partial implementation of a Storm Water Pollution Prevention Plan. The measures of the plan are shown on the Construction Drawings and shall be constructed in accordance with the Illinois Environmental Protection Agency (IEPA) Standards and Specifications for soil erosion and sediment control and these special provisions. The temporary seeding shall be required on any cleared or graded areas in which construction activities are anticipated to temporarily cease for a period of 21 days or more. The temporary seeding shall be completed within 14 days of the suspension of work.

CONSTRUCTION METHODS

The Contractor shall be required to loosen the soil to a minimum depth of 4 in. prior to placement of seed. The temporary seed mix will be as shown below:

Seeds	Lbs./Acre
Perennial Ryegrass	50
Oats, Spring*	64

* Other seeds may be used if approved by the Resident Engineer/Technician.

The Contractor will be required to irrigate the seeded area if there is insufficient soil moisture to allow proper germination of the seed.

METHOD OF MEASUREMENT

The quantity of temporary seeding to be paid for shall be the number of acres seeded as specified and accepted by the Resident Engineer/Technician.

BASIS OF PAYMENT

Payment will be made at the contract unit bid price for Temporary Seeding. This price shall be full compensation for furnishing the required materials and planting the seed in accordance with this special provision and the specifications incorporated by reference.

Payment will be made under:

Item AR156530 Temporary Seeding - per acre

END OF ITEM AR156530

ITEM AR156531 EROSION CONTROL BLANKET

DESCRIPTION

156531-1.1. This item shall consist of furnishing, transporting, and placing erosion control blanket as indicated on the Construction Plans.

MATERIALS

156531-2.1. Materials shall meet the requirements of the following Articles of Division 1000 - Materials, Illinois Department of Transportation, Standard Specifications for Road and Bridge Construction, April 1, 2016.

Item	Article
Knitted Straw Mat	1081.10(b)
Wire Staples	1081.10(d)

CONSTRUCTION REQUIREMENTS

156531-3.1. The blanket shall be placed within 24 hours after seeding operations have been completed on the areas specified. Prior to placing the blanket, the areas to be covered shall be relatively free of all rocks or clods over 1½ in. in diameter, and all sticks or other foreign material which will prevent the close contact of the blanket with the seed bed. If, as a result of rain, the prepared seed bed becomes crusted or eroded, or if eroded places, ruts, or depressions exist for any reason, the Contractor will be required to rework the soil until it is smooth and to reseed such areas which are reworked. After the area has been properly shaped, fertilized, and seeded, the blanket shall be laid out flat, evenly, and smoothly without stretching the material.

Placing and anchoring the blankets in ditches and on slopes shall be as follows:

Erosion Control Blanket. The blankets shall be stapled in-place, using four staples across the end at the start of each roll and placing staples on 6-ft centers along each side. All end seams shall overlap at least 2 in.

METHOD OF MEASUREMENT

156531-4.1. The area of Erosion Control Blanket to be paid for shall be the number of square yards of blanket measured in-place, satisfactorily installed and maintained throughout the duration of the project and the design lifespan of the blanket product.

BASIS OF PAYMENT

156531-5.1. Payment will be made at the contract unit price per square yard of Erosion Control Blanket. This price shall be full compensation for furnishing all materials, for all preparation and installation of these materials, including placement, staples, and maintenance, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item AR156531 – Erosion Control Blanket – per square yard

END OF ITEM AR156531

ITEM 209 CRUSHED AGGREGATE BASE COURSE

BASIS OF PAYMENT

209-5.1 Add the following to this section:

"Payment will be made under:

Item AR209510 Crushed Aggregate Base Course - per ton."

END OF ITEM 209

ITEM 501 PORTLAND CEMENT CONCRETE PAVEMENT
(Plain and Reinforced)

MATERIALS

501-2.6 STEEL REINFORCEMENT.

Replace the first paragraph of this section with the following:

"Reinforcement of panels as shown in the Plans shall be welded wire steel fabric of the size and dimensions shown in the Plans conforming to ASTM A185."

501-2.9 COVER MATERIAL FOR CURING.

Curing material shall meet the requirements of 501-2.9 A; delete 501-2.9 B-D.

CONSTRUCTION METHODS

501-3.6(B) PROPORTIONS.

Delete this Section in its entirety.

501-3.12 JOINTS.

Add the following to (B) Installation:

"Protection of previously sawed joints from slip form operations shall be provided in the form of rubber mats or other means acceptable to the Resident Engineer/Technician."

501-3.21 OPENING TO TRAFFIC.

Add the following:

"Prior to opening, the pavement shall be cleaned of all deleterious material. Sweeping shall be conducted in such a manner that dust will not affect operations at the Airport."

BASIS OF PAYMENT

501-5.1 Add the following to this section:

"Payment will be made under:

Item AR501506 6" PCC Pavement – per square yard.
Item AR501530 PCC Test Batch - per each."

END OF ITEM 501

ITEM 620 PAVEMENT MARKING

BASIS OF PAYMENT

620-5.1 Add the following to this section:

"Payment will be made under:

Item AR620520 Pavement Marking – Waterborne – per square foot
Item AR620525 Pavement Marking – Black Border – per square foot"

END OF ITEM 620

ITEM AR800469 REMOVE BITUMINOUS & PCC PAVEMENT

DESCRIPTION

800-1.1 This item of work shall consist of sawcutting and removing bituminous and PCC pavement structure, including aggregate base, as described herein.

The Contractor shall remove pavement of the thickness shown in the plans.

Typical construction details are shown in the plans. Exact locations of pavement removal shall be determined by the Resident Engineer/Technician.

CONSTRUCTION METHODS

800-2.1 The Contractor shall sawcut the existing pavement structure full depth as shown in the plans at locations determined by the Resident Engineer/Technician. Sawcutting shall provide a vertical surface.

After completion of sawcutting, the Contractor shall remove the pavement structure using methods which will allow a vertical surface along all sides of the removal area.

Material obtained from removal operations shall be hauled to a disposal site off of airport property by the Contractor. No additional compensation will be made for hauling and disposal of the removed material. Existing subgrade shall be compacted in accordance with Item 152.

Any damage to the existing pavement made by the Contractor beyond the limits shown on the plans shall be removed and replaced by the Contractor at his/her own expense, when identified by the Resident Engineer/Technician. These areas shall be saw cut as directed by the Resident Engineer/Technician.

METHOD OF MEASUREMENT

800-3.1 The yardage to be paid for shall be the number of square yards of pavement removal as measured in the field, completed and accepted. Sawcutting shall not be measured for payment and shall be included in the cost of the pavement removal item.

BASIS OF PAYMENT

800-4.1 The accepted quantities of pavement removal will be paid for at the contract unit price per square yard which price and payment shall be full compensation for furnishing all materials, equipment, labor, hauling, disposal and all other incidental items necessary to complete the work to the satisfaction of the Resident Engineer/Technician.

Payment will be made under:

Item AR800469 – Remove Bituminous & PCC Pavement – per square yard

END OF ITEM AR800469

DIVISION IV DRAINAGE

ITEM 701 PIPE FOR STORM SEWERS AND CULVERTS

BASIS OF PAYMENT

701-5.1. Add the following to this section:

"Payment will be made under:

Item AR701900 Remove Pipe – per linear foot"

END OF ITEM 701

ITEM 705 UNDERDRAINS FOR AIRPORTS

MATERIALS

705-2.13 FILTER FABRIC ENVELOPES FOR PERFORATED (PE) TUBING.

Delete this section.

BASIS OF PAYMENT

705-5.1 Add the following to this section:

"Payment will be made under:

Item AR705506 6" Perforated Underdrain – per linear foot
Item AR705546 6" Non Perforated Underdrain – per linear foot
Item AR705620 Underdrain End Section – per each
Item AR705640 Underdrain Cleanout – per each"

END OF ITEM 705

ITEM 751 MANHOLES, CATCH BASINS, INLETS AND INSPECTION HOLES

BASIS OF PAYMENT

751-5.1. Add the following to this section:

"Payment will be made under:

Item AR751411 Inlet – Type A – per each
Item AR751900 Remove Inlet – per each"

END OF ITEM 751

ITEM 752 CONCRETE CULVERTS, HEADWALLS, AND MISC. DRAINAGE STRUCTURES

BASIS OF PAYMENT

752-5.1. Add the following to this section:

"Payment will be made under:

Item AR752900 Remove End Section – per each"

END OF ITEM 752

DIVISION V – TURFING

ITEM 901 SEEDING

BASIS OF PAYMENT

901-5.1 Add the following to this section:

"Payment will be made under:

Item AR901510 Seeding – per acre"

END OF ITEM 901

ITEM 908 MULCHING

BASIS OF PAYMENT

908-5.1 Add the following to this section:

"Payment will be made under:

Item AR908510 Mulching – per acre"

END OF ITEM 908

DIVISION VI – LIGHTING INSTALLATION

ITEM 108 INSTALLATION OF UNDERGROUND CABLE FOR AIRPORTS

DESCRIPTION

108-1.1. Add the following to this section:

"This Item of work shall consist of the installation (plowing, trenching, directional-boring, or installing in ducts or raceways) of cable for airfield lighting circuits and/or navaid circuits on the runways, taxiways, aprons, and the associated homeruns at the locations shown on the Plans and in accordance with these Specifications. This Item shall include cable in unit duct where noted on the Plans and specified herein.

In areas where there is a congestion of buried cable or where the proposed cable crosses an existing cable, the Contractor will be required to trench the proposed cable into place. In all other areas, the Contractor has the option to either trench or plow the proposed cable in unit duct into place.

When crossing existing circuits, the Contractor will be required to hand dig the trenches for the proposed cable."

108-1.2 REFERENCES. Note: where FAA Advisory Circulars are referenced they shall be the current issue or issues in effect.

A. ASTM Specification B3 – Standard Specification for Soft or Annealed Copper Wire.

B. ASTM Specification B8 – Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

C. FAA Advisory Circular 150/5340-30 (current issue in effect) DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS

D. FAA Advisory Circular 150/5345-7 (current issue in effect) "SPECIFICATIONS FOR L-824 UNDERGROUND ELECTRICAL CABLE FOR AIRPORT LIGHTING CIRCUITS.

E. FAA Advisory Circular 150/5345-26 (current issue in effect) "FAA SPECIFCATIONS FOR L-823 PLUG AND RECEPTACLE CABLE CONNECTORS".

F. FAA AC No. 150/5345-53 "AIRPORT LIGHTING EQUIPMENT CERTIFICATION PROGRAM" (current issue in effect) and AC 150/5345-53D, AIRPORT LIGHTING EQUIPMENT CERTIFICATION PROGRAM Appendix 3 Addendum (current issue in effect).

G. FAA AC No. 150/5370-2 (current issue in effect) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION.

H. Federal Specification A-A-59544 Cable and Wire, Electrical (Power, Fixed Installation).

I. NFPA 70 – National Electrical Code (most current issue in force).

J. NFPA 70E – Standard for Electrical Safety in the Workplace.

K. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

L. UL Standard 44 – Thermoset-Insulated Wires and Cables.

M. UL Standard 83 – Thermoplastic-Insulated Wires and Cables.

N. UL Standard 854 – Service Entrance Cables.

108-1.3 SHOP DRAWINGS. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for each wire, conductor, and/or cable type to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** Contractor shall submit sufficient copies of shop drawings to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus 4 copies to be retained by the Project Engineer. Contractor may submit electronic copies of shop drawings instead of hard copies. Shop drawings shall include the following information:

A. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Do not submit NAFTA (North American Free Trade Agreement) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America from Domestic materials in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements. FAA approved equipment that is on the FAA Buy American Conformance List or the list of Nationwide Buy American Waivers Issued by the FAA complies with the AIP Buy American Preferences and will not require additional waiver paperwork for AIP projects. See the FAA website at:** https://www.faa.gov/airports/aip/buy_american/media/nationwide-buy-american-waivers-issued.pdf **for a list of Nationwide Buy American Waivers Issued by the FAA.**

B. In order to expedite the shop drawing review, inspection and/or testing of materials, the Contractor shall furnish complete statements to the Project Engineer as to the origin, composition, and manufacturer of all material to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials.

C. Illinois Department of Transportation Division of Aeronautics requires the following: ***"Under the FAA Buy American Preference, the contractor is required to submit certification that assures only domestic steel, domestic materials and domestic manufactured products are used. The Buy American statement must come from the producer, not***

the supplier. Producer verification must state that the items are produced in the United States and are made from 100% domestic materials. Statements that solely refer to the "Buy American Act" or "ARRA" or any federal purchasing act other than Title 49 United States Code (USC), Section 50101 will be rejected. Producers may use the Illinois Department of Transportation Domestic Material Compliance Certification Form AER 25 to satisfy this requirement."

D. Indicate the pay item number for each respective cable and/or cable in unit duct.

E. Shop drawings shall include wire/conductor/cable cut sheets with type, size, specifications, ETL (Intertek Testing Services) or UL listing, manufacturer, and catalog or part number.

F. Shop drawings for cable in unit duct items shall include cut sheets with type, size, specifications, ETL (Intertek Testing Services) or UL listing, manufacturer, and catalog or part number for the respective unit duct.

G. Where cable is required to have colored coded insulation, provide information on the color coding for the respective conductors.

EQUIPMENT AND MATERIALS

108-2.1 GENERAL. Add the following.

"All cable shall be FAA approved or UL-listed as suitable for installed application. Cable furnished on this project shall comply with the requirements of the Airport Improvement Program Buy American Preference Requirements. All conductors shall be copper."

108-2.2 CABLE. Revise this section to read as follows:

"L-824 Cable – L-824 cable shall be FAA L-824, Type C and shall conform to the requirements of FAA Advisory Circular 150/5345-7 (current issue in effect) "SPECIFICATIONS FOR L-824 UNDERGROUND ELECTRICAL CABLE FOR AIRPORT LIGHTING CIRCUITS". L-824 cable shall be FAA approved and listed in the current AC150/5345-53D, AIRPORT LIGHTING EQUIPMENT CERTIFICATION PROGRAM Appendix 3 Addendum. Circuits for use with constant current regulator outputs (runway or taxiway lighting circuits) shall use 5000-Volt rated cable. Circuits for use with low voltage applications (600 Volts or below) shall use either 5000-Volt rated cable or 600-Volt rated cable and shall have colored insulation corresponding to the respective voltage system. Cable shall be manufactured in the United States of America to comply with the Airport Improvement Program Buy American Preference Requirements or be on the Federal Aviation Administration list of Nationwide Buy American Waivers.

Cable for use with airfield lighting series circuits (including runway lighting, taxiway lighting and taxi guidance signs) shall be one conductor No. 8, 5,000-Volt, FAA L-824, Type C, stranded.

Item AR108108, 1/C #8 5KV UG Cable shall be one No. 8, 5,000-Volt, FAA L-824, Type C, stranded copper conductor.

Item AR108158, 1/C #8 5KV UG Cable in UD shall be one No. 8, 5,000-Volt, FAA L-824, Type C, stranded copper conductor, in unit duct (3/4-in.) or high density polyethylene duct.

XLP-USE Wire. Cable shall comply with UL Standard 44, UL Standard 854, and Federal Specification A-A-59544. Conductor shall be concentric-strand, soft copper, conforming to ASTM B8 and Underwriters' Laboratories Standard UL44 for Rubber Insulated Wires. Insulation shall be rated for 600-Volt. Insulation shall be cross-linked polyethylene conforming to Underwriter's Laboratories Requirements for Type USE-2 insulation. Cable shall be UL-listed and marked USE-2. Cable shall be manufactured in the United States of America to comply with the Airport Improvement Program Buy American Preference Requirements.

Item AR108086 1/C #6 XLP-USE shall consist of 1/C #6 AWG, XLP-USE, 600-Volt cable installed in conduit, ducts, handholes, and manholes from the Vault to the respective termination point. Conductor insulation for 120/240 VAC, single-phase, 3-wire with ground circuits shall be color-coded: Phase A – Black, Phase B – Red or black with red tape at points of access, Neutral – White, and Ground – Green. Conductor insulation for 120 VAC, single-phase, 2-wire with ground circuits shall be color-coded: Phase A – Black, Neutral - White, and Ground – Green.

Item AR108084 1/C #4 XLP-USE shall consist of 1/C #4 AWG, XLP-USE, 600-Volt cable installed in conduit, ducts, handholes, and manholes from the Vault to the respective termination point. Conductor insulation for 120/240 VAC, single-phase, 3-wire with ground circuits shall be color-coded: Phase A – Black, Phase B – Red or black with red tape at points of access, Neutral – White or black with white tape at points of access, and Ground – Green.

Color-coding: Color-code phase and neutral conductor insulation for No. 6 AWG or smaller. Provide colored marking tape or colored insulation for phase and neutral conductors for No. 4 AWG and larger. **Insulated ground conductors shall have green colored insulation for all conductor sizes (AWG and/or KCMIL) to comply with NEC 250.119. Neutral conductors shall have white colored insulation for No. 6 AWG and smaller to meet the requirements of NEC 200.6.** Standard colors for power wiring and branch circuits for 120/240 VAC, 1-Phase, 3-Wire system shall be Phase A – Black, Phase B – Red, Neutral – White, and Ground – Green."

108-2.4 CABLE CONNECTIONS. Add the following to this section:

"The Contractor will use a cable stripper/penciller whenever cable connections are made.

All breaks in the unit duct shall be sealed by shrink kits.

All below grade splices shall be installed in splice cans, handholes, or manholes. Splice cans shall be L-867, Class IA, Size B (12 in. diameter), 24 in. deep, with 1/2 in. thick, galvanized steel cover and stainless steel bolts. Larger size splice cans shall be provided, as applicable, for specific equipment applications or manufacturer's

recommendations, and/or where detailed on the Plans. Splice cans located in areas subject to heavy aircraft or vehicle loading shall be L-868 type. The Resident Engineer/Resident Technician shall approve all splice locations before work commences. The furnishing and installing of splice cans for new homerun cables shall be incidental to the respective cable pay item, and no additional compensation will be allowed."

108-2.5 RESERVED. Revise 108-2.5 as follows to comply with the requirements of FAA Advisory Circular Number 150/5370-10G Standards for Specifying Construction of Airports, Item L-108 Underground Power Cable for Airports:

"108-2.5 SPLICER QUALIFICATIONS. Every airfield lighting cable splicer shall be qualified in making cable splices and terminations on cables rated at and/or above 5000 Volts AC. The Contractor shall submit to the Project Engineer proof of the qualifications of each proposed cable splicer for the cable type and voltage level to be worked on. Cable splicing/terminating personnel shall have a minimum of three (3) years continuous experience in terminating/splicing medium voltage cable."

108-2.13 UNIT DUCT. Add the following:

"Standard sizes of smooth wall polyethylene duct shall conform to the dimensional requirements specified below:

Nominal Duct Size	Nominal Inside Diameter	Nominal Standard Wall	Nominal Outside Diameter*
3/4 in.	0.910 in.	0.070 in.	1.050 in.
1 in.	1.145 in.	0.085 in.	1.315 in.
1-1/4 in.	1.440 in.	0.110 in.	1.660 in.
1-1/2 in.	1.650 in.	0.125 in.	1.900 in.
2 in.	2.065 in.	0.155 in.	2.375 in.
2-1/2 in.	2.449 in.	0.213 in.	2.875 in.
3 in.	3.048 in.	0.226 in.	3.500 in.
4 in.	4.000 in.	0.250 in.	4.500 in.

* Dimensions include allowance for duct eccentricity."

CONSTRUCTION METHODS

108-3.1 GENERAL. Add the following to this section:

"The cable quantities as shown on the Construction plans are based on straight-line measurement. All other cable lengths, such as slack or waste, will not be measured for payment.

If the Contractor wishes to lay cable on a line other than that shown on the Plans, he shall obtain approval of the Project Engineer of record before doing so and coordinate with the Resident Engineer/Resident Technician. Any additional cable needed because of such change will be at the Contractor's expense.

Only cable in unit duct may be plowed or directional-bored.

The Contractor shall identify all existing underground utilities located within the area where the proposed cables are being installed, and will take all precautions to protect these utilities from damage. Care shall be taken so as not to damage any existing circuits. Any existing circuits damaged shall be immediately repaired to the satisfaction of the Engineer and/or the respective utility or owner where applicable. Any underground utility damaged will be repaired or replaced at the Contractor's own expense. Any repairs of existing cables will be considered incidental to the contract, and no additional compensation will be allowed.

Contractor shall coordinate work and any power outages with the Airport Manager or respective Airport personnel. Any shutdown of existing systems shall be scheduled with and approved by the Airport Manager prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures, including, but not limited to, 29 CFR Section 1910.147 The Control of Hazardous Energy (lockout/tagout).

Contractor shall comply with the requirements of FAA AC No. 150/5370-2 (current issue in effect) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".

Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

All temporary installations shall comply with National Electrical Code Article 590 – "Temporary Installations." The Contractor shall secure, identify, and place temporary exposed wiring in conduit, duct, or unit duct to prevent electrocution and fire ignition sources in conformance with the requirements of FAA AC 150/5370-2G, Part 2.18.3 "Lighting and Visual NAVAIDs".

All cables installed by the Contractor shall be properly labeled and tagged at all points of access (handholes, manholes, terminal panels, control panels, and the respective wireway in the vault).

Relocation of existing cables and/or cable in unit duct will require careful excavation of the cables to prevent damage to them. The cables and/or cable in unit duct shall be excavated and exposed and then relocated to a different depth and/or route to accommodate the respective site work.

All changes to the airfield lighting system shall be documented by the Contractor and provided to the Resident Engineer/Resident Technician."

108-3.2 INSTALLATION IN DUCT OR CONDUIT. Add the following to this section:

"The unit duct will be run continuous through all ducts and conduits.

Where cable in unit duct enters a handhole with a continuous duct bank system to the termination point (such as from a handhole to the vault or between handholes) the unit duct will not be required for the respective cable."

108-3.3 TRENCHING. Add the following to this section:

"F. Cable installed in cultivated fields shall be installed a minimum of 42 in. below grade.

G. Any and all trenches will be backfilled to a smooth grade to the satisfaction of the Engineer. All trench settlement shall be corrected for a period of one year. Restoration, grading, and seeding of areas disturbed during the installation of the proposed cable will be incidental to the respective Pay Item."

108-3.5 SPLICING. Add the following:

"In-line connections for existing cables cut during construction shall be repaired with the cast splice kit. The Contractor shall have a minimum of two splice kits on the job site at all times for emergency repairs. Cast splice kits shall be specified in paragraph (a) of Item 108-2.4. **Splice cans shall be provided for existing cables cut and repaired for each splice in cables not to be abandoned. Where a splice can is not readily available at the time of the cable damage, splice markers shall be temporarily installed over each splice in cables not to be abandoned, then these splices shall later be replaced with new splices in an L-867 splice can**.

There shall be no splices between series lighting circuit isolation transformers. In the event that a series lighting circuit cable is cut between isolation transformers, the entire length of cable between these isolation transformers shall be replaced.

The Contractor shall use a cable stripper/penciller whenever cable connections are made.

All splices and connections will be considered incidental to the respective cable."

108-3.8 TESTING. Add the following.

"K. Prior to beginning airfield lighting modifications and/or cable installation all existing series circuit cables shall be Megger tested and recorded at the vault. All existing series circuit cable loops shall have the resistance tested and recorded for each circuit at the vault. Each constant current regulator shall be tested with results recorded. Copies of test results shall be provided to the Resident Engineer/Resident Technician and the respective Project Engineer within 5 business days of conducting the respective set of tests. See the testing forms in Appendix A.

L. After airfield lighting modifications, additions, and/or upgrades have been completed, series circuit cables shall be Megger tested and recorded at the vault. All series circuit cable loops shall have the resistance tested and recorded for each circuit at the vault. Each constant current regulator shall be tested with

results recorded. Copies of test results shall be provided to the Resident Engineer/Resident Technician and the respective Project Engineer within 5 business days of conducting the respective set of tests. See the testing forms in Appendix A.

M. Insulation resistance testing equipment for use with 5,000 Volt series circuit cables shall use an insulation resistance tester capable of testing the cables at 5,000 Volts. Older series circuit cables and/or cables in poor condition may require the test voltage to be performed at a voltage lower than 5,000 Volts (Example 1,000 Volts, 500 Volts, or less than 500 Volts). The respective test voltage shall be recorded for each cable insulation resistance test result.

N. Insulation resistance testing equipment for use with 600 Volt rated cables shall use a 500 Volt insulation resistance tester. The respective test voltage shall be recorded for each cable insulation resistance test result.

O. It is recommended to use the same insulation resistance test equipment throughout the project to ensure reliable comparative readings at the beginning of the project and at the completion of the project.

P. The Contractor is responsible to employ qualified personnel that are capable of properly conducting the required tests to the satisfaction of the Project Engineer. Tests that provide unsatisfactory results shall be reviewed to determine the possible cause of unsatisfactory results, corrections shall be made, and the tests shall be conducted again."

Add the following:

108-3.12 LOCATING OF EXISTING UNDERGROUND UTILITIES AND CABLES. The location, size, and type of material of existing underground and/or aboveground utilities indicated on the Plans are not represented as being accurate, sufficient, or complete. Neither the Owner nor the Engineer assumes any responsibility whatever in respect to the accuracy, completeness, or sufficiency of the information. There is no guarantee, either expressed or implied, that the locations, size, and type of material of existing underground utilities indicated are representative of those to be encountered in the construction. It shall be the Contractor's responsibility to determine the actual location of all such facilities, including service connections to underground utilities. Prior to construction, the Contractor shall notify the utility companies of his operational plans, and shall obtain, from the respective utility companies, detailed information and assistance relative to the location of their facilities and the working schedule of the companies for removal or adjustment, where required. In the event an unexpected utility interference is encountered during construction, the Contractor shall immediately notify the utility company of jurisdiction. The Owner's Representative and/or the Resident Engineer/Resident Technician shall also be immediately notified. Any damage to such mains and services shall be restored to service at once and paid for by the Contractor at no additional cost to the Contract.

All utility cables and lines shall be located by the respective utility. **Contact JULIE (Joint Utility Location Information for Excavators) for utility information, phone: 1-800-892-0123.** Contact the FAA (Federal Aviation Administration) for assistance in locating FAA cables and utilities. Location of FAA power, control, and communication cables shall be coordinated

with and/or located by the FAA. Also contact Airport Manager and Airport Personnel for assistance in locating underground Airport cables and/or utilities. Also coordinate work with all aboveground utilities.

Payment for locating and marking underground utilities and cables will not be paid for separately, but shall be considered incidental to the plowing/trenching/boring of cable and cable in unit duct.

108-3.13 SEPARATION OF HIGH-VOLTAGE AND LOW-VOLTAGE WIRING. High-voltage circuit wiring (airfield lighting 5000 Volt series circuits and/or other circuits rated above 600 Volts) and low-voltage circuit wiring (rated 600 Volts and below) shall maintain separation from each other. High-voltage wiring and low-voltage wiring shall not be installed in the same wireway, conduit, duct, raceway, handhole, or junction box. Where necessary provide split flexible duct around low voltage cables located in a handhole with high voltage cables, to isolate the cables from possible contact with each other.

108-3.14 IDENTIFICATION OF CABLES. At electrical handholes and manholes, identify and label each cable originating in the vault with respect to the system or device served. Provide identification tags rated suitable for the respective locations with permanent markings.

METHOD OF MEASUREMENT

108-4.2. Revise this section to read as follows:

> "The footage of cable and/or cable in unit duct installed in duct, conduit, or raceway to be paid for shall be the number of linear feet of cable installed in duct, conduit, or raceway measured in place by direct measurement, completed, ready for operation and accepted as satisfactory with no allowance being made for overrun due to slack, turns, splices, etc. Slack cable required to perform cable splices outside of the respective splice cans, handholes, or manholes, shall be incidental to the respective cable pay item and no additional measurement for payment will be made. Coring and interface to handholes or manholes shall be incidental to the respective cable pay item and no additional measurement for payment will be made. The relocation, interface, and/or adjustment of existing cable and/or cable in unit duct will be considered incidental to the work for which it is required and no additional compensation will be allowed. Cable will be measured for payment from the respective termination or splice point in the field to the respective termination or splice point."
>
> For Item AR108084, the footage of 1/C #4 XLP-USE installed in conduit, duct, and raceway, to be paid for shall be the number of linear feet installed in conduit or duct measured between each termination or splice point. Cable will be measured for payment up to the respective termination or splice point. Where multiple cables are installed each one conductor cable will be measured for payment. Slack cable located at a splice can, handhole or manhole will not be measured for payment.
>
> For Item AR108086, the footage of 1/C #6 XLP-USE installed in conduit, duct, and raceway, to be paid for shall be the number of linear feet installed in conduit or duct measured between each termination or splice point. Cable will be measured for payment up the respective termination or splice point. Where multiple cables are

installed each one conductor cable will be measured for payment. Slack cable located at a splice can, handhole or manhole will not be measured for payment.

For Item AR108108, 1/C #8 5KV UG Cable installed in conduit, duct, and raceway, to be paid for shall be the number of linear feet installed in conduit or duct measured between each termination or splice point. Cable will be measured for payment up to the respective termination or splice point. Where multiple cables are installed each one conductor cable will be measured for payment. Slack cable located at a splice can, handhole or manhole will not be measured for payment.

The quantity of cable and cable in raceway, duct and/or conduit for construction of the new fueling facility and removal/relocation of components of the existing fueling facility will not be measured for payment. This will be considered incidental to the respective item of work listed in Division VIII for which it is necessary."

BASIS OF PAYMENT

108-5.1. Add the following:

"Payment will be made at the contract unit price per lin. ft of cable completed and accepted by the Engineer. This price shall be full compensation for furnishing all materials, and for all preparation, assembly, and installation of these materials; for all splices and connections; for all plowing, trenching, directional-boring, coring of manholes or handholes, installation in ducts, raceways, conduits, splice cans, handholes, or manholes, and for all excavation and backfilling; for all site restoration (topsoiling, grading, seeding, mulching) and pavement restoration; and for all labor, equipment, tools, and incidentals necessary to complete this Item.

Payment will be made under:

Item AR108084, 1/C #4 XLP-USE - per linear foot
Item AR108086, 1/C #6 XLP-USE - per linear foot
Item AR108108, 1/C #8 5KV UG Cable - per linear foot
Item AR108158, 1/C #8 5KV UG Cable in UD - per linear foot

Payment for the furnishing and installation of cable and cable in raceway, duct and/or conduit for construction of the new fueling facility and removal/relocation of components of the existing fueling facility will not be measured for payment, but shall be considered incidental to the respective item of work listed under Division VIII for which it is necessary, and no additional compensation will be allowed.

END OF ITEM 108

ITEM 110 INSTALLATION OF AIRPORT UNDERGROUND ELECTRICAL DUCT

DESCRIPTION

110-1.1 Add the following:

"This item of work shall consist of the installation of all proposed conduits and ducts as shown on the Construction Plans."

110-1.2 REFERENCES

A. ANSI C80.1 – Rigid Steel Conduit, Zinc Coated.

B. ANSI C80.4 – Fittings Rigid Metal Conduit and EMT.

C. ASTM D3350 – Specification of Polyethylene Plastics Pipe and Fittings Materials.

D. ASTM F2160 – Standard Specification for Solid Wall, High-Density Polyethylene Conduit Based on Controlled Outside Diameter.

E. NEMA TC-2 – Electrical Plastic Tubing and Conduit.

F. NEMA TC-3 – Fittings Rigid PVC Conduit and Tubing.

G. NEMA Specification TC-7 – Smooth-Wall Coilable Polyethylene Electrical Plastic Conduit.

H. NFPA 70 – National Electrical Code (NEC), most current issue in force.

I. UL Standard 6 – Rigid Metal Conduit.

J. UL Standard 514B – Conduit, Tubing and Cable Fittings.

K. UL Standard 651 – Schedule 40 and 80 Rigid PVC Conduit.

L. UL Standard 651B – Standard for Continuous Length High-Density Polyethylene (HDPE) Conduit.

110-1.3 SHOP DRAWINGS. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for each type of conduit or duct to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** Contractor shall submit sufficient copies of shop drawings to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus 4 copies to be retained by the Project Engineer. Contractor may submit electronic copies of shop drawings instead of hard copies. Shop drawings shall include the following information:

A. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Do not submit NAFTA (North American Free Trade Agreement) certification as a substitute for**

certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America from Domestic materials in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements.

B. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

C. Illinois Department of Transportation Division of Aeronautics requires the following: ***"Under the FAA Buy American Preference, the contractor is required to submit certification that assures only domestic steel, domestic materials and domestic manufactured products are used. The Buy American statement must come from the producer, not the supplier. Producer verification must state that the items are produced in the United States and are made from 100% domestic materials. Statements that solely refer to the "Buy American Act" or "ARRA" or any federal purchasing act other than Title 49 United States Code (USC), Section 50101 will be rejected. Producers may use the Illinois Department of Transportation Domestic Material Compliance Certification Form AER 25 to satisfy this requirement."***

D. Indicate the pay item number for each respective conduit or duct.

E. Shop drawings shall include conduit and/or duct cut sheets with type, size, specifications, UL listing, manufacturer, and catalog or part number.

F. Provide manufacturer's literature confirming the respective duct to be bored is suitable for directional boring with the respective Shop Drawing submittal.

G. Provide certification that the respective steel conduits used on this project are manufactured from 100 percent domestic steel.

H. Provide certification that the respective plastic conduits used on this project are manufactured from domestic materials.

EQUIPMENT AND MATERIALS

110-2.1 GENERAL. Add the following:

"All materials for these items shall be in accordance with the FAA Standard Specification 110 Equipment and Materials, as detailed on the Plans, and as specified herein.

A. Conduit for concrete encased duct shall be Schedule 40 (minimum) Polyvinyl Chloride (PVC) or Schedule 40 (minimum) High-Density Polyethylene (HDPE), sized as detailed on the Plans, and suitable for concrete encasement.

B. The duct to be directional-bored shall be Galvanized Rigid Steel Conduit (GRSC) duct, Schedule 40 PVC Conduit, Schedule 80 PVC Conduit or High-Density Polyethylene (HDPE) duct, (Schedule 40, Schedule 80, SDR 9, SDR 11, or SDR 13.5), and suitable for directional boring installation.

110-2.2 STEEL CONDUIT. Replace this section with the following:

"Rigid Steel Conduit and fittings shall be hot-dipped, galvanized, UL-listed, and produced in accordance with UL Standard 6 – Rigid Metal Conduit and ANSI C80.1 – Rigid Steel Conduit, Zinc Coated. Couplings, connectors, and fittings for rigid steel conduit shall be threaded, galvanized steel or galvanized, malleable iron, specifically designed and manufactured for the purpose. Fittings shall conform to ANSI C80.4 – Fittings Rigid Metal Conduit and EMT and UL 514B – Conduit, Tubing, and Cable Fittings. Set screw type fittings are not acceptable. Steel used to manufacture conduits shall be 100 percent domestic steel to comply with the Airport Improvement Program Buy American Preference Requirements and the Steel Products Procurement Act. Contractor shall provide certification that the respective steel conduits used on this project are manufactured from 100 percent domestic steel.

Miscellaneous Fittings. Fittings shall be suitable for use with conduits and ducts supplied. All fittings for use with rigid metal conduit shall be threaded. Set screw-type fittings are not acceptable. All conduit bodies, fittings, and boxes installed in classified hazardous locations (Class I, Division 1 or 2, Group D) shall be suitable for use in Class I, Division 1, and Group D locations. Fittings shall be as manufactured by Appleton, Crouse-Hinds, Hubbell-Killark, O-Z/Gedney, or approved equal.

Provide NEMA 4, 4X hubs for all conduit entries into NEMA 4, 4X equipment enclosures to maintain the NEMA 4, 4X rating of the respective enclosure. Hubs for use with NEMA 4X stainless steel enclosures shall be NEMA 4X stainless steel hubs."

110-2.3 PLASTIC CONDUIT. Add the following to the end of this section:

C. Conduits for concrete encasement shall be Schedule 40 PVC, UL-listed, rated for 90°C cable, conforming to NEMA Standard TC-2 and UL 651, listed suitable for concrete encasement or Schedule 40 (minimum) HDPE conduit, UL-listed, conforming to NEMA Standard TC-7 and UL 651B and listed suitable for concrete encasement. Conduits shall be suitable for underground applications encased in concrete or direct burial, and suitable for exposed applications aboveground.

D. Conduits for directional boring shall be Schedule 40 PVC or Schedule 80 PVC conduit, UL-listed, rated for 90°C cable-conforming to NEMA Standard TC-2 and UL 651 and suitable for directional boring installation, Schedule 40 HDPE or Schedule 80 HDPE conduit, UL-listed, conforming to NEMA Standard TC-7 and UL 651B and suitable for directional boring installation, or Wall Type SDR 9, SDR 11, or SDR 13.5 HDPE conduit manufactured in accordance with ASTM D-3350 (Specification of Polyethylene Plastics Pipe and Fittings Materials) and ASTM F2160 (Standard Specification for Solid Wall, High-Density Polyethylene Conduit Based on Controlled Outside Diameter), and suitable for directional boring installation. **Per NEC 300.5 (K), raceways installed using directional boring equipment shall be approved for the purpose. Provide**

manufacturer's literature confirming the respective duct is suitable for directional boring with the respective Shop Drawing submittal.

E. Conduits for direct burial in earth shall be PVC Schedule 40 (minimum wall thickness), UL-listed, rated for 90°C cable-conforming to NEMA Standard TC-2 and UL 651, listed suitable for direct burial in earth, or HDPE Schedule 40 (minimum wall thickness), conforming to NEMA Standard TC-7 and UL 651B, or HDPE SDR 13.5 (minimum wall thickness) manufactured in accordance with ASTM D-3350 (Specification of Polyethylene Plastics Pipe and Fittings Materials) and ASTM F2160 (Standard Specification for Solid Wall, High-Density Polyethylene Conduit Based on Controlled Outside Diameter). Conduits shall be suitable for direct burial in earth and/or concrete encasement."

Add the following:

110-2.9 DUCT SPACERS. Provide duct spacers to provide proper separation of conduits installed in concrete encased duct. Duct spacers shall be designed to provide 3" separation of conduits. Duct spacers shall be suitable for the respective size and quantity of ducts; Underground Devices Incorporated Wunpeece Series, Carlon Snap-N-Stac Combo Spacers, Cantex Spacers for Duct, or approved equal. Confirm catalog numbers with the manufacturer for the respective application.

CONSTRUCTION METHODS

110-3.1 GENERAL. Add to this section:

"The proposed conduits and ducts shall be constructed at the locations and in accordance with the details shown on the Construction Plans. Ducts shall be installed 18 in. minimum below grade. Ducts located in area subject to farming shall be 42 in minimum below grade. Where detailed on the Plans or where required to avoid obstructions, ducts shall be buried deeper. Where concrete-encased duct interfaces to directional-bored duct at a pavement crossing, the concrete encasement shall be installed up to the respective pavement edge. Where concrete-encased duct interfaces to an electrical handhole or manhole, the concrete encasement shall be installed up to the respective handhole or manhole. Provide bushings or bells at conduit terminations in electrical handholes or manholes.

Underground ducts installed by directional-boring method shall be installed in a manner that will not damage any existing underground utilities, and shall not disturb or damage the respective pavement or roadway surface. Ducts shall be directional-bored at the locations shown on the Construction Plans. The ducts will be bored at a minimum depth of 24 in. below the bottom of the pavement it is being bored under. Ducts installed under paved areas and roadways shall extend a minimum of 10 ft beyond the respective pavement or roadway surface, unless detailed otherwise on the Plans. A pull wire will be left in the conduit if it is to be left vacant. The ends of the conduit will be sealed with approved plugs.

The Contractor will determine if there is a conflict between the installation of the proposed electrical ducts and any existing/proposed utilities. He will make all necessary

adjustments in depth of installation to avoid any and all existing/proposed underground improvements."

110-3.7 RESTORATION. Add to this section:

"Any and all trenches and disturbed areas will be backfilled and restored to a smooth grade and seeded to the satisfaction of the Engineer. All trench settlement shall be corrected for a period of one year. Restoration, grading, and seeding of areas disturbed during the installation of the proposed ducts will be incidental to the respective pay item for which the duct is installed. The fertilizing and seeding will be completed to establish a stand of grass, and will be incidental to the respective pay item for which the duct is installed.

Any and all disturbed pavement areas will be restored to original or better condition. Restoration of pavement areas disturbed during the installation of the proposed ducts will be incidental to the respective pay item for which the duct is installed. The restoration of pavement will be completed in accordance with Item 610 for sidewalks and concrete pavement, and Item AR401910 Remove & Replace Bituminous Pavement for bituminous pavement, but will be incidental to the respective pay item for which the duct is installed."

Add the following:

110-3.8 LOCATING OF EXISTING UNDERGROUND UTILITIES AND CABLES. The location, size, and type of material of existing underground and/or aboveground utilities indicated on the Plans are not represented as being accurate, sufficient, or complete. Neither the Owner nor the Engineer assumes any responsibility whatever in respect to the accuracy, completeness, or sufficiency of the information. There is no guarantee, either expressed or implied, that the locations, size, and type of material of existing underground utilities indicated are representative of those to be encountered in the construction. It shall be the Contractor's responsibility to determine the actual location of all such facilities, including service connections to underground utilities. Prior to construction, the Contractor shall notify the utility companies of his operational plans, and shall obtain from the respective utility companies detailed information and assistance relative to the location of their facilities and the working schedule of the companies for removal or adjustment, where required. In the event an unexpected utility interference is encountered during construction, the Contractor shall immediately notify the utility company of jurisdiction. The Owner's Representative and/or the Resident Engineer/Resident Technician shall also be immediately notified. Any damage to such mains and services shall be restored to service at once and paid for by the Contractor at no additional cost to the Contract.

All utility cables and lines shall be located by the respective utility. **Contact JULIE (Joint Utility Location Information for Excavators) for utility information, phone: 1-800-892-0123.** Contact the FAA (Federal Aviation Administration) for assistance in locating FAA cables and utilities. Location of FAA power, control, and communication cables shall be coordinated with and/or located by the FAA. Also contact Airport Director/Manager and Airport Personnel for assistance in locating underground Airport cables and/or utilities. Also coordinate work with all aboveground utilities.

Contractor shall locate and mark all existing cables within ten (10) feet of proposed excavating/trenching area. Any cables found interfering with proposed excavation or

cable/trenching shall be hand dug and exposed. Any damaged cables shall be immediately repaired to the satisfaction of the Resident Engineer/Resident Technician at the Contractor's expense. The Resident Engineer/Resident Technician and Owner shall be notified immediately if any cables are damaged.

Payment for locating and marking underground utilities and cables will not be paid for separately, but shall be considered incidental to the respective duct installation.

110-3.9 SEPARATION OF HIGH-VOLTAGE AND LOW-VOLTAGE WIRING. High-voltage circuit wiring (airfield lighting 5000 Volt series circuits and/or other circuits rated above 600 Volts) and low-voltage circuit wiring (rated 600 Volts and below) shall maintain separation from each other. High-voltage wiring and low-voltage wiring shall not be installed in the same wireway, conduit, duct, raceway, handhole, or junction box.

METHOD OF MEASUREMENT

110-4.2 Delete this section.

Add the following:

"110-4.3. The quantity of conduits and ducts installed for construction of the new fueling facility and removal/relocation of components of the existing fueling facility will not be measured for payment. This will be considered incidental to the respective item of work listed under Division VIII for which it is necessary and shall include furnishing all materials and for all preparation, assembly, and installation of these materials; for all sawing and pavement removal; and for all excavation and backfilling with aggregate backfill, earth backfill and concrete; for all restoration work; and for all labor, equipment, tools, and incidentals necessary to complete the installation."

BASIS OF PAYMENT

110-5.1. Add the following:

> "Payment will be made at the contract unit price per each type and size of conduit, completed and accepted. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials; for all sawing and pavement removal; for all duct interface work to handholes/manholes including coring of handholes/manholes; for all excavation and backfilling with aggregate backfill, earth backfill, and concrete; and for all labor, coordination, equipment, tools, and incidentals necessary to complete this Item. Removal and replacement of bituminous pavement will be considered incidental to the respective pay item for which the duct is installed."
>
> Payment will be made under:
>
> Item AR110504 4-Way Conc. Encased Duct - per linear foot"

Add the following:

"110-5.2. Payment for the furnishing and installation of conduits and ducts for construction of the new fueling facility and removal/relocation of components of the existing fueling facility will not be measured for payment, but shall be considered incidental to the respective item of work listed under Division VIII for which it is necessary, and no additional compensation will be allowed."

END OF ITEM 110

ITEM 115
ELECTRICAL MANHOLES AND JUNCTION STRUCTURES

DESCRIPTION

115-1.1. This item of work shall consist of electrical manholes and junction structures (handholes and splice cans) in accordance with this Specification and as detailed on the Construction Plans. This item shall include the installation of each electrical manhole and/or junction structures with all associated excavation, backfilling, sheeting and bracing, concrete, reinforcing steel, ladders, appurtenances, testing, dewatering and restoration of surfaces to the satisfaction of the Engineer.

115-1.2 SHOP DRAWINGS. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for each type of electrical manhole and junction structure to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** Contractor shall submit sufficient copies of shop drawings to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus 4 copies to be retained by the Project Engineer. Contractor may submit electronic copies of shop drawings instead of hard copies. Shop drawings shall include the following information:

A. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Do not submit NAFTA (North American Free Trade Agreement) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the AIP Buy American Preferences requirements.**

B. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

C. The data submitted shall be sufficient, in the opinion of the Engineer, to determine compliance with the plans and specifications. The Engineer reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes, specified in this document.

D. Concrete mix design for handholes to be cast in place.

E. Precast concrete handholes and manholes must be on IDOT (Illinois Department of Transportation) List of Certified Precast Concrete Producers. Provide information on

respective precast concrete producer for precast handholes and/or manholes and drawings for respective handholes and/or manholes.

F. Provide cut sheets with part number and specification for each handhole frame and lid. Include certification that the respective handhole frame and lid is made in the United States of America.

G. Provide certification that the respective pre-cast handholes and manholes are manufactured in the United States of America.

MATERIALS

115-2.1. GENERAL

A. All equipment and materials covered by referenced specifications shall be subject to acceptance through manufacturer's certification of compliance with the applicable specification when so requested by the Engineer.

B. Manufacturer's certifications shall not relieve the Contractor of the Contractor's responsibility to provide materials in accordance with these specifications and acceptable to the Engineer. Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when directed by the Engineer and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

C. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

115-2.2 CONCRETE STRUCTURES. Provide precast concrete structures where shown on the Plans. Precast units shall have mortar or bitumastic sealer placed between all joints to make them watertight. Openings or knockouts shall be provided in the structure as detailed on the Plans and as applicable to interface to the respective duct system. Threaded inserts and pulling eyes shall be cast in as shown.

If the Contractor chooses to propose a different structural design, signed and sealed shop drawings, design calculations, and other information requested by the Engineer shall be submitted by the Contractor to allow for a full evaluation by the Engineer.

A. 4' x 4' x 4' Electrical Manholes. 4' x 4' x 4' electrical manholes shall be constructed in accordance with the details as shown on the Construction Plans. The manhole shall be provided with manhole frame and lid capable of withstanding minimum 50,000-pound loads, Neenah Foundry Company R-1640-C frame and lid, East Jordan Iron Works Catalog number 1825 Frame and Cover, or an approved equal. Lids for the manholes containing high voltage airfield lighting cables shall include lettering labeled "**DANGER HIGH VOLTAGE KEEP OUT 5000 VOLTS**" to comply with NEC Article 300.45 "Warning Signs" and NEC Article 314.30(D) "Covers". Lids for the manholes containing low voltage cables (600 Volts and below) shall include lettering labeled "**LOW-VOLTAGE**". 4' x 4' x 4' electrical

manholes shall be manufactured by a concrete electrical manhole producer on the Illinois Department of Transportation approved list of certified precast concrete producers. 4' x 4' x 4' electrical manholes will be paid for under Item AR110710 Electrical Manhole per each.

115-2.3 JUNCTION CANS. Junction Cans shall be L-867 Class 1 (non-load bearing) or L-868 Class 1 (load bearing) cans encased in concrete. The cans shall have a galvanized steel blank cover, gasket, and stainless steel hardware. Covers shall be 3/8" thickness for L-867 and 3/4" thickness for L-868. Include internal and external ground straps on each splice can.

115-2.4 CABLE TRAYS. Cable racks shall be as detailed on the Plans.

115-2.5 GROUND RODS. Furnish and install ground rods at locations where shown on the Plans or specified herein. Provide ground rods in manholes and/or handholes where applicable for termination of ground conductors. Provide ground rods for splice cans as detailed on the Plans. Ground rods for splice cans shall be 3/4-inch diameter, 10 feet long, UL-listed, copper-clad. Longer ground rods shall be provided where detailed on the Plans. Ground rods shall have 10 mils minimum copper coating. Steel used to manufacture ground rods shall be 100 percent domestic steel to comply with the Airport Improvement Program Buy American Preference Requirements and the Steel Products Procurement Act. Contractor shall provide certification that the respective ground rods used on this project are manufactured from 100 percent domestic steel.

CONSTRUCTION METHODS

115-3.1. Electrical handholes and manholes shall be constructed in accordance with the details as shown on the Construction Plans. At electrical handholes and manholes, identify and label each cable with respective to its origin and the system or device served. Coordinate conduit and duct interface with the handhole and/or manhole installation. Field cut openings for conduits and ducts according to the respective handhole and/or manhole manufacturer's recommendations. Core drill and/or cut wall of handhole and/or manhole with a tool designed for the material to be cut and suitable for the respective application. Size holes for termination fittings to be used and seal around penetrations after fittings are installed.

115-3.2 UNCLASSIFIED EXCAVATION. It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Damage to utility lines, through lack of care in excavating, shall be repaired or replaced to the satisfaction of the Engineer without additional expense to the Owner.

The Contractor shall perform excavation for structures and structure footings. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown.

All excavation shall be unclassified and shall be considered incidental to the respective handhole and/or manhole structure pay item of which it is a component part. Dewatering necessary for manhole structure installation, erosion and turbidity control, in accordance with Federal, State, and Local requirements is incidental to its respective pay item. The cost of all excavation regardless of type of material encountered, shall be included in the unit price bid for the respective manhole structure pay item.

Boulders, logs and all other objectionable material encountered in excavation shall be removed. All rock and other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped or serrated, as directed by the Resident Engineer/Resident Technician. All seams, crevices, disintegrated rock and thin strata shall be removed. When concrete is to rest on a surface other than rock, special care shall be taken not to disturb the bottom of the excavation. Excavation to final grade shall not be made until just before the concrete or reinforcing is to be placed.

The Contractor shall provide all bracing, sheeting and shoring necessary to implement and protect the excavation and the structure as required for safety or conformance to governing laws. The cost of bracing, sheeting and shoring shall be included in the unit price bid for the structure.

Unless otherwise provided, bracing, sheeting and shoring involved in the construction of this item shall be removed by the Contractor after the completion of the structure. Removal shall be effected in a manner that will not disturb or mar finished masonry. The cost of removal shall be included in the unit price bid for the structure.

After each excavation is completed, the Contractor shall notify the Resident Engineer/Resident Technician. Structures shall be placed after the Resident Engineer/Resident Technician has approved the depth of the excavation and the suitability of the foundation material.

Prior to installation the Contractor shall provide a minimum of 6 in of sand or a material approved by the Resident Engineer/Resident Technician as a suitable base to receive the structure. The base material shall be compacted and graded level and at proper elevation to receive the structure in proper relation to the conduit grade or ground cover requirements, as indicated on the Plans.

115-3.2 CONCRETE STRUCTURES. Concrete structures shall be built on prepared foundations conforming to the dimensions and form indicated on the plans. The concrete and construction methods shall conform to the requirements specified in Item 610. Any reinforcement required shall be placed as indicated on the plans and shall be approved by the Engineer before the concrete is placed.

115-3.3 PRECAST UNIT INSTALLATIONS. Precast units shall be installed plumb and true. Joints shall be made watertight by use of sealant at each tongue-and-groove joint and at roof of manhole. Excess sealant shall be removed and severe surface projections on exterior of neck shall be removed.

115-3.4 PLACEMENT AND TREATMENT OF CASTINGS, FRAMES AND FITTINGS. All castings, frames and fittings shall be placed in the positions indicated on the Plans or as directed by the Resident Engineer/Resident Technician and shall be set true to line and to correct elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place and position before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete has set.

Field connections shall be made with bolts, unless indicated otherwise. Welding will not be permitted unless shown otherwise on the approved shop drawings and written permission is granted by the casting manufacturer. Erection equipment shall be suitable and safe for the workman. Errors in shop fabrication or deformation resulting from handling and transportation

that prevent the proper assembly and fitting of parts shall be reported immediately to the Resident Engineer/Resident Technician and approval of the method of correction shall be obtained. Approved corrections shall be made at Contractor's expense.

Anchor bolts and anchors shall be properly located and built into connection work. Bolts and anchors shall be preset by the use of templates or such other methods as may be required to locate the anchors and anchor bolts accurately.

Pulling-in irons shall be located opposite all conduit entrances into structures to provide a strong, convenient attachment for pulling-in blocks when installing cables. Pulling-in irons shall be set directly into the concrete walls of the structure.

115-3.5 INSTALLATION OF LADDERS. [Not used]

115-3.6 REMOVAL OF SHEETING AND BRACING. In general, all sheeting and bracing used to support the sides of trenches or other open excavations shall be withdrawn as the trenches or other open excavations are being refilled. That portion of the sheeting extending below the top of a structure shall be withdrawn, unless otherwise directed, before more than 6 inches (150 mm) of material is placed above the top of the structure and before any bracing is removed. Voids left by the sheeting shall be carefully refilled with selected material and rammed tight with tools especially adapted for the purpose or otherwise as may be approved.

The Resident Engineer/Resident Technician may order the Contractor to delay the removal of sheeting and bracing if, in his judgment, the installed work has not attained the necessary strength to permit placing of backfill.

115-3.7 BACKFILLING. After a structure has been completed, the area around it shall be backfilled in horizontal layers not to exceed 6 inches (150 mm) in thickness. Each layer shall be deposited all around the structure to approximately the same elevation. The top of the fill shall meet the elevation shown on the plans or as directed by the Resident Engineer/Resident Technician.

Backfill shall not be placed against any structure until permission is given by the Resident Engineer/Resident Technician. In the case of concrete, such permission shall not be given until tests made by the laboratory under supervision of the Engineer establish that the concrete has attained sufficient strength to provide a factor of safety against damage or strain in withstanding any pressure created by the backfill or the methods used in placing it.

Where required, the Resident Engineer/Resident Technician may direct the Contractor to add, at his own expense, sufficient water during compaction to assure a complete consolidation of the backfill. The Contractor shall be responsible for all damage or injury done to conduits, duct banks, structures, property or persons due to improper placing or compacting of backfill.

115-3.8 CONNECTION OF DUCT BANKS. To relieve stress of joint between concrete-encased duct banks and structure walls, reinforcement rods shall be placed in the structure wall and shall be formed and tied into duct bank reinforcement at the time the duct bank is installed.

115-3.9 RESTORATION. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt and rubbish from the site. The Contractor shall restore all disturbed areas equivalent to or better than their original condition. All sodding, seeding, mulching grading and

restoration shall be considered incidental to the respective pay item. The Contractor shall grade around structures as required to provide positive drainage away from the structure. Areas with special surface treatment, such as roads, sidewalks, or other paved areas shall have backfill compacted to match surrounding areas, and surfaces shall be repaired using materials comparable to original materials. After all work is completed, the Contractor shall remove all tools and other equipment, leaving the entire site free, clear and in good condition.

115-3.10 LOCATING EXISTING UNDERGROUND UTILITIES AND CABLES. The location, size, and type of material of existing underground and/or aboveground utilities indicated on the Plans are not represented as being accurate, sufficient, or complete. Neither the Owner nor the Engineer assumes any responsibility whatever in respect to the accuracy, completeness, or sufficiency of the information. There is no guarantee, either expressed or implied, that the locations, size, and type of material of existing underground utilities indicated are representative of those to be encountered in the construction. It shall be the Contractor's responsibility to determine the actual location of all such facilities, including service connections to underground utilities. Prior to construction, the Contractor shall notify the utility companies of his operational plans, and shall obtain from the respective utility companies detailed information and assistance relative to the location of their facilities and the working schedule of the companies for removal or adjustment, where required. In the event an unexpected utility interference is encountered during construction, the Contractor shall immediately notify the utility company of jurisdiction. The Owner's Representative and/or the Resident Engineer/Resident Technician shall also be immediately notified. Any damage to such mains and services shall be restored to service at once and paid for by the Contractor at no additional cost to the Contract.

All utility cables and lines shall be located by the respective utility. **Contact JULIE (Joint Utility Location Information for Excavators) for utility information, phone: 1-800-892-0123.** Contact the FAA (Federal Aviation Administration) for assistance in locating FAA cables and utilities. Location of FAA power, control, and communication cables shall be coordinated with and/or located by the FAA. Also contact Airport Director/Manager and Airport Personnel for assistance in locating underground Airport cables and/or utilities. Also coordinate work with all aboveground utilities.

Contractor shall locate and mark all existing cables within ten (10) feet of proposed excavating/trenching area. Any cables found interfering with proposed excavation or cable/trenching shall be hand dug and exposed. Any damaged cables shall be immediately repaired to the satisfaction of the Resident Engineer/Resident Technician at the Contractor's expense. The Resident Engineer/Resident Technician and Owner shall be notified immediately if any cables are damaged.

Due to the quantities of existing utilities and lines in the proposed areas of work, the Contractor will need to carefully excavate to expose and protect these utilities and lines prior to installing manholes, handholes, and/or junction structures and the associated trenches for the proposed conduits, ducts, and raceway system.

Payment for locating and marking underground utilities and cables will not be paid for separately, but shall be considered incidental to the respective duct installation.

115-3.11 SEPARATION OF HIGH-VOLTAGE AND LOW-VOLTAGE WIRING. High-voltage circuit wiring (airfield lighting 5000 Volt series circuits and/or other circuits rated above 600 Volts) and low-voltage circuit wiring (rated 600 Volts and below) shall maintain separation from

each other. High-voltage wiring and low-voltage wiring shall not be installed in the same wireway, conduit, duct, raceway, handhole, or junction box.

METHOD OF MEASUREMENT

115-4.1. Electrical manholes, handholes and junction structures shall be measured by each unit completed in place and accepted by the Resident Engineer/Resident Technician. The following additional items are specifically included in each unit.

- All required excavation,
- Sheeting and bracing
- All required backfilling with on-site materials
- Restoration of all surfaces and finished grading, sodding
- All required connections
- Slack cable required to perform cable splices outside of the respective junction structures, handholes, or manholes.
- Dewatering if required
- Temporary cables and connections
- Ground rod testing
- All coring and labor associated with conduit, duct, cable in unit duct, and/or cable entries
- Locating existing utilities, lines, and cables in the respective areas of work
- All coordination with the respective Airport staff, site personnel, and/or FAA personnel

The quantity of junction cans and/or splice cans for construction of the new fueling facility and removal/relocation of components of the existing fueling facility will not be measured for payment. This will be considered incidental to the respective item of work listed under Division VIII for which it is necessary."

BASIS OF PAYMENT

115-5.1. Payment will be made at the contract unit price bid for each electrical manhole, handhole, and/or junction structure completed and in place. This price shall be full compensation for furnishing all materials and for all preparation, excavation, backfilling, and placing of the materials; for locating existing utilities, lines, and cables in the respective areas of work; for all coring and labor associated with conduit, duct, cable in unit duct, and/or cable entries; for all coordination with the respective Airport and/or FAA personnel; for furnishing and installation of appurtenances and connections to duct banks and other structures as may be required to complete the item as shown on the plans and for all labor, equipment, tools and incidentals necessary to complete the structure.

Payment will be made under:

Item AR110710 Electrical Manhole - per each

Payment for the furnishing and installation of junction cans and/or splice cans for construction of the new fueling facility and removal/relocation of components of the existing fueling facility will not be measured for payment, but shall be considered incidental to the respective item of work listed under Division VIII for which it is necessary, and no additional compensation will be allowed.

END OF ITEM 115

ITEM 125 INSTALLATION OF AIRPORT LIGHTING SYSTEMS

DESCRIPTION

125-1.1. Revise this paragraph to read as follows:

> "This Item of work shall consist of furnishing and installing base-and stake-mounted airfield lights, taxiway lights, and taxi guidance signs at the locations shown on the Construction Plans and in accordance with the details shown on the Plans. Also included in this Item will be the testing of the installation and all incidentals necessary to place the lighting systems into operation, completed, and to the satisfaction of the Engineer."

125-1.6 REFERENCES. Note: where FAA Advisory Circulars are referenced they shall be the current issue or issues in effect.

A. ANSI C80.1 – Rigid Steel Conduit, Zinc Coated.

B. ANSI C80.4 – Fittings Rigid Metal Conduit and EMT.

C. FAA AC No. 150/5340-26C (current issue in effect) "Maintenance of Airport Visual Aid Facilities".

D. FAA AC No. 150/5340-30 (current issue in effect) "DESIGN AND INSTALLATION DETAILS FOR AIRPORT VISUAL AIDS

E. FAA AC No. 150/5345-42 (current issues in effect) "Specification for Airport Light Bases, Transformer Housings, Junction Boxes, and Accessories".

F. FAA AC No. 150/5345-46 (current issue in effect) "SPECIFICATION FOR RUNWAY AND TAXIWAY LIGHT FIXTURES"

G. FAA AC No. 150/5345-47 (current issue in effect) "SPECIFICATION FOR SERIES TO SERIES ISOLATION TRANSFORMERS FOR AIRPORT LIGHTING SYSTEMS".

H. FAA AC No. 150/5345-53 "AIRPORT LIGHTING EQUIPMENT CERTIFICATION PROGRAM" (current issue in effect) and AC 150/5345-53D, AIRPORT LIGHTING EQUIPMENT CERTIFICATION PROGRAM Appendix 3 Addendum (current issue in effect).

I. FAA AC No. 150/5370-2 (current issue in effect) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION.

J. NFPA 70 – National Electrical Code (most current issue in force).

K. NFPA 70E – Standard for Electrical Safety in the Workplace

L. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures

M. UL Standard 6 – Rigid Metal Conduit.

N. UL Standard 514B – Conduit, Tubing and Cable Fittings.

125-1.7 SHOP DRAWINGS. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for airfield lighting equipment and materials to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected.** Contractor shall submit sufficient copies of shop drawings to meet the needs of his personnel, sub-contractor personnel, and equipment suppliers plus 4 copies to be retained by the Project Engineer. Shop drawings shall include the following information:

A. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Do not submit NAFTA (North American Free Trade Agreement) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the AIP Buy American Preferences requirements. FAA approved equipment that is on the FAA Buy American Conformance List or the list of Nationwide Buy American Waivers Issued by the FAA complies with the AIP Buy American Preferences and will not require additional waiver paperwork for AIP projects. See the FAA website at:** https://www.faa.gov/airports/aip/buy_american/media/nationwide-buy-american-waivers-issued.pdf **for a list of Nationwide Buy American Waivers Issued by the FAA.**

B. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Project Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

C. Illinois Department of Transportation Division of Aeronautics requires the following: ***"Under the FAA Buy American Preference, the contractor is required to submit certification that assures only domestic steel, domestic materials and domestic manufactured products are used. The Buy American statement must come from the producer, not the supplier. Producer verification must state that the items are produced in the United States and are made from 100% domestic materials. Statements that solely refer to the "Buy American Act" or "ARRA" or any federal purchasing act other than Title 49 United States Code (USC), Section 50101 will be rejected. Producers may use the Illinois Department of Transportation Domestic Material Compliance Certification Form AER 25 to satisfy this requirement."***

D. Cut sheets with part number and specifications for each airfield light fixture. Include cut sheets with part numbers and dimensions for mounting stakes, base cans, cover plates, transformers, and associated components for each light airfield fixture.

E. Cut sheets with part number and specifications each taxi guidance sign.

F. Cut sheets with part number and specifications for each airfield light fixture.

G. Concrete mix design.

H. Provide cut sheets with manufacturer's name, catalog number, dimensions, material and UL listing for each type and size ground rod. Include certification of 100% domestic steel for ground rods. Include cut sheets for exothermic weld connections, ground lugs, and ground wire.

I. Provide cut sheets for all types of conduit used with the airfield light fixtures (for example galvanized rigid steel conduit). Include certification that steel conduits are made with 100 percent domestic steel.

EQUIPMENT AND MATERIALS

125-2.1 GENERAL. Add the following to this section:

"D. Proposed taxiway lights shall be Type L-861T, with 30-Watt quartz lamps and blue lenses. All lights shall have an overall height of 24 in. All of the above lights shall be manufactured in accordance to FAA Specification AC No. 150/5345-46 (current issues in effect) and shall be FAA approved and in compliance with the Airport Improvement Program Buy American Preference Requirements.

The concrete used in the construction of these Items shall be in accordance with Item 610.

E. Where non-metallic light fixtures or plastic couplings are proposed the Contractor will be responsible to furnish all grounding connectors, bonding jumpers, pipe grounding clamps, and accessories to maintain continuity of the ground path for the required light base ground."

125-2.4 CONDUIT. Add the following to this section:

"Rigid Steel Conduit and fittings shall be hot-dipped, galvanized, UL-listed, produced in accordance with UL Standard 6 – Rigid Metal Conduit and ANSI C80.1 – Rigid Steel Conduit, Zinc Coated. Couplings, connectors, and fittings for rigid steel conduit shall be threaded galvanized steel or galvanized malleable iron specifically designed and manufactured for the purpose. Fittings shall conform to ANSI C80.4 – Fittings Rigid Metal Conduit and EMT. Set screw type fittings are not acceptable. Galvanized rigid steel conduit shall be manufactured in the United States of America produced from 100 percent domestic steel."

125-2.7 ISOLATION TRANSFORMERS. Add the following to this section:

"Series circuit isolation transformers for the runway or taxiway edge lights and taxi guidance signs shall be manufactured to FAA Specification AC 150/5345-47 (current issue in effect), and shall be FAA-approved (ETL/Intertek Testing Services - Certified). Series circuit transformer shall be properly sized for the respective runway or taxiway edge lights or taxi guidance signs and shall be as recommended by the respective runway or taxiway edge lights manufacturer and taxi guidance sign manufacturer. Confirm proper transformer selection and sizing with the respective runway or taxiway edge lights manufacturer and taxi guidance sign manufacturer."

125-2.8 LIGHT CANS. Add the following to this section:

"Each light base can and/or splice can shall include internal and external ground lugs. Cans shall be the size and depth as detailed on the Plans. L-867 splice cans shall have galvanized steel covers, 3/8 in. thick, with stainless steel bolts. Lids for splice cans containing high voltage airfield lighting cables shall include minimum 1/2-inch high lettering labeled "**DANGER HIGH VOLTAGE KEEP OUT**" to comply with National Electrical Code Article 300.45 "Warning Signs" and National Electrical Code Article 314.71(E) "Suitable Covers". This will need to be coordinated with the splice can manufacturer. Lids for splice cans containing low voltage cables (rated 600 Volts and below) will be acceptable to use blank covers."

Add the following:

125-2.14 IDENTIFICATION TAGS. Identification tags shall be attached to each new fixture and sign. Where shown on the Plans provide new identification tags for existing fixtures. The tag shall be of the type and with the lettering shown on the Plans. The cost of furnishing and installing these tags shall be included in the unit price for the fixtures or signs and no additional compensation will be allowed.

125-2.15 ANTI-SEIZE COMPOUND. Prior to installing the proposed airfield lights, or other airfield equipment, the Contractor will apply an oxide-inhibiting, anti-seizing compound to all screws, nuts, breakable coupling, and all places where metal comes into contact with metal.

125-2.16 STAINLESS STEEL BOLTS. All base plate-mounting bolts and stake-mounting bolts shall be stainless steel.

125-2.17 GROUND RODS. **Ground rods shall be 3/4-inch diameter by 10-feet long UL listed Copper-clad with 10 mil. (minimum) Copper coating.** Ground rods shall be manufactured in the United States of America. Steel used to manufacture ground rods shall be 100 percent domestic steel to comply with the Airport Improvement Program Buy American Requirements and the Steel Products Procurement Act. Contractor shall provide certification that the respective ground rods used on this project are manufactured from 100 percent domestic steel.

CONSTRUCTION METHODS

125-3.1 GENERAL. Add the following to this section:

"The proposed Runway/Taxiway lights, taxi guidance signs, and other airfield lighting devices shall be installed in accordance with the details shown on the Construction Plans.

Obtaining the required borrow material from an offsite borrow, placing the borrow material, grading, seeding, and mulching the disturbed areas will be considered as an Incidental Item to the proposed taxi guidance signs and lights, and/or removal work and no additional compensation will be allowed.

The proposed splice cans shall be constructed at the locations shown on the Construction Plans and in accordance with the details shown on the Construction Plans. Provide sufficient slack cable at each splice can to perform cable splices outside of the can.

Contractor shall coordinate work and any power outages with the Airport Manager and the Resident Engineer/Resident Technician. Any shutdown of existing systems shall be scheduled with and approved by the Airport Manager prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

The Contractor shall furnish and install all electrical materials necessary for complete and operational installation of the airfield lighting systems as shown on the Plans and detailed herein. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of the NFPA 70 - National Electrical Code (NEC) most current issue in force and the applicable Federal Aviation Administration standards, orders, and advisory circulars. Equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, Intertek Testing Services verification/ETL listing, (or other third party listing), and/or the manufacturer's warranty of a device will not be permitted.

Contractor shall comply with the requirements of FAA AC No. 150/5370-2 (current issue in effect) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".

Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

All temporary installations shall comply with National Electrical Code Article 590 – "Temporary Installations." The Contractor shall secure, identify, and place temporary exposed wiring in conduit, duct, or unit duct to prevent electrocution and fire ignition sources in conformance with the requirements of FAA AC 150/5370-2G, Part 2.18.3 "Lighting and Visual NAVAIDs".

Existing airfield lighting cables associated with airfield lighting to be removed shall be abandoned in place unless it conflicts with new work and then it shall be removed at no additional cost to the Contact. If the Contractor elects to salvage the cable within the circuit to be removed, shown in the Construction Plans as cable to be abandoned, any cost associated with removal of the cable shall be considered incidental to the Contract and no additional compensation will be allowed."

Add the following:

125-3.4 IDENTIFICATION NUMBERS. The Contractor will place light identification number tags on ALL of the proposed airfield lights and taxi guidance signs as detailed on the Plans.

125-3.5 GROUNDING FOR AIRFIELD LIGHTS AND TAXI GUIDANCE SIGNS. Furnish and install a ground rod at each L-867 transformer base/light can and at each stake-mounted light fixture**.** Grounding for Runway Lights, Taxiway Lights, and Lighted Taxi Guidance Signs shall be as detailed on the Plans and as specified herein. Per FAA AC 150/5340-30H DESIGN AND INSTALLTION DETAILS FOR AIRPORT VISUAL AIDS, Chapter 12, Part 12.6; a ground must be installed at each light fixture. The purpose of the light base ground is to provide a degree of protection for maintenance personnel from possible contact with an energized light base or mounting stake that may result from a shorted power cable or isolation transformer. A light base ground shall be installed at each transformer base/light can associated with runway lights, taxiway lights, and lighted taxi guidance signs. A light base ground shall also be installed at each stake-mounted light fixture. A light base ground shall be installed and connected to the metal frame of each taxi guidance sign as detailed on the Plans and in accordance with the respective taxi guidance sign manufacturer recommendations. The light base ground shall be a #6 AWG bare Copper conductor bonded to the ground lug on the respective L-867 transformer base/light can or mounting stake and a **3/4-in. diameter by 10-ft long (minimum),** UL-listed, Copper-clad ground rod. Connections to ground lugs on the L-867 transformer base/light can or mounting stake shall be with a UL-listed grounding connector. Connections to ground rods shall be made with exothermic-weld type connectors, Cadweld by Pentair Erico Products, Inc., Thermoweld by Continental Industries, Inc., Ultraweld by Harger, or approved equal. Exothermic-weld connections shall be installed in conformance with the respective manufacturer's directions using molds, as required for each respective application. Bolted connections will not be permitted at ground rods. Top of ground rods shall be buried 12 in. minimum below grade, unless noted deeper on the Plans. **For each airfield light fixture and taxi guidance sign the Contractor shall test the made electrode ground system with an instrument specifically designed for testing ground systems. Test results shall be recorded for each airfield light fixture and each taxi guidance sign installation. If ground resistance exceeds 25 Ohms, contact the Project Engineer for further direction. Copies of ground system test results shall be furnished to the Resident Engineer/Resident Technician.**

For base mounted light fixtures the light fixtures must be bonded to the light base internal ground lug via a #6 AWG stranded Copper wire rated for 600 Volts with Green XHHW insulation or a braided ground strap of equivalent current rating. The ground wire length must be sufficient to allow the removal of the light fixture from the light base for routine maintenance. See the light fixture manufacturer's instructions for proper methods of attaching a bonding wire.

125-3.6 TESTING AIRFIELD LIGHTING SYSTEMS. Prior to beginning airfield lighting modifications and/or cable installation all existing series circuit cables shall be Megger tested

and recorded at the vault. All existing series circuit cable loops shall have the resistance tested and recorded for each circuit at the vault. Each constant current regulator shall be tested with results recorded. Copies of test results shall be provided to the Resident Engineer/Resident Technician and the respective Project Engineer.

After airfield lighting modifications, additions, and/or upgrades have been completed, series circuit cables shall be Megger tested and recorded at the vault. All series circuit cable loops shall have the resistance tested and recorded for each circuit at the vault. Each constant current regulator shall be tested with results recorded. Copies of test results shall be provided to the Resident Engineer/Resident Technician and the respective Project Engineer.

See Appendix A – "Constant Current Regulator and Cable Testing Forms" for additional information on testing requirements for airfield lighting systems. All testing will be considered incidental to the respective work items and no additional compensation will be allowed.

METHOD OF MEASUREMENT

125-4.1 Add the following:

"Ground resistance tests for the made electrode ground system at each airfield light fixture will be considered incidental to the respective airfield light fixture and no additional compensation will be allowed.

Testing the airfield lighting systems and the associated constant current regulator tests and cable tests will be considered incidental to the Contract and no additional compensation will be allowed.

Conduits, conduit nipples, conduit couplings, and other conduit fittings included with splice cans, junction structures, Navaid installations, base mounted airfield light fixtures, and/or taxi signs, will be considered incidental to the respective item for which they are installed and no additional compensation will be made.

Ground rods, grounding electrode conductors, connections, and associated grounding work included with airfield lights, taxi guidance signs, and/or splice cans will be considered incidental to the respective item for which they are installed and no additional compensation will be made."

BASIS OF PAYMENT

125-5.1 Add the following:

"Payment will be made at the contract price for each complete airfield light fixture installed in place by the Contractor and accepted by the Resident Engineer/Resident Technician. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials; and for all excavation, backfilling, and restoration; and for all labor, testing, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item AR125415 MITL – Base Mounted – per each”

END OF ITEM 125

DIVISION VII – TESTING

ITEM 611 COMPACTION CONTROL TESTS

GENERAL

For the purposes of this project, the maximum density shall be determined in accordance with ASTM D 698, Standard Proctor.

END OF ITEM 611

DIVISION VIII – FUELING FACILITY

ITEM AR800494 CONSTRUCT FUELING FACILITY
ITEM AR800561 SITE WORK FOR FUELING FACILITY
ITEM AR800562 RELOCATE EXISTING FUEL TANK
ITEM AR800586 REMOVE EXISTING FUELING FACILITY

DESCRIPTION

800-1.1. This item of work shall consist of the construction of a new fueling facility and removal/relocation of components of an existing fueling facility, as further described in the enclosed "SECTION 13200 – ABOVEGROUND STORAGE TANK INSTALLATION" specification. The following specifications apply to this work item, and are enclosed in the following pages:

DIVISION 01 - GENERAL REQUIREMENTS
1) SECTION 01330 – SUBMITTAL REQUIREMENTS
2) SECTION 01400 – QUALITY REQUIREMENTS

DIVISION 13 – SPECIAL CONSTRUCTION
1) SECTION 13200 – ABOVEGROUND STORAGE TANK INSTALLATION

DIVISION 16 – ELECTRICAL
1) SECTION 16010 – BASIC ELECTRICAL REQUIREMENTS
2) SECTION 16111 – CONDUIT AND RACEWAY
3) SECTION 16120 – BUILDING WIRE AND CABLE
4) SECTION 16130 – BOXES
5) SECTION 16190 – SUPPORTING DEVICES
6) SECTION 16195 – ELECTRICAL IDENTIFICATION
7) SECTION 16450 – GROUNDING AND BONDING
8) SECTION 16470 – PANELBOARDS
9) SECTION 16500 – LIGHTING
10) SECTION 16615 – SURGE PROTECTOR DEVICES
11) SECTION 16902 – ELECTRICAL CONTROL DEVICES

BASIS OF PAYMENT

800-2.1. Payment will be made (as described in the enclosed "SECTION 13200 – ABOVEGROUND STORAGE TANK INSTALLATION" specification) at the contract unit price per lump sum for the respective pay items listed below, including field measurements, verification of existing site conditions, furnishing and installing all equipment, materials, tools, labor and incidentals to complete the work in accordance with these specifications and subject to the terms and conditions of the Contract Documents.

Payment will be made under:

Item AR800494 Construct Fueling Facility - per lump sum
Item AR800561 Site Work for Fueling Facility - per lump sum
Item AR800562 Relocate Existing Fuel Tank - per lump sum
Item AR800586 Remove Existing Fueling Facility - per lump sum

END OF ITEMS AR800494, AR800561, AR800562, AR800586

DIVISION 01 – GENERAL REQUIREMENTS
SECTION 01330 – SUBMITTAL REQUIREMENTS

1. GENERAL

1.01 WORK INCLUDES

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

1.02 SUMMARY

A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

1.03 PRODUCT DATA

A. Contractor shall submit upon award, shop drawings and certifications. The Contractor shall prepare Shop Drawings for all parts of the work. Before commencing any work or providing any material, the Contractor shall submit for approval of the Engineer all Drawings relating to the construction, arrangement or disposition of the equipment entering into the Contract, and show the complete equipment with manufacturer's Specifications of same. Shop Drawings shall be fully descriptive of all the materials and equipment to be incorporated into this project. The Contractor shall carefully check all submitted Shop Drawings, making sure they are complete in all details and cover the specific items as hereinafter specified. Contractor shall submit sufficient quantities of shop drawings for his needs plus four (4) copies to be retained by the Engineer, (five (5) copies minimum). No material or equipment shall be allowed at the site until Shop Drawings have been reviewed by the Engineer/Owner's Representative and stamped "No Exceptions Taken" or Furnish as Corrected." Shop drawings stamped "Revise and Resubmit", "Rejected" or "Submit Specified Item" will require re-submittal and approval by the Engineer/Owner's Representative. Shop drawings shall include the project name, project location, submittal number, date of submittal, submitting Contractor's name and approval stamp, and specification section corresponding to equipment or materials. Provide shop drawings and certifications for the following:

1. Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in

accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: **http://www.faa.gov/airports/aip/buy_american/** for more information on the Airport Improvement Program Buy American Preferences requirements.

2. The overall development object for this project is the removal of the existing fuel dispensing facility and the furnishing and installation of a new fuel dispensing facility. The existing jet fuel tank shall be relocated. Per the FAA Program Guidance Letter 10-02 a waiver can be considered if at least 60 percent of the cost of the components and subcomponents in the facility or equipment are produced in the United States and the final assembly of the facility or equipment has occurred in the United States. For this project the components will include aboveground fuel storage tank, fuel dispensers, fuel management credit card reader, and the concrete pad. The subcomponents will include concrete, rebar, bollard pipes, conduits and raceways, wires and cables, ground rods, panelboard, surge protective device, and emergency shut off station. If the Bidder has concerns regarding compliance with the Airport Improvement Program Buy American Preferences for any of these components and/or subcomponents he may submit a waiver to the FAA in accordance with the FAA Program Guidance Letter 10-02.

3. Aboveground fuel storage tank for Augas.

4. Fuel Dispenser Systems.

5. Fuel Management System/Credit Card System.

6. Concrete mix designs.

7. Certification of aggregates.

8. Certification of rebar including certification of 100 percent domestic steel.

9. Shop drawings and/or certification of pre-cast concrete structures.

10. Bollard pipes, covers, and certification of 100 percent domestic steel.

11. Conduits and raceways (all types used on the project) and explosion proof conduit seal-off fittings. Include certification of 100 percent domestic steel for steel conduits.

12. Wire and cables (all types used on the project).

13. Junction boxes and enclosures.

14. Provide cut sheets with manufacturer's name, catalog number, dimensions, material, and UL listing for each type and size of ground rod used on the project. Include certification of 100 percent domestic steel for ground rods. Include cut sheets for exothermic weld connections, ground lugs, and ground wire.

15. Provide cut sheets, information, voltage rating, amperage rating, number of circuits, manufacturer's catalog number, main breaker rating, branch circuit breaker schedule, panel enclosure rating, service entrance rating, and associated options and accessories for each panelboard.

16. Surge protective devices.

17. Emergency shutoff stations.

1.04 OPERATIONS AND MAINTENANCE MANUALS

A. Provide an operation and maintenance manual for the fuel dispensing equipment.

B. Organize operating and maintenance data into suitable sets of manageable size. Submit two (2) copies of the manuals to the Owner. Include the following:

1. Approved Shop Drawings on each piece of equipment and specialty items furnished.

2. Maintenance operation and lubrication instruction, parts lists, and control and wiring diagrams on each piece of equipment furnished.

3. A "one-line diagram" and troubleshooting guide to help the user to determine what steps must be taken to correct any problem that may exist in the system.

4. Brief description of each system and components, starting and stopping procedures and emergency instructions and inspection, reporting and record keeping procedures, and forms.

5. Manufacturer's warranties.

2. PRODUCTS

2.01 SUBMITTAL PROCEDURES

A. Material Test Reports: Submit 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.

3. EXECUTION (Not Used)

4. PAYMENT (Not Used

END OF SECTION 01330

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DIVISION 01 – GENERAL REQUIREMENTS
SECTION 01400 - QUALITY REQUIREMENTS

1. GENERAL

1.01 WORK INCLUDES

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

1.02 REFERENCES TO STANDARDS

A. Comply with the Provisions of the following:

1. Buy American Preference, Title 49 U.S.C. Chapter 501.
2. Civil Rights Act of 1964, Title VI – Contractor Contractual Requirements.
3. Airport and Airway Improvement Act of 1982, Section 520 – General Civil Rights Provisions.
4. Lobbying and Influencing Federal Employees, 49 CFR Part 20, Appendix A.
5. Access to Records and Reports, 49 CFR Part 18.36(i).
6. Disadvantaged Business Enterprises, 49 CFR Part 26.
7. Energy Conservation Requirements, 49 CFR Part 18.36.
8. Breach of Contract Terms, 49 CFR Part 18.36.
9. Rights to Inventions, 49 CFR Part 18.36(i)(8).
10. Trade Restriction Clause, 49 CFR Part 30.13.
11. Veteran’s Preference, Title 49 U.S.C. 47112(c).
12. Davis-Bacon Requirements, 29 CFR Part 5.5.
13. Equal Employment Opportunity, 41 CFR Part 60-1.4.
14. Certification of Non-Segregated Facilities, 41 CFR Part 60-1.8.
15. Notice of Requirement for Affirmative Action, 41 CFR Part 60-2.
16. Standard Federal Equal Employment Opportunity Construction Contract Specifications, 41 CFR Part 60.43.

17. Termination of Contract, 49 CFR Part 18.36(i)(2).

18. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion, 49 CFR Part 29.

19. Contract Work Hours and Safety Standards Act Requirements, 29 CFR Part 5.

20. Clean Air and Water Pollution Control, 49 CFR Part 18.36(i)(12).

21. Rules and Regulations of the serving electric utility company.

22. Airport Improvement Program Buy American Preference.

23. NFPA 1 – Uniform Fire Code.

24. NFPA 10 - Standard for Portable Fire Extinguishers.

25. NFPA 30 - Flammable and Combustible Liquids Code (most current issue in force).

26. NFPA 30A – Code for Motor Fuel Dispensing Facilities and Repair Garages (most current issue in force).

27. NFPA 70 - National Electrical Code (NEC) (most current issue in force).

28. NFPA 70E – Standard for Electrical Safety in the Workplace.

29. NFPA 77 – Recommended Practice on Static Electricity (most current issue in force).

30. NFPA 327, “Standard Procedures for Cleaning or Safeguarding Small Tanks and Containers.”

31. NFPA 407 – Standard for Aircraft Fuel Servicing (most current issue in force), including Appendices for design and construction, installation, inspection and testing of fuel distribution system, tanks, piping, and other components related to installation of fuel storage and dispensing system.

32. UL 842, “Standard for Valves for Flammable Fluids.”

33. ANSI/UL 87, “Power Operated Dispensing Devices for Petroleum Products.”

34. ANSI/UL 913, “Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II and III Division 1 Hazardous (Classified) Locations.”

35. American Petroleum Institute (API) Standards. Regulations and Publications, including Appendices for design, cleaning, construction, installation of tanks, piping, and dispensing system.

36. API Bulletin 1529 Latest Edition, “Aviation Fueling Hose.”

37. Petroleum Equipment Institute (PEI) Standards RP-200 and RP-100-90.

38. Applicable Local, State, and Federal Codes and Regulations.

39. FAA Advisory Circular 150/5230-4A Aircraft Fuel Storage, Handling, and Dispensing on Airports.

40. Illinois Environmental Protection Agency.

41. Occupational Safety & Health Administration (OSHA).

42. American Petroleum Institute Specification API/PI 1581 5th Edition “Specifications and Qualification Procedures for Aviation Jet Fuel Filter/Separators.”

43. Illinois Administrative Code, Title 8: Agriculture and Animals, Chapter I: Department of Agriculture, Subchapter p: Weights and Measure, Part 600 Weights and Measures Act, Subpart F: Liquid Petroleum Measuring Devices, Section 600.660 Retail Liquid Petroleum Pumps Accurately Marked: Liters or Gallons. The Illinois Bureau of Weights and Measures confirmed that retail fuel dispensing systems used at airports are required to comply with this code.

44. Applicable Regulations, as specified in Title 41: Fire Protection, Chapter 1, Office of the State Fire Marshall, State of Illinois, Parts 160, and 180

45. 2006 International Fire Code, Section 312-Vehicle Impact Protection.

1.03 LISTING AND LABELING

A. Provide listing/approval stamp, label, or other marking on equipment made to specified standards as follows:

1. Terms “Listed” and “Labeled”: As defined in the “NEC,” Article 100.

2. Listing and Labeling Agency Qualifications: A “Nationally Recognized Testing Laboratory” (NRTL), as defined in OSHA Regulation 1910.7.

1.04 PRODUCT SUBSTITUTION

A. Equipment, specialties, and accessories are based on specific types, manufactures, and models indicated. Equipment and other components having equal performance characteristics by manufacturers other than first-named manufacturer may be considered, provided deviations in dimensions, operation, and other characteristics do not change design concept or intended performance as judged by the Owner. The burden of proof of equality of products is on the Bidder.

1.05 QUALITY CONTROL

A. All equipment and materials shall be new and limited to products regularly produced and recommended for service ratings in accordance with Owner's representative data or other comprehensive literature made available and in effect at time of bidding. In all cases where device, or devices, or part of equipment is herein referred to in singular, reference shall apply to as many items as required to complete installation.

2. PRODUCTS (Not Used)

3. EXECUTION (Not Used)

4. PAYMENT (Not Used)

END OF SECTION 01400

DIVISION 13 – SPECIAL CONSTRUCTION
SECTION 13200 – ABOVEGROUND STORAGE TANK INSTALLATION

1. GENERAL

1.01 WORK INCLUDES

A. The work covered by this specification shall include the purchase, delivery, furnishing, and installation of one (1) 10,000 Gallon Avgas aboveground fuel storage tank and associated dispensing system with a fuel management system and the associated site work, concrete pad, bollards, and electrical work. The work shall include all labor, equipment, materials, transportation, shipping, tools, field measurements, verification of existing site conditions, site work, foundations, anchorage, electrical work, grounding, shop drawings, operational and maintenance manuals, warranties, all technical assistance and Airport personnel training, coordination, utility coordination, labeling, testing, and all incidentals required to place the respective facilities into proper working order to the satisfaction of the Owner's Representative, in accordance with these specifications and subject to the terms and conditions of the Contract Documents.

B. The work covered by this specification shall include the relocation of one (1) existing 10,000 Gallon Jet-A aboveground fuel storage tank and the purchase, delivery, furnishing, and installation of the associated dispensing system with a fuel management system and the associated site work, concrete pad, bollards, and electrical work. The work shall include all labor, equipment, materials, transportation, shipping, tools, field measurements, verification of existing site conditions, site work, foundations, anchorage, electrical work, grounding, shop drawings, operational and maintenance manuals, warranties, all technical assistance and Airport personnel training, coordination, utility coordination, labeling, testing, and all incidentals required to place the respective facilities into proper working order to the satisfaction of the Owner's Representative, in accordance with these specifications and subject to the terms and conditions of the Contract Documents.

C. The manufacturer of the fuel storage and dispensing systems offered shall have been continuously engaged in the design and production of aviation fuel storage and dispensing systems for a period of not less than five (5) years.

D. Removal of the existing Avgas tanks and removal of the dispensers and associated equipment and materials will be considered incidental to Item AR800586 Remove Existing Fueling Facility and no additional compensation will be provided.

E. The electric power feed and distribution system for the fuel facility will be considered incidental to Item AR800561 Site Work for Fueling Facility and no additional compensation will be provided.

F. The telephone line/communications link for the fuel facility will be considered incidental to Item AR800561 Site Work for Fueling Facility and no additional compensation will be provided.

G. The site lighting for the fuel facility will be considered incidental to Item AR800561 Site Work for Fueling Facility and no additional compensation will be provided.

H. The Contractor shall be required to apply for and obtain the required permits from the Office of the Illinois State Fire Marshal and local authorities of jurisdiction. Permit will be required to relocate the existing 10,000 Gallon Jet-A aboveground fuel storage tank and new dispensing system. Permit will be required to furnish the Avgas aboveground fuel storage tank and dispensing system. Aboveground fuel storage tanks shall be registered with the Office of the Illinois State Fire Marshal.

1.02 REFERENCE TO STANDARDS

A. NFPA 1 – Uniform Fire Code.

B. NFPA 10 - Standard for Portable Fire Extinguishers.

C. NFPA 30 - Flammable and Combustible Liquids Code (most current issue in force).

D. NFPA 30A – Code for Motor Fuel Dispensing Facilities and Repair Garages (most current issue in force).

E. NFPA 70 - National Electrical Code (NEC) (most current issue in force).

F. NFPA 70E – Standard for Electrical Safety in the Workplace.

G. NFPA 77 – Recommended Practice on Static Electricity (most current issue in force).

H. NFPA 327, “Standard Procedures for Cleaning or Safeguarding Small Tanks and Containers.”

I. NFPA 407 – Standard for Aircraft Fuel Servicing (most current issue in force), including Appendices for design and construction, installation, inspection and testing of fuel distribution system, tanks, piping, and other components related to installation of fuel storage and dispensing system.

J. UL 142, Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids.”

K. UL 842, “Standard for Valves for Flammable Fluids.”

L. UL 2085, “Standard for Protected Aboveground Tanks for Flammable and Combustible Liquids.”

M. ANSI/UL 87, “Power Operated Dispensing Devices for Petroleum Products.”

N. ANSI/UL 913, “Standard for Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II and III Division 1 Hazardous (Classified) Locations.”

O. American Petroleum Institute (API) Standards. Regulations and Publications, including Appendices for design, cleaning, construction, installation of tanks, piping, and dispensing system.

P. API Bulletin 1529 Latest Edition, “Aviation Fueling Hose.”

Q. Petroleum Equipment Institute (PEI) Standards RP-200 and RP-100-90.

R. Applicable Local, State, and Federal Codes and Regulations.

S. FAA Advisory Circular 150/5230-4B (current issue in effect) Aircraft Fuel Storage, Handling, and Dispensing on Airports.

T. FAA Advisory Circular 150/5370-2 (current issue in effect) “OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION”.

U. Illinois Environmental Protection Agency.

V. Occupational Safety & Health Administration (OSHA).

W. American Petroleum Institute Specification API/PI 1581 5th Edition “Specifications and Qualification Procedures for Aviation Jet Fuel Filter/Separators.”

X. Illinois Administrative Code, Title 8: Agriculture and Animals, Chapter I: Department of Agriculture, Subchapter p: Weights and Measure, Part 600 Weights and Measures Act, Subpart F: Liquid Petroleum Measuring Devices, Section 600.660 Retail Liquid Petroleum Pumps Accurately Marked: Liters or Gallons. The Illinois Bureau of Weights and Measures confirmed that retail fuel dispensing systems used at airports are required to comply with this code.

Y. Applicable Regulations, as specified in Title 41: Fire Protection, Chapter 1, Office of the State Fire Marshal, State of Illinois, Parts 160 and 180.

Z. 2006 International Fire Code, Section 312-Vehicle Impact Protection.

1.03 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering material and equipment for the following system components. Shop drawings are required for the fuel dispensing equipment and associated equipment and materials. **Note shop drawings that are submitted that do not include all of the following listed requirements will be rejected and will require resubmittal. Contractor shall use the following as a check list and shall verify all information noted below is included with the respective submittal prior to submitting the shop drawing for review. Shop drawings shall be clear and legible. Copies that are illegible will be rejected:**

1. Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment.

Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements.

2. **The overall development object for this project is the relocation of the existing Jet Fuel aboveground fuel storage tank, removal of the existing aboveground Avgas fuel storage tanks and fuel dispensing facility and the construction of a new fueling facility. Per the FAA Program Guidance Letter 10-02 a waiver can be considered if at least 60 percent of the cost of the components and subcomponents in the facility or equipment are produced in the United States and the final assembly of the facility or equipment has occurred in the United States. For this project the components will include aboveground fuel storage tanks, fuel dispensers, fuel management credit card reader, and the concrete pad. The subcomponents will include concrete, rebar, bollard pipes, conduits and raceways, wires and cables, ground rods, light fixtures, light poles, and emergency shut off stations. If the Bidder has concerns regarding compliance with the Airport Improvement Program Buy American Preferences for any of these components and/or subcomponents he may request the Sponsor (Airport) submit a waiver to the FAA in accordance with the FAA Program Guidance Letter 10-02. The successful Contractor will be responsible to provide the respective information to be included in the waiver request.**

3. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the Contract but, in all cases, prior to delivery of such materials and equipment.

4. Cut sheets, specifications, details, dimensions, and wiring diagrams for the aboveground fuel storage tanks, fuel dispensing systems, fuel management system, and associated equipment and materials.

5. Refer to Section 01330 Submittal Requirements for additional information on Shop drawing requirements.

B. Operation and Maintenance Manuals

1. The Contractor shall provide two (2) copies of all manuals, parts lists, instruction sheets, and other literature that is provided with all system components.

2. PRODUCTS

2.01 GENERAL INFORMATION

A. The complete fuel facility is to be turnkey. Each tank shall have a fuel dispensing system (one for Avgas and one for Jet Fuel). The fuel facility shall be complete with aboveground tanks, dispensing systems, credit card reader and fuel management system, concrete pad, bollards, site lighting, grounding, and associated electrical work.

B. The work covered shall include the furnishing of all equipment, materials, and labor to install and place into satisfactory operation, a complete factory-assembled, aboveground fuel storage tank for Avgas with a dispensing system, relocated aboveground fuel storage tank for Jet Fuel with the addition of a dispensing system, fuel management system, and accessories in accordance with the Plans and Specifications. Items included, but not limited to, are:

1. One 10,000-gallon AVGAS “Fireguard” protected, double-wall, aboveground, steel, horizontal fuel storage tank constructed to UL 142 and UL 2085. Aboveground fuel storage tank shall be UL 2085 listed, and shall bear the UL 2085 label.

2. Relocation of existing 10,000-gallon Jet Fuel aboveground, fuel storage tank.

3. Fuel dispensing systems for each tank.

4. Automated fueling device, mounted on a pedestal, capable of controlling and monitoring mechanical fuel dispensers.

5. Accounting/management system, interfaced with a major credit card accounting system company. Accounting system includes a card reader, receipt printer, logger, and inventory capabilities.

6. Personal Computer with monitor, printer, software, and modem, located as directed by the Airport Manager, interfaced to the fuel management/accounting system through the telephone system.

7. Dedicated telephone line, installed by the Contractor from the respective telephone service demarcation point or other point after the demarcation point to get telephone service to the accounting/management system, located at the fuel facility. The Contractor shall coordinate telephone to the fuel management system with the Airport Manager. Cost of routing the telephone line and associated materials and labor is the responsibility of the Contractor. Monthly telephone service charges are the Airport’s responsibility.

8. Electrical power to the site, as detailed on the Plans, per the requirements of Division 16 Electrical Specifications, and in accordance with all applicable Federal, State, and Local codes.

9. Concrete pad and bollards, in accordance to the Plans and Specifications.

10. Minor excavation, grading, and seeding, as required.

11. Spill kit.

12. Complete systems start up, including travel expense.

13. Training of designated personnel.

14. All electrical/electronic equipment shall be properly protected from power fluctuations and/or lightning.

15. Power consumption by equipment/components of the fuel facility system shall not affect performance of each other.

2.02 ABOVEGROUND FUEL STORAGE TANK FOR AVGAS

A. The aboveground fuel storage tank shall be a Fireguard double-wall, UL-2085 Listed “Protected” Aboveground Tank for Flammable and Combustible Liquids and shall bear the UL-2085 label. The tank shall have a minimum two-hour fire rating. The tank shall be leak tested after delivery and prior to installation. The Avgas Tank shall be a 10,000 Gallon tank. The fuel storage tank shall be an aboveground horizontal cylinder with flat heads, non-pressure, non-vacuum type, with support saddles, secondary/containment structure Type II, and shall consist of a secondary tank encompassing the primary tank. Unit shall be furnished with factory-installed accessories, as specified herein or as indicated on the Drawings. The primary tank shall be located inside the containment structure, and shall be supported by steel supports attached to the secondary containment.

B. Tank Finishes: The fuel tank and equipment surface shall be blasted in accordance with SSPC-SP6 and painted with a high solids epoxy primer or equal. The exterior finish shall consist of two (2) coats of a white finish, weather-resistant, acrylic enamel paint. The exterior finish shall conform to the respective coating manufacturer’s requirements for application and for minimum dry-film thickness requirements. The fuel tank interior shall be sandblasted in accordance with SSPC-SP10 and furnished with an epoxy coating compatible with jet fuel and aviation fuel. The interior liner finish shall conform to the respective coating manufacturer’s requirements for applications and for minimum dry-film thickness requirements, final coat to be white to off-white in color. The tanks will be subject to a 10 day soak test as required by major Aviation Fuel suppliers to verify the fuel and coating are compatible. The contractor is responsible for all costs associated with this test and the associated ASTM 1655 laboratory testing. In the event of a failure of this soak test, the contractor will be responsible for all cost associated with the removal and re-application of the tank interior coating as well as all costs

associated with removal, disposal and replacement of the fuel used for the failed test.

C. The fuel storage tank dispensing system shall be skid-mounted package unit suitable for outdoor installation. Note it is not mandatory that the fuel dispensing system be attached to the frame of the aboveground fuel storage tank. Where the dispensing system skid is attached to the frame of the aboveground fuel storage tank it shall be done in a manner that is acceptable to the respective tank manufacturer, shall not affect the tank warranty, and shall not void the tank UL listing. The fuel dispensing system skid shall be adequately sized for the respective equipment and shall include a spill containment area in accordance with the requirements of sized in accordance with the requirements of Title 41: Fire Protection, Chapter 1, Office of the State Fire Marshal, State of Illinois, Part 180.

D. Man-way: The man-way for the primary tank shall be a steel extension cylinder welded in the top of the tank with flange for cover, and shall be a minimum of 24-in. diameter and located in a position to allow access to the floating suction.

E. Tank nozzles and connections: The fill and suction nozzles shall be 3 in., 150# flanged and located on the tank head above the maximum liquid level of the tank. All other tank bung connections and locations shall be in accordance with the respective tank manufacturer's recommendations. Tank bungs 2 in. or less, threaded steel pipe connections are acceptable. Tank bungs larger than 2 in. shall use welded and/or flanged pipe connections.

F. A water collecting sump system with anti-siphon valve and a lockable 3/4-in. valve shall be installed in the tank and piped from an outlet above the maximum fill level. The hand pump shall be positioned to operate from ground level and be capable of pulling the fuel from the tank low point sump pipe and discharging the sample into a sample bucket placed on the pavement at the tank rear.

2.03 EXISTING ABOVEGROUND FUEL STORAGE TANK FOR JET FUEL

A. The existing Jet Fuel tank is a Modern Welding Company Fireguard, UL-2085, Secondary Containment Aboveground Storage Tank for Flammable Liquids. Nameplate data is as follows: Manufacture Date: 5/2006. Model Number MWCFG-96" Diameter -10,000 Gallons Capacity. Tank Weight 25,000 pounds. Steel Tank Institute Fireguard Serial Number 17963. Modern Welding Company Protected Secondary Containment Aboveground Tank for Flammable Liquids UL Listed UL -2085, Number B-464237. This tank shall be relocated.

2.04 ABOVEGROUND TANK ACCESSORIES

A. The following accessories for the storage tank shall be provided factory installed, as indicated herein.

1. Certification Plate: Underwriter's Laboratory UL 2085 label shall be permanently affixed to each tank.

2. Tank Fill: Tank shall be equipped with a means of transferring fuel through a bottom loading system into the tank. Seal welded, 3-in. fill piping into primary tank with over-fill protection to completely stop the flow of fuel at 95 percent. The bottom loading system shall conform to NFPA 30 Article 4.3.2.5 Tank Openings Other than Vents for Aboveground Tanks, and shall include the following:

    a. 3-in. cam lock fill pipe with hose fitting and dust cap for tank truck hookup.
    b. 3-in. x 20-in. mesh removable baskets of Type 316 stainless steel, wire mesh screen. Pressure drop for clean strainer shall not exceed 3 psig at design flow rates.
    c. 3-in. manual ball valve or manual butterfly style valve suitable for aviation fuel service and the respective application.
    d. 3-in. 150# flanged ductile iron swing check valve.
    e. 3-in. 150# flanged ductile iron overfill/check valve.

3. Overfill Protection System: Tank shall be equipped with a 3-in. float activated diaphragm valve by CLA-VAL, OCV Control Valves, OPW, or approved equal, in conformance with NFPA 30 Article 4.6.1 Prevention of Overfilling of Tanks. An internal float shall activate the valve completely stopping the flow when tank is 95 percent full. Include alarm notification to alert the transfer operator when the tank is no more than 90 percent full by restricting the flow of liquid into the tank or triggering the high level alarm.

4. Fusible Link Emergency Fire Valve: Conforming to NFPA 30 and located adjacent to the tank. The valve shall close upon sensing heat from a fire. The fire valve can also be manually closed for maintenance of dispensing components while product remains in the tank. The valve shall be of ductile iron construction, Teflon packing, stainless steel spring, and shall have 165º F. rated fusible link. Morrison Brothers 2-in. - Fig. 346DI, or approved equal.

5. Explosion-Proof Solenoid Valve: The solenoid shall prevent the siphoning of product in the event of failure of connected piping or components in accordance with NFPA 30A Part 4.2.4. The solenoid valve shall not be energized, except when the fuel pump is on. All soft seal parts of the solenoid valve shall be of Viton®. If the solenoid valve was to fail, it shall fail in a position that will prevent the fuel in the tank from being siphoned or pumped from the tank.

6. Check Valve: Provide check valve in the suction piping. Check valve shall be properly sized and selected for the respective fuel type, system piping, and application.

7. Operating Vent: An operating vent shall be provided on the top of the aboveground fuel storage tank extending to 12 ft aboveground level. The vent shall conform to the requirements of NFPA 30 Article 4.2.5 Design of Tank Vents and suitable for the respective fuel type.

8. Emergency Vent: Provide on the top of the storage tank. The emergency vent shall relieve internal pressures in excess of 2.5 psi above the pressure/vacuum vent. The vent shall conform to the requirements of NFPA 30 Article 4.2.5.2 Emergency Relief Venting for Fire Exposure for Aboveground Tanks. The vent shall be sized for the respective tank, and shall have flow and pressure stamped on emergency vent. The emergency vent shall be a Morrison 244, or approved equal.

9. Interstitial Emergency Vent: The vent shall conform to the requirements of NFPA 30 Article 4.2.5.2 Emergency Relief Venting for Fire Exposure for Aboveground Tanks. The vent shall be sized for the respective tank, and shall have flow and pressure stamped on emergency vent. Should the product tank rupture in a fire, the interstitial vent shall allow adequate venting of the secondary containment tank. The interstitial emergency vent shall be a Morrison 244, or approved equal.

10. Liquid Level Gauge Assembly: External product level gauge with dial readout for ground level reading per the applicable sections of NFPA 30. Clock [dial] gauge with overfill alarm. High-level warning alarm shall consist of a battery-powered, intrinsically-safe, alarm, unit-mounted remote from the gauge. Alarm shall be set for desired level during installation, and can be reset at any time for a change in alarm level requirements. The alarm shall have 90 decibel, high pitched “Beep” cycle alarm, an on-off test switch, and powered by two (2) 9-Volt batteries, housed in plastic weather-proof housing. The gauge shall be adjustable to rotate 360 degrees after mounting. Provide necessary flat device, direct read face plate, decals for indicating overfill, and re-order levels. Morrison 2-in. - Fig. 818 clock gauge with Morrison 909 overfill alarm, or approved equal. Provide conversion charts necessary to convert product reading to gallons. Include a spare tank port to accommodate a Tank Sentinel tank monitoring system level probe.

11. Interstitial Monitoring: Provide a gauge to monitor the interstitial space of the respective tank. Should a leak occur in the primary tank, it shall be quickly noted in the sight gauge. Provide an interstitial vacuum test port located on the top of the tank, conforming to the applicable sections of NFPA 30. Test port shall be designed to enable a vacuum test on the interstitial space throughout the life of the tank. Include a spare tank port in the interstitial space to accommodate a Tank Sentinel tank monitoring system leak detector.

12. Leak Containment Chamber: Spill containment shall be provided for dispensers.

13. Stage I Vapor Recovery/Overflow: AVGAS SYSTEM ONLY, Provide Stage I vapor recovery piping and connections in locking cover.

14. Floating Suction System: Floating suction system, with a test pull line of coated stainless steel cable installed in each system, minimizing the potential of allowing water or particulate matter through filter systems.

15. Electric Wiring in Conduit: The systems shall arrive pre-wired with conduit stub-outs for connection to power supplies and interface to the fuel management system. All electric wiring associated with the system shall be in galvanized rigid steel conduit in accordance with the Chapter 5, Articles 500, 501, 514, and 515 of the NFPA 70, NEC.

16. Tank Supports and Equipment Porch System: The tank supports shall be as recommended by the respective tank and/or fuel system manufacturer and shall maintain the UL listed of the tank. Where the dispensing system skid/porch is attached to the tank it shall be done in a manner that is acceptable to the tank manufacturer and does not void the UL listing of the tank.

17. Lifting Lugs: Provide for handling and installation.

18. Ladders: OSHA design, carbon steel ladder rungs on rear of each tank in addition to an OSHA compliant side mounted ladder and tank top platform for access to the tank manual gauge port and floating suction test mechanism.

19. Tank Markings: The tanks shall be appropriately marked on all sides, according to the product stored in tank such as “AVGAS”, and marked with all safety decals, such as “NO SMOKING, STOP ENGINES, PRIOR TO FUELING TURN OFF ALL ELECTRICAL OR HEATING DEVICES, ALL PASSENGERS MUST DEPLANE” and “FLAMMABLE - KEEP FIRE & FLAME AWAY.” The marking shall comply with the Illinois State Fire Marshal’s requirements and NFPA as they pertain to the system.

20. Tank Base and Protection: The tanks shall be installed on a reinforced concrete base designed to support the fully loaded tank in accordance with the tank manufacturer’s recommendations and requirements and as detailed on the Plans.

2.05 AVGAS DISPENSER

A. AVGAS Dispenser shall be a complete dispensing system with equipment, materials, pump, hose, hose reel, with rewind motor, metering, filtering, piping, sump containment, controls, and accessories to interface to the aboveground fuel storage tank system in compliance with the requirements of the Office of the State Fire Marshal and the respective applicable codes. The fuel dispenser shall be enclosed in a stainless steel housing or corrosion resistant painted steel housing. The cabinet shall be designed to allow access to the equipment. Unit shall have the following factory-installed, piped, and wired:

1. Self-contained, suction-type, single-hose dispensing, gear pump, rated capacity required to deliver a minimum of 20 GPM for AVGAS and to the nozzle at the end of a 1 in. inside diameter hose, **75 ft** in length with manufacturer’s recommended accessories. All components shall be UL listed, ETL listed, or FM approved suitable for the respective application and suitable for use in the respective classified hazardous location.

2. Continuous duty, explosion-proof motor for Class I, Division 1, Group D hazardous locations, as defined in NFPA 70. Horsepower shall be as required per manufacturer's recommendations for the respective fuel system. Power available at the site is 120/240 VAC, single-phase.

3. Motor starters/contactors shall be properly sized and rated suitable for the respective pump motor horsepower and full load Amps. Motor starter enclosures located at the fuel facility site shall be NEMA 7, UL-listed, or FM-approved, suitable for use in Class I, Division 1, Group D hazardous locations. Provide clear working space in front of and about the motor starters to comply with National Electrical Code clearance requirements, including NEC 110.26. No obstructions will be permitted.

4. Each pump motor shall be provided with a disconnecting means located in site from the motor location to comply with National Electrical Code 430.102 and to allow lock out/tag out of each pump motor independent of the other pump motor(s). Safety switches/disconnects shall have horsepower ratings equal to or greater than those of the respective pump motor it is powering. Safety switches/disconnects shall have amperage ratings equal to or greater than that of the over-current protective device (circuit breaker or fuse) that feeds the respective pump motor. The disconnecting means shall open all ungrounded supply conductors and shall be designed so that no pole can be operated independently to comply with National Electrical Code 430.103. Safety switches/disconnects shall be shall be pad lockable in the off position. Disconnecting means located in a hazardous classified area of the fuel facility shall be NEMA 7, UL-listed, or FM-approved, suitable for use in Class I, Division 1, Group D hazardous locations. **Note the controller disconnecting means shall be permitted to serve as the disconnection means for the motor if it is in site from the motor location. Provide clear working space in front of and about the disconnecting means to comply with National Electrical Code clearance requirements, including NEC 110.26. No obstructions will be permitted.**

5. Register: Lighted and mechanical/digital electronic displays. Register shall display volume in total gallons, the unit selling price per gallon, and the total selling price in dollar and cents. This requirement is based on Illinois Administrative Code, Title 8: Agriculture and Animals, Chapter I: Department of Agriculture, Subchapter p: Weights and Measure, Part 600 Weights and Measures Act, Subpart F: Liquid Petroleum Measuring Devices, Section 600.660 Retail Liquid Petroleum Pumps Accurately Marked: Liters or Gallons. The Illinois Bureau of Weights and Measures has previously confirmed that retail fuel dispensing systems used at airports are required to comply with this code. Please include a light in the dispensing unit so that the unit price, total gallons and total cost can be seen with low light.

6. Avgas fuel hose, 1 in. inside diameter, or as recommended by the fuel system equipment manufacturer to accommodate the respective fuel deliver rate, 75 ft long, complying with NFPA 407 and API 1529. Contractor

shall coordinate permit approval from the OSFM for 75-ft hose. Include hose reel with a motor rewind.

7. Nozzle: Nozzle shall be UL-listed for aviation gasoline, 1-1/3 in. by 1 in. overwing nozzle with anti-misfueling spout and strainer with 100 mesh and quick disconnect fittings. Nozzle shall automatically shut-off when pump pressure shuts off, nozzle accidentally falls from tank, or tank is full. Nozzle shall be constructed of cast aluminum body, stainless steel stem, and aluminum disc. Nozzle shall have a cable with a plug or clip for bonding to the aircraft conforming to NFPA 407.

8. Hose Reel: Heavy-duty, 115 VAC, single-phase, 60 Hz., explosion-proof electric rewind, non-ferrous swing joint/internals, Hannay Reel, or approved equal with all accessories, factory-installed and wired. Provide deadman control conforming to NFPA 407 Article 4.1.7 Deadman Controls.

9. Static Grounding and Reel: With 100 ft of cable, ground rod, spring rewind reel and mounting bracket by Hannay Reel, or approved equal. Provide one (1) static ground reel to serve both dispensing systems.

10. Include containment sump in accordance with the requirements of the Office of the Illinois State Fire Marshal.

11. Filter/separator for Avgas: The Avgas system is required to be filtered when being removed from the tank (pumping from the tank into aircraft). Rated 5 to 50 gpm, water absorbing type, suitable for use with Avgas, Velcon VF-61EP1/2 series, or an approved equal. Include differential pressure gauge. Bidder shall confirm the respective filter/separator is suitable and rated for the respective application. The filter/separator shall be furnished with four (4) spare cartridges and gaskets.

12. Include associated fuel piping and accessories to interface to the fuel storage tank system and comply with the requirements of the Office of the Illinois State Fire Marshal and other applicable codes.

2.06 JET FUEL DISPENSER

A. Jet Fuel Dispenser shall be a complete dispensing system with equipment, materials, pump, hose, hose reel, with rewind motor, metering, filtering, piping, sump containment, controls, and accessories to interface to the aboveground fuel storage tank system in compliance with the requirements of the Office of the State Fire Marshal and the respective applicable codes. The fuel dispenser shall be enclosed in a stainless steel housing or corrosion resistant painted steel housing. The cabinet shall be designed to allow access to the equipment. Unit shall have the following factory-installed, piped, and wired:

1. Self-contained, suction-type, single-hose dispensing, gear pump, rated capacity required to deliver a minimum of 50 GPM for Jet Fuel and to the nozzle at the end of a 1.5 in. inside diameter hose, **75** ft in length with manufacturer's recommended accessories. All components shall be UL

listed, ETL listed, or FM approved suitable for the respective application and suitable for use in the respective classified hazardous location.

2. Continuous duty, explosion-proof motor for Class I, Division 1, Group D hazardous locations, as defined in NFPA 70. Horsepower shall be as required per manufacturer's recommendations for the respective fuel system. Power available at the site is 120/240 VAC, single-phase.

3. Motor starters/contactors shall be properly sized and rated suitable for the respective pump motor horsepower and full load Amps. Motor starter enclosures located at the fuel facility site shall be NEMA 7, UL-listed, or FM-approved, suitable for use in Class I, Division 1, Group D hazardous locations. Provide clear working space in front of and about the motor starter means to comply with National Electrical Code clearance requirements, including NEC 110.26. No obstructions will be permitted.

4. Each pump motor shall be provided with a disconnecting means located in site from the motor location to comply with National Electrical Code 430.102 and to allow lock out/tag out of each pump motor independent of the other pump motor(s). Safety switches/disconnects shall have horsepower ratings equal to or greater than those of the respective pump motor it is powering. Safety switches/disconnects shall have amperage ratings equal to or greater than that of the over-current protective device (circuit breaker or fuse) that feeds the respective pump motor. The disconnecting means shall open all ungrounded supply conductors and shall be designed so that no pole can be operated independently to comply with National Electrical Code 430.103. Safety switches/disconnects shall be shall be pad lockable in the off position. Disconnecting means located in a hazardous classified area of the fuel facility shall be NEMA 7, UL-listed, or FM-approved, suitable for use in Class I, Division 1, Group D hazardous locations. **Note the controller disconnecting means shall be permitted to serve as the disconnection means for the motor if it is in site from the motor location. Provide clear working space in front of and about the disconnecting means to comply with National Electrical Code clearance requirements, including NEC 110.26. No obstructions will be permitted**.

5. Register: Lighted and mechanical/digital electronic displays. Register shall display volume in total gallons, the unit selling price per gallon, and the total selling price in dollar and cents. This requirement is based on Illinois Administrative Code, Title 8: Agriculture and Animals, Chapter I: Department of Agriculture, Subchapter p: Weights and Measure, Part 600 Weights and Measures Act, Subpart F: Liquid Petroleum Measuring Devices, Section 600.660 Retail Liquid Petroleum Pumps Accurately Marked: Liters or Gallons. The Illinois Bureau of Weights and Measures has previously confirmed that retail fuel dispensing systems used at airports are required to comply with this code. Please include a light in the dispensing unit so that the unit price, total gallons and total cost can be seen with low light.

6. Jet Fuel hose, 1.5 in. inside diameter, or as recommended by the fuel system equipment manufacturer to accommodate the respective fuel deliver rate, **75 ft** long, complying with NFPA 407 and API 1529. Contractor shall coordinate permit approval from the OSFM for 75-ft hose. Include hose reel with a motor rewind.

7. Nozzle: Nozzle shall be UL-listed for jet fuel. Jet fuel nozzle shall have a duckbill spout. Nozzle shall automatically shut-off when pump pressure shuts off, nozzle accidentally falls from tank, or tank is full. Nozzle shall be constructed of cast aluminum body, stainless steel stem, and aluminum disc. Nozzle shall have a cable with a plug or clip for bonding to the aircraft conforming to NFPA 407.

8. Hose Reel: Heavy-duty, 115 VAC, single-phase, 60 Hz., explosion-proof electric rewind, non-ferrous swing joint/internals, Hannay Reel, or approved equal with all accessories, factory-installed and wired. Provide deadman control conforming to NFPA 407 Article 4.1.7 Deadman Controls.

9. Static Grounding and Reel: With 100 ft of cable, ground rod, spring rewind reel and mounting bracket by Hannay Reel, or approved equal. Provide one (1) static ground reel to serve both dispensing systems.

10. Include containment sump in accordance with the requirements of the Office of the Illinois State Fire Marshal.

11. Filter for Jet-A Fuel: The fuel delivery rate for the Jet fuel dispenser is specified to be 50 gpm (minimum). The fuel off-loading rate (from the delivery truck into the tank is estimated to be approximately 200 gpm. The filter vessel and cartridges shall be rated for 240 gpm (minimum), suitable for Jet-A Fuel with the associated de-icing additives (Prist). The unit shall be capable of removing free and entrained water and solid contaminates in conformance to API 1581, Fifth edition, Group II, Class C. The filter system and piping shall be set up to allow recirculation of the fuel. Bidder shall be responsible to properly size the fuel piping and include all associated mounting hardware, supports, valves, drain valve, air eliminator, differential pressure gauge, pressure relief, drain valve, and accessories to accommodate the flow rates of the dispenser system. Include the following filter accessories:

B. Air Eliminator: Provides an air vent to permit escape of trapped air during filling of filter vessel. When the filter vessel is completely filled with fuel the air eliminator automatically closes.

C. Check Valve: This valve shall prevent air from siphoning into the filter vessel through the air eliminator.

D. Pressure Relief Valve: This valve shall be set to open at the filter manufacturer's recommended pressure to exhaust excess pressure built up in the system, due to thermal expansion in a non-flow condition.

E. Differential Pressure Gauge: Provide a pressure gauge assembly to measure the pressure difference between the inlet and the outlet of the filter and therefore providing indication of filter cartridge condition.

F. Sampling Probe: Provide a sampling probe to insure that the fuel samples are representative of the fuel in the pipe.

G. Drain Valve: Include a drain valve with the filter vessel.

H. Include sump heater for water defense.

I. Include hardware kit for cartridge installation and associated mounting hardware. Include adjustable leg assembly.

J. Include one (1) set of spare filter cartridges and head gasket.

K. Include additional accessories recommended by the respective fuel system manufacturer.

1. Include associated fuel piping and accessories to interface to the fuel storage tank system and comply with the requirements of the Office of the Illinois State Fire Marshal and other applicable codes.

2.07 FUEL MANAGEMENT SYSTEM

A. Fuel management system shall include network interface and appropriate software to accept AVTRIP, Multi Service, VISA, MasterCard, American Express, Discover, AVCARD, AIR card, and other major credit card company credit cards. Fuel management system shall also be capable of accepting individual cards programmed for use with a dedicated aircraft or individual. Fuel management system shall include keypad entry, receipt printer, card reader, credit card reader, auto/manual override control capability, controller for a minimum of two (2) hoses, and shall be capable of managing both fuel dispensing systems. Unit shall be mounted on a pedestal and rated suitable for outdoor use and the respective fuel system installation. Include software and associated communication cabling that is compatible with the respective computer located in the Terminal Building. Coordinate interface between telephone, computer, printer, and the fuel management system with the Airport Manager. Bidder shall furnish all accessories, programming, hardware, software, start-up, check-out, and training in order to provide a complete and operational fuel management system. Bidder is responsible to confirm the selected fuel management system will meet the requirements specified herein. The system shall be Fuelmaster 2560 Aviation Fuel Management System as manufactured by Syn-Tech Systems, Inc., QT Technologies M3000 PRO, or an approved equal. Include equipment and software capable of communicating with a computer and printer located at the Terminal Building via telephone line. The software shall be capable of producing printed reports such as quantity of fuel dispensed, credit card information, time of day, etc. System start up, including travel expenses, shall be provided.

2.08 EARTHWORK

A. Minor grading and earthwork will be required to prepare the fuel facility site. All excess dirt will be disposed of off the Airport property at the Contractor's own expense.

2.09 CONCRETE PAD

A. Concrete pad shall be constructed for the fuel tanks and dispensers site. The concrete shall be in accordance with Item 610 Structural Portland Cement Concrete and shall be an IDOT Class SI mix, produced by an approved IDOT concrete plant. The concrete pad shall be sized for the respective fuel dispensing equipment as detailed on the plans. Reinforcing steel shall be produced from 100 percent Domestic steel.

2.10 BOLLARDS

A. Bollards shall be furnished and installed in accordance to the Plans. Concrete used shall be an IDOT Class SI mix, produced by an approved IDOT concrete plant. Bollard pipes shall be produced from 100 percent Domestic steel to comply with the Airport Improvement Program Buy American Preference requirements and the Steel Products Procurement Act.

2.11 FIRE EXTINGUISHERS

A. Furnish and install two UL rated 40B:C fire extinguishers; Amerex Catalog Number B462, Buckeye Model 10HISA-STD or Model 10-STD, or approved equal. Include mounting brackets and mount to bollard posts. Fire extinguishers shall be made in the United States of America to comply with the Airport Improvement Program Buy American Preference Requirements. Confirm model numbers with the respective fire extinguisher manufacturer.

2.12 SPILL KIT

A. Furnish spill kit with container for the tank and dispenser installation. The spill kit shall be suitable to absorb oils, coolants, solvents and water and shall have an absorbency rating of not less than 60 gallons. Container for spill kit shall suitable for outdoor use and UV resistant or include a UV resistant cover. Spill kits shall be made in the United States of America to comply with the Airport Improvement program Buy American Preferences requirements. Spill kits shall be New Pig Spill Kit in 95 Gallon Container Part Number KIT262 with UV protection cover, ULINE Universal 95 Gallon Drum Spill Kit Model Number S-18305 with UV protection cover, or approved equal.

3. EXECUTION

3.01 WORK INCLUDED

A. The work covered by this specification shall include the purchase, delivery, furnishing, and installation of one (1) 10,000 Gallon Avgas aboveground fuel storage tank and associated dispensing system with a fuel management system and the associated site work, concrete pad, bollards, and electrical work. The work shall include all labor, equipment, materials, transportation, shipping, tools, field measurements, verification of existing site conditions, site work, foundations, anchorage, electrical work, grounding, shop drawings, operational and maintenance manuals, warranties, all technical assistance and Airport personnel training, coordination, utility coordination, labeling, testing, and all incidentals required to place the respective facilities into proper working order to the satisfaction of the Owner's Representative, in accordance with these specifications and subject to the terms and conditions of the Contract Documents.

B. The work covered by this specification shall include the relocation of one (1) existing 10,000 Gallon Jet-A aboveground fuel storage tank and the purchase, delivery, furnishing, and installation of the associated dispensing system with a fuel management system and the associated site work, concrete pad, bollards, and electrical work. The work shall include all labor, equipment, materials, transportation, shipping, tools, field measurements, verification of existing site conditions, site work, foundations, anchorage, electrical work, grounding, shop drawings, operational and maintenance manuals, warranties, all technical assistance and Airport personnel training, coordination, utility coordination, labeling, testing, and all incidentals required to place the respective facilities into proper working order to the satisfaction of the Owner's Representative, in accordance with these specifications and subject to the terms and conditions of the Contract Documents.

C. The manufacturer of the fuel storage and dispensing systems offered shall have been continuously engaged in the design and production of aviation fuel storage and dispensing systems for a period of not less than five (5) years.

D. Removal of the existing Avgas tanks and removal of the dispensers and associated equipment and materials will be considered incidental to Construct Fuel Facility work and no additional compensation will be provided.

E. The Contractor shall be required to apply for and obtain the required permits from the Office of the Illinois State Fire Marshal.

3.02 FIELD VERIFY EXISTING SITE CONDITIONS

A. Contractor shall field verify existing site conditions. Information provided on the Plans for the existing fuel facility and site are based on field data and record documents provided by the Airport's representative. Contractor shall confirm actual site conditions to provide replacement fuel storage and dispensing equipment that will accommodate and be compatible with the respective site conditions. Contractor shall also confirm the proposed fuel facility equipment will be compatible with the available site electrical distribution and voltage system, and provide fuel facility equipment that is suitable for use on the respective electrical distribution system.

B. Contractor shall identify and confirm existing power sources prior to disconnecting and removing equipment.

3.03 PERMITS

A. Contractor shall be responsible for the application and obtaining all required permits from the Office of the Illinois State Fire Marshal and local authorities of jurisdiction. The Contractor shall coordinate the application of the permit(s) with Office of the Illinois State Fire Marshal and the Illinois Department of Transportation, Division of Aeronautics. Copies of the permits shall also be provided to the Airport Manager and to Hanson Professional Services, Inc.

3.04 EQUIPMENT, MATERIALS, AND CONSTRUCTION

A. All equipment and materials to be furnished under these specifications shall be new and free from defects in either materials or workmanship.

3.05 DELIVERY, STORAGE, AND HANDLING

A. The Contractor is responsible for the safe delivery of the system; should damage, etc. be incurred during delivery, it will be the Contractor's responsibility to replace and/or repair damaged items to the satisfaction of the Airport Manager. The Contractor shall coordinate delivery of the system, and its' accessories, with the Airport Manager. The Contractor shall store system and components, as needed, in a safe and secure location, as directed by the Airport Manager.

3.06 INSTALLATION OF FUEL DISPENSERS AND OTHER EQUIPMENT

A. The fuel distribution equipment will be installed as per the pertinent manufacturer's requirements and recommendations. The installation will be completed in accordance with all Local, State, and Federal laws, codes and regulations. The Contractor must be capable of providing repair support "on a timely basis" throughout the period of warranty. The "emergency shutdown switch" shall be installed so that activation will cease fueling ability at the entire location.

3.07 ELECTRICAL INSTALLATION AND WORK

A. The Contractor shall furnish and install all equipment and materials necessary for a complete and operational installation of the respective equipment, as specified herein and as shown on the Plans. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of NFPA 70 - National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application.

Any installations which void the UL listing, Intertek Testing Services verification/ETL listing, FM approval (or other third party listing), and/or the manufacturer's warranty of a device will not be permitted.

1. Contractor shall keep a copy of the latest NEC in force on site at all times during construction for use as a reference.

2. Contractor shall keep a copy of the Plans, Special Provision Specifications including any addenda, and copies of any change orders on site at all times during construction.

3. The Contractor should examine the proposed site to evaluate the complexity of the work.

4. Contractor shall coordinate work and any power outages with the Airport Manager. Any shutdown of existing systems shall be scheduled with and approved by the Airport Manager prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

5. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

6. Contractor shall comply with the requirements of FAA Advisory Circular 150/5370-2 (current issue in effect) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".

7. The proposed power shall be supplied, as stated in the following sections, as detailed on the Plans, and as specified in Division 16 Electrical. All equipment and material shall be sized correctly in order to meet the power requirements under all power consumption conditions.

8. Electrical equipment installed at the fuel tank and dispenser site in classified hazardous locations (Class I, Division 1 or 2, Group D) shall be approved and listed suitable for the respective hazardous environment and shall conform to the applicable sections of the NEC, most current issue in force, including, but not limited to, Articles 500, 501, 504, 514, and 515, as well as all manufacturer's requirements and all other applicable local codes, laws, ordinances, and requirements in force.

9. All equipment installed by the Contractor shall be properly labeled.

10. All power and control cables shall be installed in conduit, wireways, pull boxes, junction boxes, or raceways. No exposed power or control wiring will be permitted. All cables shall be tagged at points of access to identify the respective circuit.

11. The Contractor shall be responsible for furnishing and setting all anchor bolts required to install his equipment.

12. Where concrete mounting pads are required for equipment mounting, the Contractor shall furnish all concreting and form work necessary to complete the installation.

13. Where electrical equipment is located on damp or wet walls or locations as directed, it shall be "stand-off" mounted 1/2 in. from the wall in a manner so that the rear of the equipment is freely exposed to the surrounding air.

3.08 LOCATE EXISTING UNDERGROUND UTILITIES AND CABLES

A. Locate Existing Underground Utilities and Cables. The location, size, and type of material of existing underground and/or aboveground utilities indicated on the Plans are not represented as being accurate, sufficient, or complete. Neither the Owner nor the Engineer assumes any responsibility whatever in respect to the accuracy, completeness, or sufficiency of the information. There is no guarantee, either expressed or implied, that the locations, size, and type of material of existing underground utilities indicated are representative of those to be encountered in the construction. It shall be the Contractor's responsibility to determine the actual location of all such facilities, including service connections to underground utilities. Prior to construction, the Contractor shall notify the utility companies of his operational plans, and shall obtain from the respective utility companies detailed information and assistance relative to the location of their facilities and the working schedule of the companies for removal or adjustment, where required. In the event an unexpected utility interference is encountered during construction, the Contractor shall immediately notify the utility company of jurisdiction. The Owner's Representative and/or the Engineer shall also be immediately notified. Any damage to such mains and services shall be restored to service at once and paid for by the Contractor at no additional cost to the Contract. All utility cables and lines shall be located by the respective utility.

B. **Contact JULIE (Joint Utility Location Information for Excavators) for utility information, phone: 1-800-892-0123.** Contact the FAA (Federal Aviation Administration) for assistance in locating FAA cables and utilities. Location of FAA power, control, and communication cables shall be coordinated with and/or located by the FAA. Also contact Airport Director/Manager and Airport Personnel for assistance in locating underground Airport cables and/or utilities. Also coordinate work with all aboveground utilities.

C. It will be necessary for the Contractor to make his own field investigation to determine the exact location of the underground lighting circuits or utilities at critical points so as to avoid any damage. The Contractor shall mark, in the field, locations of existing cables or other underground utilities. Any discrepancies between Plans and field conditions shall be resolved to the satisfaction of the Airport Manager or his Legal Representative prior to initiation of trenching or excavation.

D. Any airfield cable repairs or replacement to any part of the electrical system made necessary by the Contractor's operations will be made by him in the manner

specified in Sections 108 and 125, Standard Specifications for Construction of Airports, Adopted April 1, 2012, at no cost to the Airport. Cost of replacement to be borne by the Contractor shall include any expense incurred in locating as well as repairing or replacing damaged parts of the system by the owning agency. Any repairs that must be made by the Owner of the utility shall have the cost reimbursed to the utility by the Contractor.

E. Payment for locating and marking underground utilities and cables will not be paid for separately, but shall be considered incidental to the respective items of work for which they are necessary.

3.09 REMOVAL OF ABOVEGROUND FUEL STORAGE TANKS

A. Contractor shall examine the site to determine the extent of the work.

B. It will be the Contractor's responsibility to obtain all pertinent permits required for the relocation, removing, hauling and disposal of the respective aboveground fuel storage tanks and dispensing systems.

C. The State Fire Marshal's office shall be contacted prior to removal of the tanks and dispensers. Contractor shall coordinate removal work with the Office of the State Fire Marshal and the Airport Manager.

D. Contractor shall comply with the applicable codes and regulations in regard to removal of aboveground fuel storage tanks and dispensing systems.

E. All solid and liquid waste removed from the site by the Contractor shall be handled, transported and disposed of in conformance with all applicable Environmental Protection Agency, OSHA, Department of Transportation, State, and local regulations and codes.

F. Contractor shall coordinate removal work with the Airport Manager to allow the Airport to remove fuel from the tanks. Any remaining fuel left in the tanks at the time of removal, shall be removed and disposed of by the Contractor.

G. The existing 10,000 Gallon Jet-A aboveground fuel storage tank shall be relocated and used at the new fuel facility site.

H. Contractor shall remove the existing Avgas aboveground fuel storage tanks Avgas dispenser, Jet Fuel dispenser, and associated equipment, materials, piping and electrical and dispose of off the Airport site in a legal manner. The Airport will retain salvage rights of equipment and the right of first refusal for the respective equipment. Any equipment not salvaged by the Airport shall be disposed of by the Contractor in a legal manner off the Airport site. The associated electrical located at the fuel dispensing site shall be removed and disposed of off the Airport Site in a legal manner.

I. Contractor shall coordinate work and any power outages with the Airport Manager and/or the Airport Representative. Any shutdown of existing systems shall be scheduled with and approved by the Airport Manager and/or the Airport Representative prior to shutdown. Once shut down, the circuits shall be labeled as

such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures, including, but not limited to, 29 CFR Section 1910.147 The Control of Hazardous Energy (lockout/tagout).

J. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

K. Power for the respective fuel system equipment and/or other equipment associated with the fuel storage and dispensing system shall be disconnected at the respective power source prior to removing the respective equipment. Contractor shall field verify to confirm the respective power source for each respective system. The fuel system equipment appears to have power from multiple sources.

L. Existing cables, conduits, ducts, and electrical equipment associated with fuel system equipment to be removed shall be removed where exposed and abandoned in place unless it conflicts with new work and then it shall be removed at no additional cost to the Contract. If the Contractor elects to salvage the cable within the circuit to be removed, shown in the Construction Plans as cable to be abandoned, any cost associated with removal of the cable shall be considered incidental to the Contract and no additional compensation will be allowed.

3.10 SUPERVISION OF INSTALLATION AND START-UP

A. The Contractor shall provide qualified personnel to supervise the installation of the equipment, place the equipment into operation, and provide training on the operation and maintenance of the equipment to designated Airport personnel.

4. PAYMENT

4.01 METHOD OF MEASUREMENT

A. The quantity of the equipment to be paid for under Item AR800494 Construct Fueling Facility shall be measured for payment as a unit price per lump sum and shall consist of the respective aboveground fuel storage tanks and dispensing systems furnished, installed, complete and operational, and accepted by the Owner's Representative.

B. Relocation of the existing Jet Fuel tank shall be measured for payment as a unit price per lump sum under Item AR800562 Relocate Existing Fuel Tank and no additional compensation will be provided.

C. Removal of the existing Avgas tanks and removal of the dispensers and associated equipment and materials shall be measured for payment as a unit price per lump sum under Item AR800586 Remove Existing Fueling Facility and no additional compensation will be provided.

D. The electric power feed and distribution system for the fuel facility will be considered incidental to Item AR800561 Site Work for Fueling Facility and no additional compensation will be provided.

E. The telephone line/communications link for the fuel facility will be considered incidental to Item AR800561 Site Work for Fueling Facility and no additional compensation will be provided.

F. The site lighting for the fuel facility will be considered incidental to Item AR800561 Site Work for Fueling Facility and no additional compensation will be provided.

4.02 BASIS OF PAYMENT

A. Payment will be made at the Contract Unit Price for the completed installation for Item AR800494 Construct Fueling Facility per lump sum. This price shall be full compensation for furnishing and installing the aboveground fuel storage tanks and dispensing systems with all labor, equipment, materials, transportation, shipping, tools, field measurements, verification of existing site conditions, site work, foundations, anchorage, electrical work, grounding, shop drawings, operational and maintenance manuals, warranties, all technical assistance and Airport personnel training, coordination, utility coordination, labeling, testing, and all incidentals required to place the respective facilities into proper working order to the satisfaction of the Owner's Representative.

B. Payment for relocation of the existing Jet Fuel tank shall be made under Item AR800562 Relocate Existing Fuel Tank per lump sum. This price shall be full compensation for all labor, equipment, materials, transportation, shipping, tools, field measurements, verification of existing site conditions, site work, anchorage, electrical work, grounding, warranties, all technical assistance and Airport personnel training, coordination, utility coordination, labeling, testing, and all incidentals required to place the respective facilities into proper working order to the satisfaction of the Owner's Representative.

C. Payment for removal of the existing Avgas tanks and removal of the dispensers and associated equipment and materials shall be made under Item AR800586 Remove Existing Fueling Facility per lump sum. This price shall be full compensation for all labor, equipment, materials, transportation, shipping, tools, field measurements, verification of existing site conditions, site work, electrical work, all technical assistance and Airport personnel coordination, utility coordination, testing, and all incidentals required to remove and properly dispose of the respective facilities to the satisfaction of the Owner's Representative.

D. Payment for the electric power feed and distribution system for the fuel facility will be considered incidental to Item AR800561 Site Work for Fueling Facility. This price shall be full compensation for all labor, equipment, materials, transportation, shipping, tools, field measurements, verification of existing site conditions, site work, electrical work, grounding, shop drawings, operational and maintenance manuals, warranties, all technical assistance and Airport personnel training, coordination, utility coordination, labeling, testing, and all incidentals required to

place the respective facilities into proper working order to the satisfaction of the Owner's Representative.

E. Payment for the telephone line/communications link for the fuel facility will be considered incidental to Item AR800561 Site Work for Fueling Facility. This price shall be full compensation for all labor, equipment, materials, transportation, shipping, tools, field measurements, verification of existing site conditions, site work, electrical work, grounding, shop drawings, operational and maintenance manuals, warranties, all technical assistance and Airport personnel training, coordination, utility coordination, labeling, testing, and all incidentals required to place the respective facilities into proper working order to the satisfaction of the Owner's Representative.

F. The site lighting for the fuel facility will be considered incidental to Item AR800561 Site Work for Fueling Facility. This price shall be full compensation for all labor, equipment, materials, transportation, shipping, tools, field measurements, verification of existing site conditions, site work, electrical work, foundations, anchorage, grounding, shop drawings, operational and maintenance manuals, warranties, all technical assistance and Airport personnel training, coordination, utility coordination, labeling, testing, and all incidentals required to place the respective facilities into proper working order to the satisfaction of the Owner's Representative.

Payment will be made under:

Item AR800494 Construct Fueling Facility - per lump sum
Item AR800561 Site Work for Fueling Facility - per lump sum
Item AR800562 Relocate Existing Fuel Tank - per lump sum
Item AR800586 Remove Existing Fueling Facility - per lump sum

END OF SECTION 13200

DIVISION 16 – ELECTRICAL
SECTION 16010 - BASIC ELECTRICAL REQUIREMENTS

1. GENERAL

1.01 WORK INCLUDES

A. Work included in this section is general in nature and applicable to electrical system work. Contractor is also directed to other sections of Division 16 – Electrical for additional related Specifications for items described in this section.

B. Work included in this section shall apply to installation and testing of all materials and equipment necessary to completely install electrical system, as shown on Plans and described herein in these Specifications, or as may be necessary for a complete and operational electrical system.

C. Plans pertaining to this installation indicate general location of circuit breaker panels, load centers, conduits, wiring, lighting, outlets, and other details necessary for installation of system. Contractor shall field verify existing site conditions.

D. Electrical installation, as shown on Plans and as specified herein, is based upon available information, with regard to characteristics of building layout and associated equipment specified. In the event changes are necessary in order to accommodate mechanical equipment furnished, necessary revisions will be made with approval of Owner's Representative.

E. Any minor changes in location of equipment, to include conduits, outlets, etc. from those shown on Plans, shall be made without extra charge if so directed by Owner's Representative. These changes shall be any changes in location that had new location been the bid-upon location would not have resulted in an increase in contract construction cost over that actually bid.

F. The Contractor shall furnish and install all materials necessary for a complete and operational installation of the electrical equipment, as specified herein and as shown on the Plans. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of NFPA 70 - National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, Intertek Testing Services verification/ETL listing, FM approval, or other third party listing, and/or the manufacturer's warranty of a device will not be permitted.

G. Electrical equipment installed at the fuel tank and dispenser site in classified hazardous locations (Class I, Division 1 or 2, Group D) shall be approved and listed suitable for the respective hazardous environment and shall conform to the applicable sections of the NEC, most current issue in force, including but not limited to Articles 500, 501, 504, 514, and 515, as well as all manufacturer's

requirements and all other applicable local codes, laws, ordinances, and requirements in force.

H. Contractor shall keep a copy of the latest NEC in force on site at all times during construction for use as a reference.

I. Contractor shall keep a copy of the Plans, Special Provision Specifications, including any addenda, and copies of any Change Orders on site at all times during construction.

J. Contractor shall coordinate work and any power outages with the Airport Manager. Any shutdown of existing systems shall be scheduled with and approved by the Airport Manager prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

K. All electrical equipment installed by the Contractor shall be properly labeled.

1.02 CODE REQUIREMENTS, LAWS, AND ORDINANCES

A. In installation of this work, Contractor shall comply in every respect with requirements of NFPA 70- National Electrical Code, most current issue in force, and any state and local requirements, laws, and ordinances as may be applicable.

B. All equipment and installations at the fuel tank and dispenser sites shall conform to the applicable sections of the following:

1. FAA AC 150/5230-4B Aircraft Fuel Storage, Handling, and Dispensing on Airports;

2. Illinois Administrative Code, Title 8: Agriculture and Animals, Chapter I: Department of Agriculture, Subchapter p: Weights and Measure, Part 600 Weights and Measures Act, Subpart F: Liquid Petroleum Measuring Devices, Section 600.660 Retail Liquid Petroleum Pumps Accurately Marked: Liters or Gallons;

3. NFPA 30 – Flammable and Combustible Liquids Code (most current issue in force);

4. NFPA 30A – Code for Motor Fuel Dispensing Facilities and Repair Garages (most current issue in force);

5. NFPA 70 – National Electrical Code (most current issue in force);

6. NFPA 70E – Standard for Electrical Safety in the Workplace;

7. NFPA 77 – Recommended Practice on Static Electricity;

8. NFPA 407 – Standard for Aircraft Fuel Servicing (most current issue in force);

9. Title 41: Fire Protection, Chapter I, Office of the State Fire Marshall, State of Illinois, Part 160 Storage, Transportation, Sale, and Use of Gasoline and Volatile Oils; Rules and Regulations Relating to General Storage.

10. Title 41: Fire Protection, Chapter I, Office of the State Fire Marshall, State of Illinois, Part 180 Storage, Transportation, Sale, and Use of Gasoline and Volatile Oils.

C. All equipment and installations at the fuel tank and dispenser sites shall also conform to the requirements of the Office of the Illinois State Fire Marshall.

D. If, in opinion of the Contractor, there is anything in Plans or Specifications that will not strictly comply with above laws, ordinances, and rules, the matter shall be referred to the attention of the Owner's Representative for a decision before proceeding with that part of the work. No changes on Plans or in Specifications shall be made without the full consent of Owner's Representative.

E. Contractor shall obtain and pay for all licenses, permits, and inspections required by above laws, ordinances, and rules for entire electric wiring job called for in these Specifications and accompanying Plans.

2. PRODUCTS

2.01 PRODUCTS SHALL BE AS SPECIFIED IN OTHER SECTIONS AND AS DETAILED ON THE PLANS.

3. EXECUTION

3.01 EQUIPMENT STORAGE

A. All electrical equipment considered to be a part of this Contract, to include, but not be limited to, starters, transformers, lighting fixtures, etc., shall be stored before installation in a warm, dry, indoor area so as to protect the equipment from physical damage, freezing, dirt, and any other harmful effects. Equipment stored under tarpaulins or plastic covers will not be considered as meeting this requirement.

B. The installation of electrical equipment shall not begin until the structure, if required, within which the equipment is to be permanently housed, is complete enough to provide protection from weather and vandalism (i.e., roof and doors installed).

C. The Contractor will be responsible for ensuring conformance with these procedures.

3.02 DRAWINGS

A. Drawings for electrical work are a part of electrical Plans to which will be added, during the period of construction, any other Detail Drawings as may be necessary in opinion of Owner's Representative, to show proper installation of various appliances or equipment with relation to project.

B. The Drawings and Specifications are intended to be descriptive only, and any error or omissions of detail in either shall not relieve the Contractor from the obligations thereunder to install in correct detail any and all materials necessary for complete and operating electrical systems to the extent shown on the Drawings and described in this Specification.

C. The Contractor shall, during the progress of the job, record any and all changes or deviations from the original Drawings and, at the completion of the project, shall deliver to the Engineer a marked-up set of "as-built" Drawings.

3.03 SHOP AND ERECTION DRAWINGS

A. The Contractor shall prepare Shop Drawings for all parts of the electrical work. Before commencing any work or providing any material, the Contractor shall submit for approval of the Engineer all Drawings relating to the construction, arrangement or disposition of the equipment entering into the Contract, and show the complete equipment with manufacturer's Specifications of same.

B. Shop Drawings of all distribution panels, power and lighting systems, fixtures, wire, cables, devices, etc. shall be submitted for approval, as well as complete details of all systems not shown in detail on the Drawings.

C. Shop Drawings shall be fully descriptive of all the materials and equipment to be incorporated into this project. The Contractor shall carefully check all submitted Shop Drawings, making sure they are complete in all details and cover the specific items as hereinafter specified.

D. Contractor shall submit all shop drawings electronically in PDF format and organize them per the specification section they belong to.

E. No material or equipment shall be allowed at the site until Shop Drawings approved by the Owner's Representative are received by the Engineer at the site.

F. The following information shall be clearly marked on each Shop Drawing, catalog cut, pamphlet, specification sheet, etc. submitted:

PROJECT TITLE:
SPECIFICATION SECTION #:
BRANCH OF WORK: ELECTRICAL
NAME OF BUILDING OR LOCATION:
PAGE OF PLANS OR SPECS WITH WHICH EQUIPMENT COMPLIES:
DATE:
SUBMITTED BY:

G. The following electrical equipment and materials will require shop drawing submittals for this project.

1. Fuel Dispensers.
2. Fuel Management System/Credit Card Reader for Fuel System Dispensers.
3. Conduits (all types used on the project).
4. Explosion Proof Conduit Seal-off Fittings.
5. Wire and Cables (all types used on the project).
6. Ground Rods.
7. Exothermic Weld Connections.
8. Ground Wire.
9. Junction Boxes and Enclosures.
10. Panelboards and Circuit Breakers.
11. Surge Protective Devices.
12. Emergency Shutoff Stations.
13. Junction and Splice cans.

3.04 CONTINUITY OF SERVICE

A. Should it be required that the Contractor perform work in the facility which is in operation at the time the Contractor's work is to be performed, then the Contractor shall clear with the operating personnel of the facility and/or the Owner's Representative any power outages or equipment downtime that may occur as a result of the performance of his work.

3.05 EQUIPMENT MOUNTING

A. Electrical Contractor shall be responsible for furnishing and setting all anchor bolts required to install Contractor's equipment.

B. Where concrete mounting pads are required for equipment mounting. Electrical Contractor shall furnish all concrete and form work necessary to complete the installation.

C. Where electrical equipment is located on damp or wet walls or locations as directed, it shall be "stand-off" mounted 1/2-in. from wall in a manner so that rear of equipment is freely exposed to surrounding air. Method of mounting shall be approved by Owner's Representative before equipment is mounted.

3.06 GENERAL ELECTRICAL

The Contractor shall furnish and install all materials necessary for complete and operational installation of the respective equipment, as specified herein and as shown on the Plans. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of the NFPA 70 – National Electrical Code (NEC) most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, Intertek Testing Services verification/ETL listing (or other third party listing), and/or the manufacturer's warranty of a device will not be permitted.

A. Contractor shall keep a copy of the latest NEC in force on site at all times during construction for use as a reference.

B. Contractor shall keep a copy of the Plans, Special Provision Specifications including any addenda, and copies of any change orders on site at all times during construction.

C. Contractor shall coordinate work and any power outages with the Airport Manager and the Engineer. Any shutdown of existing systems shall be scheduled with and approved by the Airport Manager prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

D. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

E. All electrical equipment installed by the Contractor shall be properly labeled, and all cables must be tagged.

F. All power and control cables shall be installed in conduit, wireways, pull boxes, junction boxes, or raceways. No exposed power or control wiring will be permitted.

G. All changes to the electrical system shall be documented by the Contractor and provided to the Engineer.

H. Locate Existing Underground Utilities and Cables. The location, size, and type of material of existing underground and/or aboveground utilities indicated on the Plans are not represented as being accurate, sufficient, or complete. Neither the Owner nor the Engineer assumes any responsibility whatsoever in respect to the accuracy, completeness, or sufficiency of the information. There is no guarantee, either expressed or implied, that the locations, size, and type of material of existing underground utilities indicated are representative of those to be encountered in the construction. It shall be the Contractor's responsibility to

determine the actual location of all such facilities, including service connections to underground utilities. Prior to construction, the Contractor shall notify the utility companies of his operational plans, and shall obtain, from the respective utility companies, detailed information and assistance relative to the location of their facilities and the working schedule of the companies for removal or adjustment, where required. In the event an unexpected utility interference is encountered during construction, the Contractor shall immediately notify the utility company of jurisdiction. The Owner's Representative and/or the Engineer shall also be immediately notified. Any damage to such mains and services shall be restored to service at once and paid for by the Contractor at no additional cost to the Contract. All utility cables and lines shall be located by the respective utility. **Contact JULIE (Joint Utility Location Information for Excavators) for utility information, phone: 1-800-892-0123.** Contact the FAA (Federal Aviation Administration) for assistance in locating FAA cables and utilities. Location of FAA power, control, and communication cables shall be coordinated with and/or located by the FAA. Also contact Airport Director/Manager and Airport Personnel for assistance in locating underground Airport cables and/or utilities. Also coordinate work with all aboveground utilities.

I. Contractor shall comply with the requirements of FAA AC No. 150/5370-2 (current issue in effect) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION."

J. Secure, identify, and place any temporary exposed wiring in conduit to prevent electrocution and fire ignition sources."

3.07 TESTING

A. Tests shall be conducted for electrical equipment as detailed in the respective Specification sections.

B. Contractor shall provide services of the fuel system manufacturer's representative for the purpose of inspection, checkout, testing, start-up, instruction of user personnel, and any other required services to provide a complete and operational system. All tests shall be conducted in the presence of the Owner's Representative. Contractor shall furnish 2 copies of test results to Owner's Representative. Start-up procedure and tests shall include, but not be limited to, the following as well as other tests and requirements specified herein. Tests shall be conducted for each fuel system.

1. Conduct megger test on each motor. Record results.

2. Check control circuitry for proper operation.

3. Inspect each control panel, motor starter, disconnect, etc. for correct terminal connections and tightness, correct and tighten as required.

4. Check for correct rotation of pump motors, correct as required.

5. Measure voltage at no load (motor off) and at motor running under load. Record results for each motor.

6. Measure current in each phase with motor running under load. Record results for each motor.

7. Verify a label is provided on each fuel system control panel with the name, address, phone number, and emergency phone number of the service representative.

8. Verify proper operation of all pilot lights and alarm lights.

9. Test emergency fuel shut-off push button stations at each location and confirm each unit disables the respective fueling systems.

10. Instruct user personnel about the operations of the control panel and components; indicating items for routine maintenance check, operation modes, failure modes, alarm conditions, etc.

11. Conduct any additional tests as required by the manufacturer, or as requested by the Owner's Representative.

12. Record all test results and submit reports (two (2) copies) to Owner's Representative.

4. PAYMENT (Not Used)

END OF SECTION 16010

DIVISION 16 – ELECTRICAL
SECTION 16111 – CONDUIT AND RACEWAY

1. GENERAL

1.01 DESCRIPTION OF WORK

A. The work included in this section is the conduits, raceways and fitting required for a complete and operational electrical system.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16120 – Building Wire and Cable.

C. Section 16450 – Grounding and Bonding.

1.03 REFERENCE TO STANDARDS

A. ANSI C80.1 – Rigid Steel Conduit, Zinc Coated.

B. ANSI C80.3 – Electrical Metallic Tubing, Zinc Coated.

C. ANSI C80.4 – Fittings Rigid Metal Conduit and EMT.

D. ASTM D3350 – Specification of Polyethylene Plastics Pipe and Fittings Materials.

E. ASTM F2160 – Standard Specification for Solid Wall, High-Density Polyethylene Conduit Based on Controlled Outside Diameter.

F. NEMA TC-2 – Electrical Plastic Tubing and Conduit.

G. NEMA TC-3 – Fittings Rigid PVC Conduit and Tubing.

H. NEMA TC-7 – Smooth-Wall Coilable Polyethylene Electrical Plastic Conduit.

I. NFPA 70, National Electrical Code (NEC) (most current issue in force).

J. UL Standard 1 – Flexible Metal Conduit.

K. UL Standard 6 – Rigid Metal Conduit.

L. UL Standard 360 – Liquid-Tight Flexible Steel Conduit.

M. UL Standard 514B – Conduit, Tubing and Cable Fittings.

N. UL Standard 651 – Schedule 40 and 80 Rigid PVC Conduit.

O. UL Standard 651B – Standard for Continuous Length High-Density Polyethylene (HDPE) Conduit.

P. UL Standard 797 – Electrical Metallic Tubing.

1.04 DELIVERY, STORAGE AND HANDLING

A. Threads of metal conduits shall be protected by plastic caps. Fittings shall be stored in boxes. All equipment shall be stored on pallets to prevent contact with earth and shall be covered with plastic sheeting to protect them from dirt and weather.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for each type of conduit or duct to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected:**

1. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements.**

2. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

3. Shop drawings shall include conduit and/or duct cut sheets with type, size, specifications, UL listing, manufacturer, and catalog or part number.

4. Provide certification that steel conduits are manufactured in the United States of America and made with 100 percent domestic steel.

5. For plastic duct to be installed by boring method, provide manufacturer's literature confirming the respective duct is suitable for directional boring with the respective Shop Drawing submittal.

1.06 QUALIFICATIONS

A. All material shall be purchased new from suppliers/manufacturers regularly engaged in the business of electrical conduit, ducts and fittings supply.

2. PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. Galvanized Rigid Steel Conduit

Rigid Steel Conduit and fittings shall be hot-dipped, galvanized, UL-listed, and produced in accordance with UL Standard 6 – Rigid Metal Conduit and ANSI C80.1 – Rigid Steel Conduit, Zinc Coated. Couplings, connectors, and fittings for rigid steel conduit shall be threaded, galvanized steel or galvanized, malleable iron, specifically designed and manufactured for the purpose. Fittings shall conform to ANSI C80.4 – Fittings Rigid Metal Conduit and EMT and UL 514B – Conduit, Tubing, and Cable Fittings. Set screw type fittings are not acceptable. Steel used to manufacture conduits shall be 100 percent domestic steel. Contractor shall provide certification that the respective steel conduits used on this project are manufactured from 100 percent domestic steel.

B. Schedule 40 PVC and Schedule 80 PVC Conduit

Conduit shall be Schedule 40 PVC, 90°C, UL rated or approved equal. Material shall comply with NEMA Specification TC-2 (Conduit), TC-3 (Fittings-UL-514), and UL-651 (Standard for rigid nonmetallic conduit). The conduit and fittings shall carry a UL label (on each 10 ft length of conduit and stamped or molded on every fitting). Conduit and fittings shall be identified for type and manufacturer and shall be traceable to location of plant and date manufactured. The markings shall be legible and permanent. The conduit shall be made from polyvinyl chloride C-300 compound which includes inert modifiers to improve weatherability, heat distortion. Clean rework material, generated by the manufacturer's own conduit production, may be used by the same manufacturer, provided the end products meet the requirements of this Specification. The conduit and fittings shall be homogeneous plastic material free from visible cracks, holes, or foreign inclusions. The conduit bore shall be smooth and free of blisters, nicks or other imperfections which could mar conductors or cables. Conduit, fittings and cement shall be produced by the same manufacturer to assure system integrity and shall be Carlon Plus 40, Plus 80 conduit, or approved equal.

C. Plastic Conduit for Directional Boring Installation

Conduits for directional boring shall be Schedule 40 PVC or Schedule 80 PVC conduit, UL-listed, rated for 90°C cable-conforming to NEMA Standard TC-2 and UL 651 and suitable for directional boring installation, Schedule 80 HDPE conduit, UL-listed, conforming to NEMA Standard TC-7 and UL 651B and

suitable for directional boring installation, or Wall Type SDR 9 or SDR 11 HDPE conduit manufactured in accordance with ASTM D-3350 (Specification of Polyethylene Plastics Pipe and Fittings Materials) and ASTM F2160 (Standard Specification for Solid Wall, High-Density Polyethylene Conduit Based on Controlled Outside Diameter), and suitable for directional boring installation. Per NEC 300.5 (K), raceways installed using directional boring equipment shall be approved for the purpose. Provide manufacturer's literature confirming the respective duct is suitable for directional boring with the respective Shop Drawing submittal. Conduits shall be suitable for underground applications encased in concrete or direct burial, and suitable for exposed applications aboveground.

D. Liquid-Tight, Flexible Metal Conduit (Non-Explosion Proof)

Liquid-tight, flexible metal conduit shall consist of polyvinyl jacket over flexible, hot-dip, galvanized steel tubing. The flexible conduit shall be completely sealed from liquids, dust, dirt, and fumes and be resistant to oil, gasoline, grease, and abrasion. Jacket shall also be sunlight-resistant. Liquid-tight, flexible metal conduit shall be UL-listed, suitable for use as a grounding conductor, and comply with Article 350 of the NEC. **Liquid-tight, flexible metal conduit and associated fittings shall be UL-listed to meet the requirements of NEC 350.6.** Where liquid-tight, flexible metal conduit is installed in a Class I, Division 2 classified hazardous location it shall also be listed suitable for use in Class I, Division 2 classified hazardous locations. Liquid tight flexible metal conduit shall not be installed in a Class I, Division 1 classified hazardous location except for use with intrinsically safe wiring. Liquid-tight, flexible metal conduit shall be Anaconda Sealtite Type UA, as manufactured by Anamet Electrical Inc., 1000 Broadway Avenue East, Mattoon, Illinois 61938-0039, (Phone: 217-234-8844), Liquatite Type LA as manufactured by Electri-Flex Company, 222 W. Central Ave., Roselle, Illinois 60172, (Phone: 630-529-2920 or 1-800-323-6174), or approved equal. **Do not install liquid-tight, flexible metal conduit that is not UL listed. Contractor shall confirm liquid-tight, flexible metal conduit bears the UL label prior to installation.**

E. Flexible Metal Conduit (Non-Explosion Proof)

Flexible metal conduit shall be hot dipped galvanized steel or Aluminum flexible conduit and shall comply with UL-1. Flexible metal conduit shall be UL-listed, suitable for use as a grounding conductor, and comply with Article 348 of the NEC. **Flexible metal conduit and associated fittings shall be UL-listed to meet the requirements of NEC 348.6.** Flexible metal conduit shall not be installed in a Class I, Division 1 or Division 2 classified hazardous location except for use with intrinsically safe wiring. **Do not install flexible metal conduit that is not UL listed. Contractor shall confirm flexible metal conduit bears the UL label prior to installation.**

F. Square Duct/Wireway (Interior Locations)

Square duct shall be sized for the respective application and/or as detailed on the Plans. Wireway shall be installed, as indicated on the Plans, including, but not limited to, straight lengths, elbows, tees, offsets, panel adaptors, closing plates, wire retainers, and supports, as required for a complete installation. Wireways shall be constructed of 16-gauge steel before finishes are applied. All

straight lengths of wireway shall have hinged or bolt-on covers. Lengths shall be provided with cover latches, a minimum of every 3 ft, which shall hold the cover securely in-place when closed. Sealing ears shall be provided on both the wireway lengths and connector covers so that the entire run can be sealed. Wireways shall not be less than 6 in. by 6 in., or as detailed on the Plans. Where wire ways are furnished with knockouts, all conduits entering the wireway through concentric or eccentric knockouts shall be provided with grounding bushings with bonding jumpers. Standard locknuts or bushings shall not be the sole means for bonding where a conduit enters an enclosure through a concentric or eccentric knockout. Connectors shall be slip-in type with self-retained mounting screws. They shall also have the feature to allow “lay-in” of all conductors. Wireways shall be provided with a gray epoxy-painted finish applied over a corrosion-resistant phosphate primer or powder coated paint finish. All wireway lengths and accessories shall be Underwriter’s Laboratories listed and labeled in conformance with UL 870 Standards for Wireways, Auxiliary Gutters, and Associated Fittings and conform to NEMA 1 enclosure rating.

G. Square Duct/Wireway (Exterior Locations)

Square duct shall be sized for the respective application and/or as detailed on the Plans. Wireways for exterior locations shall be NEMA 4X stainless steel with hinged cover as manufactured by Hoffman Enclosures Inc., or approved equal. All wireway lengths and accessories shall be Underwriter’s Laboratories listed and labeled in conformance with UL 870 Standards for Wireways, Auxiliary Gutters, and Associated Fittings and conform to NEMA 4, 4X enclosure rating.

H. Electrical Metallic Tubing (EMT)

Electrical Metallic Tubing shall be galvanized steel tubing conforming to ANSI C80.3 and U.L. 797. Electrical Metallic Tubing shall be as manufactured by Allied Tube and Conduit Corporation, or equal. All EMT and mounting hardware shall be constructed of corrosion resistant materials and be listed for use in wet locations. EMT fittings, couplings and connectors shall be steel compression type. Set screw fittings will not be allowed. Steel used to manufacture conduits shall be 100 percent domestic steel. Contractor shall provide certification that the respective steel conduits used on this project are manufactured from 100 percent domestic steel.

I. Explosion-Proof Flexible Conduit

Explosion-proof flexible conduit shall be suitable for use in Class I, Division 1, Group D hazardous locations, and liquid-tight for wet locations. Conduit shall have an interior insulating liner to protect conductors from abrasion under vibrating conditions. Conduit shall provide a continuous electrical path. Explosion proof flexible conduit shall be Crouse-Hinds, O-Z/Gedney ECGJH, ECLK Series, Appleton EXGJH or EXLK Series Flexible Coupling, or equal.

J. Explosion Proof Conduit Seals

Explosion-proof conduit seals shall be suitable for use in Class I, Division 1, Group D hazardous location. Explosion proof conduit seals shall be Crouse-

Hinds EYS or EZS Series, Appleton EYS, ESU, or EY Series, O-Z/Gedney EYA, EY, EZS Series explosion-proof sealing fitting, or equal.

K. Miscellaneous Fittings

Fittings shall be suitable for use with conduits and ducts supplied. All conduit bodies, fittings, and boxes installed in classified hazardous locations (Class I, Division 1 or 2, Group D) shall be UL-listed, FM listed, or ETL listed suitable for use in the respective classified hazardous location. Fittings shall be as manufactured by Appleton, Crouse-Hinds, Hubbell-Killark, O-Z/Gedney, or equal.

Provide NEMA 4, 4X hubs for all conduit entries into NEMA 4, 4X equipment enclosures to maintain the NEMA 4, 4X rating of the respective enclosure. Hubs for use with NEMA 4X stainless steel enclosures shall be NEMA 4X stainless steel hubs, unless approved otherwise by the Project Engineer.

L. Fire Stopping Material

1. Fire stopping materials shall consist of commercially manufactured products capable of passing ASTM E-814 (UL 1479) Standard Method of Fire Test for Through Penetration Fire Stops.

2. Fire stopping materials shall maintain the rating of the wall, partition or floor opening that penetration is made. Comply with NEC 300.21.

3. Fire stopping materials shall be U.L. classified.

4. Acceptable Products:

a. 3M - Fire Barrier.
b. Thomas & Betts - Flame Safe.
c. Nelson Electric – Flameseal.

3. EXECUTION

3.01 INSPECTION

A. All conduits shall be inspected for proper fit and finish, for out-of-round and for proper thickness. All burrs and flashing shall be removed. Conduit and fittings shall be clean and free of obstructions.

3.02 LOCATE EXISTING UTILITIES

A. The location, size, and type of material of existing underground and/or aboveground utilities indicated on the Plans are not represented as being accurate, sufficient, or complete. Neither the Owner nor the Engineer assumes any responsibility whatsoever in respect to the accuracy, completeness, or sufficiency of the information. There is no guarantee, either expressed or implied, that the locations, size, and type of material of existing underground

utilities indicated are representative of those to be encountered in the construction. It shall be the Contractor's responsibility to determine the actual location of all such facilities, including service connections to underground utilities. Prior to construction, the Contractor shall notify the utility companies of his operational plans, and shall obtain from the respective utility companies detailed information and assistance relative to the location of their facilities and the working schedule of the companies for removal or adjustment, where required. In the event an unexpected utility interference is encountered during construction, the Contractor shall immediately notify the utility company of jurisdiction. The Owner's Representative and/or the Engineer shall also be immediately notified. Any damage to such mains and services shall be restored to service at once and paid for by the Contractor at no additional cost to the Contract.

B. All utility cables and lines shall be located by the respective utility. **Contact JULIE (Joint Utility Location Information for Excavators) for utility information, phone: 1-800-892-0123.** Also contact Airport Manager and Airport Personnel for assistance in locating underground Airport cables and/or utilities. Also coordinate work with all aboveground utilities.

C. Contractor shall locate and mark all existing cables within 10 ft of proposed excavating/trenching area. Any cables found interfering with proposed excavation or cable/trenching shall be hand dug and exposed. Any damaged cables shall be immediately repaired to the satisfaction of the Engineer at the Contractor's expense. The Engineer and Owner shall be notified immediately if any cables are damaged.

D. Payment for locating and marking underground utilities and cables will not be paid for separately, but shall be considered incidental to the respective duct installation or respective item of work.

3.03 INSTALLATION

A. All exterior above grade exposed conduit shall be galvanized rigid steel conduit (GRSC). All conduit penetrations to the building exterior shall be GRSC. All conduit penetrations to firewalls shall be GRSC with UL-listed fire stop/seal at the wall penetrations. All conduits containing power wiring, control wiring, Veeder-Root probe and sensor wiring, and/or communication wiring associated with the fuel facility shall be galvanized rigid steel. All below grade conduit shall be as detailed on the Plans and specified herein.

B. Feeder and branch circuit conduits, located at building interiors, run overhead to or from panelboards, load centers, and equipment panels shall be electrical metallic tubing provided they do not enter a classified hazardous location. All other exposed interior conduit installed in non-hazardous areas shall be electrical metallic tubing unless otherwise noted on the Plans.

C. Conduit runs embedded in floors shall be galvanized rigid steel unless otherwise noted on the Plans.

D. Conduits used for pendant mounted light fixtures shall be galvanized rigid steel.

E. All work shall be laid out with sleeves for openings through floors and walls, etc. as required prior to the laying of floors and walls. If sleeves and inserts are not properly installed, the Contractor will be required to do all necessary cutting and patching later at his own expense and to the satisfaction of the Engineer.

F. Conduit size and fill requirements shall comply with Chapter 9 and Annex C of the NEC. It should be noted these are minimum requirements and larger conduit sizes or smaller fill requirements shall be used whenever specified or detailed on the Drawings.

G. Use liquid-tight, flexible metal conduit or flexible metal conduit for final connection to motors, bi-fold door operators, constant current regulators, transformers, portable equipment, and for equipment subject to movement, vibration, and/or noise transmission. For each conduit size up to 1-in. trade size, flexible conduit shall be minimum length of 12 in. and a maximum length of 36 in. and for conduit sizes above 1-in. trade size, flexible conduit shall be minimum length of 20 in. and maximum length of 48 in. Liquid-tight, flexible metal conduit and/or flexible metal conduit that is used for flexibility (including connections to motors, constant current regulators, and transformers) shall require and external bonding jumper or internal equipment grounding conductor per NEC 350.60 and/or 348.60. **Do not install liquid-tight, flexible metal conduit or flexible metal conduit that is not UL-listed.** Do not install liquid-tight flexible metal conduit or flexible metal conduit in a classified hazardous location unless it is approved and listed suitable for use in the respective classified hazardous location.

H. Explosion-proof flexible conduit shall be provided as a connection between each motor junction box (or any other piece of equipment subject to movement or vibration) and the rigid conduit system where installed in a classified hazardous location.

I. Ream conduits only after threads are cut. Cut joints square to butt solidly into couplings. Where necessary to join two (2) pieces of conduit and it is impossible to use standard coupling, use 3-piece malleable iron conduit coupling. The use of running thread is prohibited. This applies to all rigid conduit installations, underground or otherwise.

J. Make all joints in steel underground conduit watertight with approved joint compound. Temporarily plug conduit openings to exclude water, concrete or any foreign materials during construction. Clean conduit runs before pulling in conductors.

K. Hickey bends will not be acceptable for conduits 1-in. and larger. Use manufactured elbows or bends fabricated with bending machine. Field bending of all PVC conduit shall be accomplished with the use of equipment approved by the conduit manufacturer. Open flame bending equipment will not be acceptable.

L. A run of conduit between outlet and outlet, between fitting and fitting or between outlet and fitting shall not contain more than the equivalent of four (4) 90 degree bends, including bends immediately at an outlet or fitting.

M. Where conduit enters a box or fitting provide a steel locknut and an insulated metallic bushing. Use this method to terminate conduit in panels, pull boxes, safety switches, etc. Conduit terminations in panel boards (circuit breaker panels or load centers) shall have grounding bushings with ground wire connections between the bushing and the ground bus.

N. Do not run conduit below or adjacent to water piping, unless specifically detailed otherwise on the Plans.

O. Run exposed conduits parallel with walls and at right angles to the building lines, not diagonally. Make bends and turns with pull boxes or cadmium plated or hot-dipped galvanized malleable iron fittings and covers.

P. Conduit terminations shall include bushings to protect conductors from damage from conduit.

Q. Support exposed rigid steel conduit runs on walls or ceiling every 5 ft with cadmium plated or PVC coated galvanized cast one (1) hole straps, clamp backs and anchors. Provide lead shield insert anchors, with stainless steel round head machine screws, for concrete and brick construction. In wood construction, use stainless steel round head wood screws. Where steel members occur, drill and tap and use stainless steel round head machine screws.

R. In brick construction, drill hole for insert near center of brick, not near edge or in mortar joint.

S. Support two (2) or more exposed parallel conduit runs, 1-in. and larger, every 5 ft with trapeze hangers. Hanger assembly to consist of concrete inserts, threaded solid rod, washers, nuts and cross members of galvanized angle iron or 1-5/8-in. by 1-5/8-in. metal framing. Anchor each conduit individually to cross members of every other hanger with cast one (1) hole straps, clamps backs and proper sized cadmium plated machine bolts and nuts.

T. Perforated iron strapping is prohibited. Set screw type fittings are prohibited.

U. Use only screws, bolts, washers, etc. fabricated from rust resisting metals for the supporting of boxes.

V. Schedule 40 PVC conduit and/or sleeves shall be used for grounding electrode conductors.

3.04 EXCAVATION FOR DUCT BANK

A. The ground shall be excavated in open trenches to width, depth, and in direction necessary for proper installation of underground duct work and any manholes, handholes, etc. and connections as may be shown on the Plans. Trench widths shall be held to a minimum.

B. Any necessary sheathing to prevent cave-ins, etc. shall be provided by and the responsibility of the respective Contractor installing the duct bank.

C. Where muck of unstable ground is encountered in bottom of trench, it shall be excavated to a depth of at least 12 in. below the line of the duct or slab. Where bottom of trench is excavated below necessary elevation, it shall be brought to proper grade by use of sand or 3/8 in. gravel, well compacted.

D. Where excavation for a respective portion of trench is in water or wet sand, Contractor shall install a pumping system to dewater the trench.

E. Excavations shall be deeper than minimum wherever required in order that ducts or conduits may be installed so as to avoid new or existing piping, etc., as dictated by site conditions or directed by Owner's Representative.

F. Should conduits or ducts pass under sidewalks, roads, curbs, parking lots, or other paved areas Contractor shall take up same in order to install conduits or ducts. All sidewalks, roads, curbs, parking lots, or other paved areas shall be replaced with material equal to that removed and shall be as approved by the Owner's Representative.

G. The Contractor shall proceed with caution in the excavation and preparation of the trench so that the exact location of underground structures, utilities, and piping, both known and unknown, may be determined, and the Contractor shall be held responsible for the repair of such structures, utilities, and piping when broken or otherwise damaged by the Contractor.

3.05 UNDERGROUND CONDUIT INSTALLATION

A. The proposed conduits and ducts shall be constructed at the locations and in accordance with the details shown on the Construction Plans. Ducts shall be installed 18 in. minimum below grade to the top of conduit. Ducts located in areas subject to farming shall be 42 in. minimum below grade. Where detailed on the Plans or where required to avoid obstructions, ducts shall be buried deeper. Where concrete-encased duct interfaces to directional-bored duct at a pavement crossing, the concrete encasement shall be installed up to the respective pavement edge. Where concrete-encased duct interfaces to an electrical handhole or manhole, the concrete encasement shall be installed up to the respective handhole or manhole. Provide bushings or bells at conduit terminations in electrical handholes or manholes.

B. Perform excavation, trenching, backfilling and compaction in accordance with Item 110 INSTALLATION OF AIRPORT UNDERGROUND ELECTRICAL DUCT of the Standard Specifications for Construction of Airports, Illinois Department of Transportation, Division of Aeronautics.

C. Underground ducts installed by directional-boring method shall be installed in a manner that will not damage any existing underground utilities, and shall not disturb or damage the respective pavement or roadway surface. Ducts shall be directional-bored at the locations shown on the Construction Plans. The ducts will be bored at a minimum depth of 24 in. below the bottom of the pavement it is being bored under. Ducts installed under paved areas and roadways shall extend a minimum of 10 ft beyond the respective pavement or roadway surface.

A pull wire will be left in the conduit if it is to be left vacant. The ends of the conduit will be sealed with approved plugs.

D. Conduit lines shall be laid with a minimum slope of 4 in. per 100-ft. Ells and offsets shall be made with factory ells or with field bends made in accordance with conduit manufacturer's recommendations. The minimum bend radius shall be 36 in. Otherwise, long sweep bends having a minimum radius of 25 ft shall be used for a change of direction of more than 5 degrees, either horizontally or vertically. Both curved and straight sections may be used to form long sweep bends as required.

E. Conduits shall be kept clean of concrete, dirt, or foreign substances during storage and construction. After conduit installation, a standard flexible mandrel shall be used for cleaning followed by a brush with stiff bristles. Mandrel shall be at least 12 in. long and have a diameter ¼-in. less than the inside diameter of the conduit being cleaned. All obstructions in conduits shall be removed prior to pulling wires or final acceptance. Conduits unable to pass mandrel shall be replaced. All unused conduits shall be capped.

F. Trench widths shall be held to a minimum.

G. Examine all available site utility information in regard to existing utility lines and locate and protect existing lines. Repair all existing utility lines that are damaged by this construction.

H. All excavations shall be barricaded, lighted and protected during construction.

I. Contractor shall obtain approval from Owner for proposed schedules of any description of vehicular or pedestrian traffic for the installation of this work.

J. The Contractor will determine if there is a conflict between the installation of the proposed electrical ducts and any existing utilities. He will make all necessary adjustments in depth of installation to avoid any and all proposed underground improvements."

K. Contractor shall backfill all excavations, grade, mulch, and seed to restore. Any and all trenches and disturbed areas will be backfilled and restored to a smooth grade and seeded to the satisfaction of the Engineer. All trench settlement shall be corrected for a period of one (1) year. Restoration, grading, and seeding of areas disturbed during the installation of the proposed ducts will be incidental to the respective pay item for which the duct is installed.

3.06 WALL, ROOF AND FLOOR PENETRATIONS AND SLEEVE INSTALLATION

A. Provide sleeves for all electrical raceways, and wiring passing through walls and floors and roof. Sleeves shall be of sufficient length to extend through the wall, roof and floors. Wall sleeves shall have ends flush with finished thickness of walls and floor sleeves shall extend 1 in. above finish floor. Interior diameter of sleeves shall provide 1/2 in. clearance all around conduit.

B. Set all wall, roof and floor sleeves during the construction of same in new construction.

C. Below grade, wall, and roof penetrations shall be made watertight. Below grade wall penetration shall be sealed with compression type conduit sealing bushings. Roof penetration shall be sealed and flashed per roof manufacturers published recommendations.

3.07 FIRESTOPPING

A. All occupied and unoccupied sleeves or openings for electrical raceways or cables installed in or through fire rated walls shall be fire stopped, to provide an effective barrier against the spread of fire, smoke and gases and maintain the integrity of the partition, wall or floor.

B. Fire stopping materials shall be installed in accordance with manufacturers written instructions.

3.08 SPECIAL INSTALLATION

A. Hazardous Locations

1. Electrical equipment installed at the fuel tank and dispenser site in classified hazardous locations (Class I, Division 1 or 2, Group D) shall be approved and listed suitable for the respective hazardous environment and shall conform to the applicable sections of the NEC, most current issue in force, including but not limited to Articles 500, 501, 504, 514, and 515.

2. Per NEC 513, aircraft hangars are classified as a Class I, Division 2, Group D hazardous location for a level of 18 in. above the floor for the entire area of the hangar. Per NEC 513.3(C) “Vicinity of Aircraft” the area within 5 ft horizontally from aircraft power plants or aircraft fuel tanks shall be classified as a Class I, Division 2 location that shall extend upward from the floor to a level 5 ft above the upper surface of wings and of engine enclosures. All electrical installations in the hangar shall conform to the applicable sections of NEC 500, 501, and 513 in addition to the other applicable sections of NEC. Where electrical equipment is installed in a classified hazardous location it shall be suitable for use in the respective classified hazardous location. Where possible, avoid installation of electrical equipment, raceways, and wiring in the classified hazardous areas of this facility.

3. Perform all work in classified hazardous locations as defined by the NEC in strict accordance with the NEC for the particular "Class", "Division", and "Group" of hazardous locations involved or indicated on the Drawings. Provide conduit and cable seals in accordance with the NEC.

4. All conduits installed in classified hazardous locations (including Class I, Division 1 or 2, Group D) shall be suitable for the respective location. All boxes and fittings installed in Class I, Division 1 locations shall be approved (FM Approved or UL-listed) suitable for Class I, Division 1

locations. All boxes and fittings installed in Class I, Division 2 locations shall conform to the requirements of NEC 501.10 (B)(4).

5. Per Article 501.15 (C) (6) of the 2008 NEC and UL Standard 886, the cross sectional area for conductors installed in a conduit seal off fitting shall not exceed 25 percent, unless the conduit seal off fitting has been specifically approved for a higher percentage of fill.

6. Install explosion-proof conduit sealing fittings in conformance with the respective manufacturer's instructions. Contact the respective seal off manufacturer if assistance is required for direction of installing packing fiber to form a dam and pouring the sealing compound.

7. Explosion-proof flexible conduit shall be provided as a connection between each motor junction box (or any other piece of equipment subject to movement or vibration) and the rigid conduit system where installed in a classified hazardous location. For Class I, Division 2 hazardous locations, liquid-tight, flexible metal conduit may be used where it is listed as approved for use in a Class I, Division 2 hazardous location.

8. EMT is not suitable for use in classified hazardous locations and, therefore, shall not be installed in classified hazardous locations.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. All conduits, ducts, elbows, fittings, raceways, and handholes, **associated with construction of a new fueling facility and removal/relocation of components of an existing fueling facility**, will not be paid for separately, but shall be considered incidental to Item AR800561 Site Work for Fueling Facility, or other item of work for which it is necessary, and no additional compensation will be allowed. All preparation, assembly, and installation of these materials; for all sawing and pavement removal; for all duct interface work to handholes/manholes including coring of handholes/manholes; for all excavation and backfilling with aggregate backfill, earth backfill, and concrete; for all interfaces, entries, and exits to buildings; and for all labor, coordination, equipment, tools, and incidentals necessary to complete this work shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

B. Payment for locating and marking underground utilities and cables will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

C. Payment for trenching, excavation, and backfill will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16111

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DIVISION 16 – ELECTRICAL
SECTION 16120 – BUILDING WIRE AND CABLE

1. GENERAL

1.01 DESCRIPTION OF WORK

A. The work included in this section is the supply of wire and cable to provide a complete and operational electrical system.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16450 – Grounding and Bonding.

1.03 REFERENCE TO STANDARDS

A. ASTM Specification B3 – Standard Specification for Soft or Annealed Copper Wire.

B. ASTM Specification B8 – Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

C. FAA AC No. 150/5370-2 (current issue in effect) “OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION.

D. Federal Specification A-A-59544 Cable and Wire, Electrical (Power, Fixed Installation).

E. NFPA 70 – National Electrical Code (most current issue in force).

F. NFPA 70E – Standard for Electrical Safety in the Workplace.

G. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

H. Standard Specifications for Construction of Airports, Illinois Department of Transportation, Division of Aeronautics

I. UL Standard 44 – Thermoset-Insulated Wires and Cables.

J. UL Standard 83 – Thermoplastic-Insulated Wires and Cables.

K. UL Standard 854 – Service Entrance Cables.

1.04 DELIVERY, STORAGE AND HANDLING

A. Wire and cable shall be delivered on reels or coiled in boxes. Wire and cables shall be stored and handled to prevent damage to conductor and insulation.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for all cable types and sizes to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected:**

1. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements.**

2. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

3. Shop drawings shall include cable and/or conductor cut sheets with type, size, specifications, product data, UL listing, manufacturer, and catalog or part number.

4. Where cable is required to have colored coded insulation, provide information on the color coding the respective conductors.

1.06 QUALIFICATIONS

A. The wire and cable shall be manufactured and supplied by a company regularly engaged in the business of furnishing wire and cable. If required by the Engineer, the manufacturer shall submit a certification to a minimum experience of five (5) years in the manufacture of wire and cable.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. Wire and cable shall be warranted to be free from defects in material and workmanship for a period of one (1) year from date of substantial completion by the Owner.

2. PRODUCTS AND MATERIALS

2.01 GENERAL

A. All cable shall be UL-listed as suitable for installed application.

2.02 EQUIPMENT SPECIFICATION

A. XHHW Wire. Cable shall comply with UL Standard 44, ICEA S-95-658/NEMA WC70 and Federal Specification A-A-59544. Conductors shall be Class B, stranded-annealed, uncoated copper per UL Standard 44. Insulation shall be rated for 600-Volts. Insulation shall be cross-linked polyethylene complying with the physical and electrical requirements of UL Standard 44 for Type XHHW-2. Cable shall be UL-listed and marked XHHW-2.

B. THWN Wire. Cable shall comply with Underwriters' Laboratories Standard UL-83 and Federal Specification A-A-59544. Conductor shall be soft annealed uncoated copper and shall comply with ASTM B3 and B8. Insulation shall be rated for 600-Volts. Insulation shall be polyvinyl-chloride conforming to Underwriters' Laboratories requirements for Type THW. The outer covering shall be nylon conforming to Underwriters' Laboratories for type THHN or THWN. Cable shall be UL-listed and marked THWN-2. **Note where THWN wiring is referenced on the Plans it shall be THWN-2.**

C. XLP-USE Wire. Cable shall comply with UL Standard 44, UL Standard 854, and Federal Specification A-A-59544. Conductor shall be concentric-strand, soft copper, conforming to ASTM B8 and Underwriters' Laboratories Standard UL44 for Rubber Insulated Wires. Insulation shall be rated for 600-Volts. Insulation shall be cross-linked polyethylene conforming to Underwriter's Laboratories Requirements for Type USE-2 insulation. Cable shall be UL-listed and marked USE-2.

D. Joints and Splices

1. Make terminations, taps and splices with an indent type pressure connector with insulating cover for 8 AWG and smaller:

a. Acceptable Manufacturers:

1) Buchanan.
2) Burndy.
3) Ideal.
4) Thomas & Betts.

2. Instead of indent type connectors insulated spring compression connectors may be used for 10 AWG and smaller:

   a. Acceptable Products:

      1) Buchanan.
      2) Ideal, Wing Nut.
      3) ITT Holub, Free Spring.
      4) T&B, Piggy.
      5) 3M, Scotchlok.

3. Use mechanical compression or bolted type connector for 6 AWG or larger. Cover connector with insulating type of heat shrinkable insulation equivalent to 150 percent conductor insulation:

   a. Acceptable Manufacturers:

      1) AMP, Inc.
      2) Anderson.
      3) Blackburn.
      4) Burndy Corp.
      5) General Electric Co.
      6) Ideal Industries.
      7) ITT Weaver.
      8) O.Z./Gedney Co.
      9) T&B.
      10) 3M Co.

4. All below grade splices shall be installed in splice cans. Splice cans shall be L-867, Class I, Size B (12-in. diameter), 24-in. deep with 1/2-in. thick steel cover. Larger size splice can shall be provided as applicable, for specific equipment applications or manufacturer's recommendations, and/or where detailed on the plans. Splice cans located in areas subject to heavy aircraft or vehicle loading shall be L-868 type. The Engineer shall approve all splice locations before work commences.

E. COLOR CODING: Color-code phase and neutral conductor insulation for No. 6 AWG or smaller. Provide colored marking tape for phase and neutral conductors for No. 4 AWG and larger. **Insulated ground conductors shall have green-colored insulation for all conductor sizes (AWG and/or KCMIL) to comply with NEC 250.119. Contractor shall arrange with his supplier to provide conductors with green colored insulation for all insulated ground wires regardless of conductor size ((AWG and/or KCMIL). Neutral conductors shall have white-colored insulation for No. 6 AWG and smaller to meet the requirements of NEC 200.6.** Standard colors for power wiring and branch circuits shall be as follows:

	120/240 VAC, 1-Phase, 3-wire	208/120 VAC, 3-Phase, 4-wire	240/120 VAC, 3-Phase, 4-wire
Phase A	Black	Black	Black
Phase B	Red	Red	Orange
Phase C	(Not applicable)	Blue	Blue
Neutral	White	White	White
Ground	Green	Green	Green

F. Wire Pulling Lubricant

1. Pulling lubricant shall be a UL-listed, water-based, polymer solution. Lubricants containing waxes or soaps are not acceptable.

2. The lubricant shall be compatible with the cable insulation and shall not cause any premature deterioration of the insulating material.

3. Dried residue from lubricant shall not become tacky or gum-up. Cables shall remain pullable after lubricant has dried.

4. The lubricant shall be approved by the cable manufacturer for use with their cables.

5. Acceptable Manufacturers/Products:

   a. American Colloid/Poly-X.
   b. American Polywater/Polywater J.
   c. ARNCO/Hydra-Lube.
   d. Buchanan/Quick Slip.
   e. Condux/Super-Lube.
   f. Ideal/Aqua-Gel.

3. EXECUTION

3.01 INSTALLATION OF WIRE AND CABLE

A. All fixed wiring in a hangar shall be in metal raceways.

B. Underground cable installation shall conform to Item 108 Installation of Underground Cable for Airports of the Standard Specifications for Construction of Airports, Illinois Department of Transportation, Division of Aeronautics and as detailed on the Plans.

C. The Contractor shall furnish and install all materials necessary for complete and operational installation, as specified herein, and as shown on the Plans. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of the NFPA 70 – National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and

recommendations for the respective application. Any installations which void the UL listing, Intertek Testing Services verification/ETL listing (or other third party listing), and/or the manufacturer's warranty of a device will not be permitted.

D. Contractor shall coordinate work and any power outages with the Airport Manager. Any shutdown of existing systems shall be scheduled with and approved by the Airport Manager prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

E. Contractor shall comply with the requirements of FAA AC No. 150/5370-2 (current issue in effect) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION."

F. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

G. All temporary installations shall comply with National Electrical Code Article 590 – "Temporary Installations." The Contractor shall secure, identify, and place temporary exposed wiring in conduit, duct, or unit duct to prevent electrocution and fire ignition sources in conformance with the requirements of FAA AC 150/5370-2G, Part 2.18.3 "Lighting and Visual NAVAIDs".

H. Wire and cable shall be warranted to be free from defects in material and workmanship. Wire and cable shall be installed using accepted industry methods to prevent damage to conductors and insulation.

I. Installation shall comply with all applicable sections of the NEC regarding conduit fill. Do not exceed conduit fill established by the NEC for number of conductors installed in a raceway.

J. Splices will not be permitted in conduit bodies. All splices shall be made in outlet boxes or junction boxes provided for that purpose as detailed or required by need. Make all feeder cables continuous for origin to panel or equipment terminations without running splices in intermediate pull or boxes, unless specifically indicated on the Plans or approved in writing by the Engineer.

K. Do not pull any cable or wire in a raceway until conduit system is complete and internal raceway has been cleaned. Strain on cables shall not exceed manufacturer's recommendations during pulling. Use pulling lubricant, compatible with insulation and covering that will not cause deterioration of insulation or jacket covers of cables or conductors. Use pulling lubricant shall be as recommended by wire manufacturer.

L. Neatly train and lace wiring inside boxes, equipment and panelboards or load centers.

M. Provide each cable or conductor in panels, junction or pull boxes with a permanent pressure-sensitive label with suitable numbers or letters for easy identification. Identify wires at each end and in junction boxes with circuit numbers.

N. Provide wires and cables entering equipment or panels with enough slack to eliminate stretched, angular connection. Neatly arrange wiring, bundle and fan out to termination panels. Make minimum bending radius for conductors in accord with NEC.

O. Support all conductors in vertical raceways in accord with National Electrical Code.

P. All cables installed by the Contractor shall be properly labeled and tagged at all points of access (splice cans, handholes, manholes, wireways, and junction boxes).

3.02 LOCATING OF EXISTING UNDERGROUND UTILITIES AND CABLES.

A. The location, size, and type of material of existing underground and/or aboveground utilities indicated on the Plans are not represented as being accurate, sufficient or complete. Neither the Owner/Airport nor the Engineer assumes any responsibility whatsoever in respect to the accuracy, completeness, or sufficiency of the information. There is no guarantee, either expressed or implied, that the locations, size and type of material of existing underground utilities indicated are representative of those to be encountered in the construction. It shall be the Contractor's responsibility to determine the actual location of all such facilities, including service connections to underground utilities. Prior to construction, the Contractor shall notify the utility companies of his operational plans and shall obtain from the respective utility companies detailed information and assistance relative to the location of their facilities and the working schedule of the companies for removal or adjustment where required. In the event an unexpected utility interference is encountered during construction, the Contractor shall immediately notify the utility company of jurisdiction. The Engineer shall also be immediately notified. Any such mains and services shall be restored to service at once and paid for by the Contractor at no additional cost to the Contract.

B. Contact JULIE (Joint Utility Location Information for Excavation) for utility information, phone: 1-800-892-0123. Also contact the Airport Manager and/or respective airport personnel for assistance in locating underground airport cables and/or utilities. Also coordinate work with all aboveground utilities.

C. In areas where there is a congestion of buried cable or where the proposed cable crosses an existing cable, the Contractor shall be required to trench the proposed cable into place. When crossing existing circuits, the Contractor will be required to hand dig the trenches for the proposed cable. The hand digging of this cable will be considered incidental to the contract unit price of the proposed cable and no additional compensation will be allowed. In all other areas, the Contractor has the option to either trench or plow the proposed cable in unit duct into place. The trenching or plowing of this cable will be considered incidental to

the contract unit price of the proposed cable and no additional compensation will be allowed.

D. The Contractor shall identify all existing underground utilities located within the area where the proposed cables are being installed, and will take all precautions to protect these utilities from damage. Care shall be taken so as not to damage any existing circuits. Any existing circuits damaged shall be immediately repaired to the satisfaction of the Engineer and/or the respective utility or owner where applicable. Any underground utility damaged will be repaired or replaced at the Contractor's own expense. Any repairs of existing cables will be considered incidental to the contract, and no additional compensation will be allowed.

3.03 TESTING

A. Inspect wiring for physical damage and proper connection.

B. Upon completion of cable and wire installation, but before termination to equipment, test each wire for grounds and short circuits. Replace or correct defective wiring.

C. Verify proper phasing and correct or adjust connections, where applicable.

D. Torque test conductor terminations to manufacturer's values.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. All wiring and cable, **associated with construction of a new fueling facility and removal/relocation of components of an existing fueling facility,** will not be paid for separately, but shall be considered incidental to Item AR800561 Site Work for Fueling Facility, or other item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16120

DIVISION 16 – ELECTRICAL
SECTION 16130 – BOXES

1. GENERAL

1.01 DESCRIPTION OF THE WORK

A. The work included in this section is the supply and installation of all junction and pull boxes to provide a complete and operational electrical system.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16120 – Building Wire and Cable.

D. Section 16450 – Grounding and Bonding.

1.03 REFERENCE TO STANDARDS

A. NEMA 4.

B. NEMA 4X.

C. NEMA 7.

D. NFPA 70 – National Electrical Code (NEC) (most current issue in force).

1.04 DELIVERY, STORAGE AND HANDLING

A. Boxes shall be stored away from contact with the earth and protected from the weather.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for junction and pull boxes to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected:**

1. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings**

submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements.

2. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

3. Shop drawings shall include junction and pull boxes cut sheets with type, size, specifications, UL listing, manufacturer, and catalog or part number.

1.06 QUALIFICATIONS

A. The junction and pull boxes shall be manufactured and supplied by a company regularly engaged in the business of furnishing junction and pull boxes. If required by the Engineer, the manufacturer shall submit a certification to a minimum experience of five (5) years in the manufacture of junction and pull boxes.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. Junction and pull boxes shall be warranted to be free from defects in materials and workmanship for a period of one (1) year from date of substantial completion by the Owner.

2. PRODUCTS AND MATERIALS

2.01 EQUIPMENT SPECIFICATION

A. In interior conduit runs, located in dry, clean areas, boxes shall be constructed of 14 gauge sheet steel with either galvanized finish or two (2) coats of approved enamel paint. Boxes shall have screw held access covers, or hinged covers. Boxes shall be of sizes noted on the Plans or shall be sized per the NEC Article 314 for the size and number of conduits, wires, and/or splices entering them. Boxes shall be UL listed.

B. Exterior junction and pull boxes located in non-hazardous, non-classified areas shall be NEMA 4X stainless steel or aluminum sized for conductors and splices per NEC Article 314. Boxes shall be U.L. listed. Boxes shall have hinged covers.

C. Junction boxes located in classified hazardous locations (Class I, Division 1, or 2, Group D), shall be NEMA 7 (explosion proof) cast aluminum with threaded screw on covers and shall comply with applicable provisions of the NEC including but not limited to Articles 500 and 501. NEMA 7 junction boxes shall be UL listed or FM approved suitable for use in Class I, Division 1, Group D locations.

D. Acceptable manufacturers:

1. Appleton Electric Co.

2. Crouse-Hinds Co.

3. Hoffman Co.

4. Hubbell-Killark Electric Mfg. Co.

5. O.Z./Gedney Co.

6. Saginaw Engineering.

7. Or Approved equal.

3. EXECUTION

3.01 INSTALLATION

A. All pull or junction boxes surface mounted in any interior damp location shall be "standoff" mounted 1/2-in. from the wall in a manner to promote air circulation completely around the box.

B. Boxes required by code or need which are not detailed on the Plans shall be considered incidental to the proposal price and will not be paid for separately.

C. The Contractor shall coordinate the installation of junction boxes with the general and mechanical work as required at the facility.

D. Any damage to pull or junction boxes shall be immediately repaired or replaced to the satisfaction of the Owner's Representative and/or Engineer.

E. Protect all boxes from entry of foreign materials. Clean out metal shavings, scrap wire, dirt, and debris from each junction or pull box.

F. Provide NEMA 4 hubs for all conduit entries into boxes or enclosures rated NEMA 4 or NEMA 4X to maintain the NEMA 4, 4X rating of the respective enclosure. **Hubs for use with NEMA 4X stainless steel enclosures shall be NEMA 4X stainless steel hubs.**

G. Independently support all boxes. No parts of the weight or stress thereof shall be borne by the conduits termination therein.

H. Avoid installations in classified hazardous locations. Where boxes are installed in a classified hazardous location they shall be UL listed or FM listed suitable for the respective classified hazardous location, and installed in conformance with the respective requirements of NEC for the respective location.

I. All boxes shall be bonded to ground with a ground lug or screw and a ground wire.

J. Plug all unused openings. Use threaded plugs for cast boxes.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. All junction and pull boxes will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16130

DIVISION 16 – ELECTRICAL
SECTION 16190 – SUPPORTING DEVICES

1. GENERAL

1.01 DESCRIPTION OF WORK

A. Conduit and equipment supports as required and specified herein.

B. Anchors and Fasteners.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16130 – Boxes.

D. Section 16470 – Panelboards.

1.03 REFERENCE TO STANDARDS

A. NFPA 70 – National Electrical Code (NEC) (most current issue in force).

B. NECA – National Electrical Contractors Association.

1.04 DELIVERY, STORAGE AND HANDLING

A. Stored conduit and equipment supports shall not be in contact with the earth, but shall be on pallets or other above-grade supports. Conduit and equipment supports shall be covered to minimize exposure to the weather.

B. Anchors and fasteners shall be stored in their original containers in a clean, dry place. They shall not be exposed to weather

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected:**

1. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport**

Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements.

2. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

3. Product Data: Provide manufacturer's catalog data for fastening systems and supports. Include certification of manufacture in the United States from Domestic Steel.

4. Manufacturer's Instructions: Include application conditions and limitations for use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage handling, protection, examination and installation of Product.

1.06 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

2. PRODUCTS

2.01 MANUFACTURERS

A. Unistrut.

B. B-Line.

C. Approved Equivalent.

2.02 EQUIPMENT SPECIFICATION

A. Strut-type stainless steel supports shall be provided to support all free standing equipment enclosures and other equipment enclosures as indicated on Plans.

B. Strut supports for outdoor locations or areas that are damp, wet, or subject to corrosion shall be stainless steel as produced by Unistrut Corporation, Cooper B-Line, or approved equal. All hardware shall be corrosion resistant stainless steel.

C. Strut supports for indoor locations in dry non-corrosive areas shall be steel with hot dipped galvanized finish, roll formed from 12 gauge (.105 U.S.S. Gage) cold rolled steel, galvanized material ASTM Des. A-446 Grade A. Material (cold rolled steel) shall be hot dipped galvanized coating conforming to ASTM Specification A-525, Des. G-90. Zinc coating shall form an excellent bond with steel surface so as not to be affected by subsequent forming operations. Supports shall be hot dipped galvanized steel strut, as produced by Unistrut Corporation, Cooper B-Line, or approved equal. All hardware shall be corrosion resistant stainless steel.

D. Provide necessary hardware, such as floor flanges, etc., as required to install equipment.

E. Provide materials, sizes and types of anchors, fasteners, and supports necessary to carry the loads of equipment and conduits. Consider weights of conduit when selecting products.

F. Fasteners and anchors shall be corrosion resistant, stainless steel or cadmium plated. Where suitable, non-metallic clamps and fasteners may be used.

3. EXECUTION

3.01 EXAMINATION

A. Examine all supports and fasteners for straightness, rust and corrosion. Do not use any equipment that is not straight or is rusted or corroded.

3.02 PREPARATION

A. All equipment shall be clean at time of installation. Remove all burs.

3.03 INSTALLATION

A. Install products in conformance with manufacturer's instruction and as detailed on the Plans.

B. Provide anchors, fasteners and supports in accordance with NECA Standard of Installation.

C. Do not fasten supports to pipes, ducts, mechanical equipment or conduit.

D. Do not use spring steel clips or clamps.

E. Install surface mounted cabinets, enclosures and panelboards with a minimum of four (4) anchors.

F. Use spring-lock washers under all nuts.

G. Provide zinc rich paint applied to field cuts of galvanized steel strut support to minimize the potential for corrosion per the respective strut support manufacturer's recommendation.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. All conduit and equipment supports, anchors, fasteners, and associated hardware will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16190

DIVISION 16 – ELECTRICAL
SECTION 16195 – ELECTRICAL IDENTIFICATION

1. GENERAL

1.01 DESCRIPTION OF WORK

A. This section includes field-installed nameplates, labeling and identification methods for electrical equipment, components and wiring.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

1.03 REFERENCE TO STANDARD

A. NFPA 70 – National Electrical Code (NEC) (most current issue in force).

1.04 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 70 – National Electrical Code (NEC), most current issue in force.

2. PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. Legend plates shall be provided for all equipment. Legend plates shall be provided to identify the equipment controlled, the power source, and the function of each device. Each individual circuit breaker, transfer switch, control panel, motor starter, safety switch, panelboard, load center shall be furnished with a phenolic engraved legend plate that identifies the respective device, the power source, and the respective voltage, phase, and wire. Furnish additional phenolic engraved legend plates as detailed on the Plans and/or where required by code. Legend plates shall be weatherproof and abrasion resistant phenolic/plastic engraved material and fastened with contact type permanent adhesive, screws, or rivets. Installation shall not break, crack, or deform the legend plate. Lettering shall be 1/4-in. high black lettering on a white background, unless noted otherwise on the Plans.

B. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 IN."

C. Provide legend plate or placard for panelboards and load centers labeled "NOTICE AIRCRAFT SHALL MAINTAIN 5 FEET MINIMUM CLEARANCE FROM ELECTRICAL EQUIPMENT PANELS". Lettering shall be 1/2-inch high white lettering on a red background or red lettering on a white background.

D. Furnish and install weatherproof warning label for each meter socket, enclosed circuit breaker, disconnect switch, switchboard, panelboard, load center, motor control center, and control panel to warn persons of potential electric arc flash hazards, per the requirements of NEC 110.16 "Arc-Flash Hazard Warning". Labels shall also conform to ANSI Z535.4-2002 "American National Standard for Product Safety Signs and Labels." NEC 110.16 requires that switchboards, panelboards, industrial control panels, meter socket enclosures, and motor control centers that are likely to require examination, adjustment, servicing or maintenance while energized, shall be field marked to warn qualified persons of potential arc flash hazards. The markings shall be located so as to be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment. This new requirement is intended to help reduce the occurrence of serious injury or death due to arcing faults to those working on or near energized electrical equipment. The warning labels are to indicate to a qualified worker who intends to open the equipment for analysis of work that a serious hazard exists and that the worker should follow appropriate work practices and wear appropriate personal protective equipment (PPE) for the specific hazard. Labels shall be as detailed on the Plans, in accordance with NEC 110.16 and 110.21, and/or shall include at least the following information: "WARNING - POTENTIAL ARC-FLASH HAZARDS EXIST WHILE WORKING ON THIS ENERGIZED EQUIPMENT. APPROPRIATE PPE REQUIRED".

E. Per NEC 300.45 Warning Signs, for applications over 1000 Volts nominal, warning signs shall be conspicuously posted at points of access to conductors in all conduit systems and cable systems. The warning signs shall be legible and permanent and shall carry the following wording: "DANGER – HIGH VOLTAGE – KEEP OUT".

3. EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive nameplates and markers.

3.02 INSTALLATION

A. Secure nameplates to equipment using screws or adhesive.

B. Nameplates shall be provided for all panelboards, load centers, disconnects, enclosed starters, control panels, emergency stop stations, etc.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. All nameplates, placards, labeling, and identification will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16195

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DIVISION 16 – ELECTRICAL
SECTION 16450 – GROUNDING AND BONDING

1. GENERAL

1.01 WORK INCLUDES

A. The work in this section includes grounding of electrical systems and equipment and basic requirements for grounding for protection of personnel, life, equipment, circuits, and systems. Grounding requirements specified in this Section may be supplemented in other Sections of these Specifications. See grounding details on the Drawings and refer to other related work sections included with these Specifications for further details.

B. Furnish and install grounding as detailed on the Plans and as specified herein.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16120 – Building Wire and Cable.

D. Section 16130 – Boxes.

E. Section 16470 – Panelboards.

F. Section 16615 – Surge Protector Devices.

1.03 REFERENCE TO STANDARDS

A. NFPA 70 – National Electrical Code (NEC) (most current issue in force)

B. NFPA 409 – Standard on Aircraft Hangars (2011 edition).

1.04 DELIVERY, STORAGE, AND HANDLING

A. Exothermic welds and hardware items shall not be shipped loose but shall be in boxes, labeled with material and equipment enclosed. Boxes shall be stored away from contact with earth and shall be protected from weather.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected:**

1. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements.**

2. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

3. Shop drawings shall include cut sheets for ground rods with type, size, specifications, product data, UL listing, manufacturer, and catalog or part number.

4. Provide certification that ground rods are manufactured in the United States of America and produced from 100 percent Domestic steel.

5. Shop drawings shall include cut sheets for grounding conductors/ground wire with type, size, specifications, product data, UL listing, manufacturer, and catalog or part number.

6. Shop drawings shall include cut sheets for grounding connectors (including exothermic weld type connectors) with type, size, specifications, product data, manufacturer, and catalog or part number.

1.06 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one (1) year form date of substantial completion established by the Owner.

2. PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. Ground rods shall be UL listed, 3/4-inch diameter by 10 feet long copper-clad steel with 10 mil minimum copper coating. Where shown on the Plans or required to obtain a better grounding system, ground rods shall be coupled together to form 20 feet, 30 feet, or longer ground rods. Couplers shall be as recommended by the respective ground rod manufacturer. Steel used to manufacture ground rods shall be 100 percent domestic steel.

B. Connections to building steel shall be with two-hole tongue long barrel compression lugs bolted with stainless steel bolts, nuts, and washers as detailed on the Plans.

C. Connection of ground wire to ground rod shall be with exothermic weld type connections. Exothermic weld type connectors shall be Cadweld by Pentair Erico Products, Thermoweld by Continental Industries, Inc., Ultraweld by Harger, or approved equal. Where exothermic weld connections are used they shall be installed in conformance with the respective manufacturer's directions using proper molds suitable for each respective application.

D. Connections to rebar shall be with UL listed grounding connectors suitable for concrete encasement, sized and suitable for the respective rebar and grounding electrode conductor, Eritech RC70/RC100 rebar clamp or approved equal. Exothermic weld connectors are also acceptable for connections to rebar.

E. Equipment ground wires shall be copper conductors sized as detailed on the Plans. Insulation shall be 600-Volt, same type as phase conductors, green in color.

F. Grounding electrode conductors shall be bare stranded annealed copper, sized as detailed on the Plans.

3. EXECUTION

3.01 INSTALLATION

A. The Contractor shall furnish and install all grounding shown on the Plans and/or as may be necessary or required to make a complete grounding system as required by the latest National Electrical Code (NFPA 70) in force. The reliability of the grounding system is dependent on careful, proper installation and choice of materials. Improper preparation of surfaces to be joined to make an electrical path, loose joints or corrosion can introduce impedance that will seriously impair the ability of the ground path to protect personnel and equipment and to absorb transients that can cause noise in communications circuits. The following functions are particularly important to ensure a reliable ground system.

B. All products associated with the grounding system shall be UL-listed and labeled.

C. All bolted or mechanical connections shall be coated with a corrosion preventative compound before joining, Sanchem Inc. “NO-OX-ID “A-Special” compound, or equal.

D. Metallic surfaces to be joined shall be prepared by the removal of all non-conductive material, per **2017 National Electrical Code Article 250-12**. All copper bus bars must be cleaned prior to making connections to remove surface oxidation.

E. Metallic raceway fittings shall be made up tight to provide a permanent low impedance path for all circuits. Metal conduit terminations in enclosures shall be bonded to the enclosure with UL-listed fittings suitable for grounding. Provide grounding bushings with bonding jumpers for all metal conduits entering service equipment (meter base, CT cabinet, main service breaker enclosure, etc.). Provide grounding bushings with bonding jumpers for all metal conduits entering an enclosure through concentric or eccentric knockouts that are punched or otherwise formed so as to impair the electrical connection to ground. Standard locknuts or bushings shall not be the sole means for bonding where a conduit enters an enclosure through a concentric or eccentric knockout.

F. All motor frames, pump bases, electrical equipment enclosures, panel housings, conduits, boxes, etc. have a continuous copper wire ground connection and shall be positively bonded to the respective grounding system. Conduit connectors will not be considered as adequate grounding.

G. Furnish and install ground fields, ground rings, and/or ground rods at all locations where shown on the Plans or specified herein. **Ground rods for electrical installations shall be 3/4-inch diameter by 10-feet long, (to accommodate the respective site soil conditions) UL-listed, copper clad with 10-mil minimum copper coating.** Top of ground rods shall be a minimum of 30 in. below finish grade unless otherwise noted on the Plans. Ground rods shall be spaced as detailed on the Plans and in no case spaced less than one (1) rod length apart. All connections to ground rods, ground fields, and/or ground rings shall be made with exothermic weld type connectors, Cadweld by Pentair Erico Products, Inc., Thermoweld by Continental Industries, Inc., Ultraweld by Harger, or approved equal. Exothermic weld connections shall be installed in conformance with the respective manufacturer’s directions using molds as required for each respective application. Bolted connections will not be permitted at ground rods or at buried grounding electrode conductors. Grounding electrode conductors shall be bare copper sized as detailed on the Plans. In addition to the grounding work described herein and shown on the Plans, the Contractor shall test the made electrode ground rod/ground field/ground ring with an instrument specifically designed for testing ground field systems. If ground resistance exceeds **25 Ohms**, contact the Project Engineer for further direction. Copies of grounding electrode resistance field test results shall be furnished to the Project Engineer.

H. All connections, located above grade, between the different types of grounding conductors shall be made using UL-listed double compression crimp type connectors or UL-listed bolted ground connectors. For ground connections to enclosures, cases and frames of electrical equipment not supplied with ground lugs the Contractor shall drill required holes for mounting a bolted ground connector. All bolted ground connectors shall be Burndy, Dossert Corporation, ILSCO Corporation, Penn-Union Corporation, Thomas and Betts, or approved equal. Tighten connections to comply with tightening torques in UL Standard 486A to assure permanent and effective grounding.

I. All metal equipment enclosures, conduits, cabinets, boxes, receptacles, motors, etc. shall be bonded to the respective grounding system.

J. Provide all boxes for proposed outlets, switches, circuit breakers, etc. with grounding screws. Provide all panelboard, switchgear, etc., enclosures with grounding bars with individual screws, lugs, clamps, etc., for each of the grounding conductors that enter their respective enclosures.

K. Each feeder circuit and/or branch circuit shall include an equipment ground wire. Metal raceway or conduit shall not meet this requirement. The equipment ground wire from equipment shall not be smaller than allowed by 2017 (or most current issue in force) NEC Table 250-122 “Minimum Size Conductors or Grounding Raceway and Equipment.” When conductors are adjusted in size to compensate for voltage drop, equipment-grounding conductors shall be adjusted proportionately according to circular mil area. All equipment ground wires shall be copper, either bare or insulated green in color. Where the equipment grounding conductors are insulated, they shall be identified by the color green, and shall be the same insulation type as the phase conductors.

L. All utility transformer bank grounds shall be installed in accordance with the serving electric utility company’s recommendation and in accordance with NEC.

M. The secondary neutral of all transformers (separately derived system transformers) shall be grounded in accordance with the NEC. The respective grounding electrode conductor shall be connected to the neutral point of the transformer between the transformer and the output disconnecting means. Size of the grounding electrode conductor shall be in accordance with 2017 (or most current issue in force) NEC Article 250-66 and Table 250-66 unless shown larger on the Drawings. A bond shall be provided between the neutral and transformer case, or other metal that is part of the AC equipment grounding system, so as to complete a circuit for fault current to the transformer winding from the AC equipment grounding system. Size of the neutral bonding conductor shall be in accordance with 2017 (or most current issue in force) NEC Article 250-102.

N. All exterior metal conduit, where not electrically continuous because of manholes, handholes, non-metallic junction boxes, etc., shall be bonded to all other metal conduit in the respective duct run, and at each end, with a copper-bonding jumper sized in conformance with 2017 (or most current issue in force) NEC 250-102. Where metal conduits terminate in an enclosure (such as a motor control center, switchboard, etc.) where there is not electrical continuity with the

conduit and the respective enclosure, provide a bonding jumper from the respective enclosure ground bus to the conduit sized per 2017 (or most current issue in force) NEC 250-102.

O. Install grounding electrode conductors, lightning protection down conductors and separate ground conductors in Schedule 40 or Schedule 80 PVC conduit or exposed where acceptable to local codes. Where grounding electrode conductors, lightning protection down conductors or individual ground conductors are run in PVC conduit, Do Not completely encircle conduit with ferrous and/or magnetic materials. Use non-metallic reinforced fiberglass strut support. Where metal conduit clamps are installed, use nylon bolts, nuts, washers and spacers to interrupt a complete metallic path from encircling the conduit. This is required to avoid girdling of ground conductors. Girdling of a ground conductor is the result of placing the conductor in a ring of magnetic material. This ring could be a metallic conduit, U-bolt or strut support pipe clamp, or other support hardware. The result of girdling ground conductors significantly increases the inductive impedance of the ground conductor. Inductive and capacitive impedance is a type of resistance that opposes the flow of alternating current. Any increase in the impedance of a ground conductor reduces its ability to effectively mitigate radio frequency noise in the ground system. The condition where a ground conductor is girdled during a lightning strike results in phenomena known as Surge Impedance Loading. Surge impedance loading is a result of voltage and current reaching 500,000 volts and 10,000 amps for a short duration. Girdling further increases the impedance at lightning frequencies of 100 kilohertz to 100 megahertz. At these power and frequency levels any increase in the impedance of the ground conductor must be controlled. During lightning discharge conditions a low inductive impedance path is more important than a low DC resistance path.

3.04 TESTING

A. Entire ground system shall be tested. Measure resistance to ground of system. Perform testing in accordance with test instrument manufacturer's recommendations using fall-of-potential method. Maximum grounding system resistance shall be 25 Ohms.

B. Contractor shall test the made grounding electrode system (ground rods/ground ring/ground field/or other grounding electrodes) with an instrument specifically designed for testing grounding electrode systems. If ground resistance exceeds 25 Ohms, contact the Owner's Representative and/or Engineer for further direction. Copies of grounding electrode system test results shall be furnished to the Project Engineer.

C. Copies of data and test reports shall be furnished to Owner's Representative. Report data to include technician's name, date and certification of test results.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. All costs for furnishing all materials and for all preparation, assembly, and installation of these materials; for all excavation and backfilling; and for all labor, equipment, tools, and incidentals necessary to perform the grounding and bonding as detailed on the Plans and specified herein shall be considered incidental to the respective item of work for which the grounding and bonding is being installed, and no additional compensation will be allowed.

END OF SECTION 16450

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DIVISION 16 – ELECTRICAL
SECTION 16470 – PANELBOARDS

1. GENERAL

1.01 DESCRIPTION OF WORK

A. This section includes the supply and installation of panelboards, load centers, circuit breakers, and all required work to provide a complete and operational electrical system.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16120 – Building Wire and Cable.

D. Section 16190 - Supporting Devices.

E. Section 16195 – Electrical Identification.

F. Section 16450 – Grounding and Bonding.

G. Section 16615 – Surge Protector Devices.

1.03 REFERENCE TO STANDARDS

A. Federal Specification W-P-115b, Type I, Class I.

B. Federal Specification W-G-375B (Circuit Breakers).

C. NECA (National Electrical Contractors Association) “Standard of Installation.”

D. NEMA AB 1 – Molded Case Circuit Breakers.

E. NEMA ICS 2 – Industrial Control Devices, Controllers, and Assemblies.

F. NEMA KS 1 – Enclosed Switches.

G. NEMA PB 1 – Panelboards.

H. NEMA PB 1.1 – Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.

I. NFPA 70 – National Electrical Code (most current issue in force).

J. NFPA 70E – Standard for Electrical Safety in the Workplace.

K. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

L. UL 50 – Cabinets and Boxes.

M. UL Standard 67 – Panelboards.

N. UL Standard 489 – Molded Case Circuit Breakers.

1.04 DELIVERY, STORAGE AND HANDLING

A. Panelboards and Load Centers shall be stored indoors in the original container as delivered to the jobsite, protected from weather and construction.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for panelboards and load centers to be used on the project. **Shop drawings shall be clear and legible. Copies that are illegible will be rejected:**

1. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements.**

2. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

3. Submittals for panelboards and load centers shall include outline and support point dimensions, voltage, main bus ampacity, bus material, integrated short circuit ampere rating, circuit breaker arrangement and sizes and respective enclosure. Information on circuit breakers shall include manufacturer's catalog numbers, description with number of poles, voltage ratings, Amp trip ratings, Amp interrupting current ratings,

and any special features (for example switched neutral, shunt trip, etc.). Submittals shall also include manufacturer's installation instructions; indicating application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting the product.

1.06 QUALITY ASSURANCE

A. Panelboards and Load Centers shall be manufactured and supplied by a company regularly engaged in the business of furnishing panelboards and/or load centers. If required by the Engineer, the manufacturer shall submit certification to a minimum often (10) years' experience in the manufacturer of panelboards and/or load centers. Panelboards and Load Centers shall be manufactured in the United States of America.

1.07 REGULATORY REQUIREMENTS

A. Conform to requirements of NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

1.08 MAINTENANCE SERVICE (WARRANTY)

A. Panelboards and Load Centers shall be warranted to be free from defects, material and workmanship for a period of one (1) year from date of substantial completion by the Owner.

2. PRODUCTS

2.01 MANUFACTURERS

A. Panelboards and load centers shall be as manufactured by Square D, Eaton Cutler-Hammer, or approved equal. Panelboards and load centers shall be manufactured in the United States of America to comply with the Airport Improvement Program Buy American Requirement.

2.02 EQUIPMENT

A. Panelboards: Panelboard bus structure shall be copper. Bus and main lugs or main circuit breaker shall have voltage and current ratings as shown on the Plans. Such ratings shall be in accordance with UL Standard 67. Bus bar connections to the branch circuit breakers shall be the "distributed phase" or phase sequence type. All current carrying parts of copper bus structures shall be plated to prevent corrosion. Panelboards for service entrance applications shall be UL listed suitable for service entrance. All panelboards shall be Dead-Front

Safety Type, equipped with thermal-magnetic molded case breakers, and solid neutral bus. Bussing shall be such that adjacent single pole breakers will be on different phases or polarities, and that 2-pole breakers can be installed at any location. Panelboard numbering shall be such that starting at the top, odd numbers shall be used in sequence down the left hand side and even numbers shall be used in sequence down the right hand side. Cabinets shall be fabricated of code gauge galvanized steel with gutters sized per National Electrical Code and shall be suitable for the respective location. Cabinets shall be finished with rust inhibiting primer and baked enamel. For outdoor installations (in non-hazardous areas) the enclosure shall be rated NEMA 3R (rain proof) and NEMA 12 (dust tight) with a hinged cover. For indoor installations (in non-hazardous areas) the enclosure shall be rated NEMA 1 or NEMA 12. Panelboard shall be provided with bolt-on circuit breakers of size, type, and ratings as detailed on the Plans. Contractor shall confirm and adjust circuit breaker amperage trip ratings as required for the respective equipment or device being fed, in accordance with the respective equipment manufacturer's recommendation and NEC. Breakers shall be 1 or 2 pole with an integral crossbar to assure simultaneous opening of all poles in multiple circuit breakers. Breakers supplying 120 VAC or 120/240 VAC circuits associated with the fuel facility equipment shall include a switched neutral feature. Breakers shall have an over-center, trip-free, toggle-type operating mechanism with quick-make, quick-break action and positive handle indication. Handles shall have "ON," "OFF," and "TRIPPED" positions. Circuit breakers shall be UL-listed in accordance with UL Standard 489 and shall be rated 120/240-Volts AC, single-phase 3-wire. A circuit directory frame and card with a clear plastic cover shall be provided on door interior. Circuit directory shall be typed or neatly hand written indicating each branch circuit of the panel board. Revise directory to reflect circuiting changes as required. All panelboards shall be UL-listed and bear the UL label. Panelboards shall be furnished with a copper equipment ground bar(s) and a separate insulated copper neutral bus.

B. Circuit Breakers for Existing Panelboards and Load Centers: Circuit breakers shall be compatible with the respective panelboard and/or load center. Where possible the circuit breakers should be by the same manufacturer as the existing panelboard or load center. Panelboards and load centers shall be provided with circuit breakers of size, type, and ratings as detailed on the Plans. Contractor shall confirm and adjust circuit breaker amperage trip ratings as required for the respective equipment or device being fed, in accordance with the respective equipment manufacturer's recommendation and NEC. Amp interrupting current ratings of circuit breakers shall exceed the available fault current and shall not be less than 10,000 AIC at 120/240 VAC for circuit breakers on a 120/240 VAC, single-phase, 3-wire system.

3. EXECUTION

3.01 EXAMINATION

A. Panelboards and load centers shall be thoroughly inspected for physical damage, proper alignment, anchorage and grounding. The exterior finish shall be inspected for blemishes, nicks, and bare spots and touched up as required

(where applicable) using touch-up paint provided. Inspection shall be made for proper installation and tightness of connections of all circuit breakers.

3.02 PREPARATION

A. Test for shorts and high resistance grounds. Check for faulty operation of circuit breakers.

3.03 INSTALLATION

A. All electrical work shall comply with the requirements of NFPA 70 - National Electrical Code (NEC), most current issue in force, and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations which void the UL listing, Intertek Testing Services verification/ETL listing, FM approval, or other third party listing, and/or the manufacturer's warranty of a device will not be permitted.

B. Contractor shall coordinate work and any power outages with the Airport Manager and the Engineer. Any shutdown of existing systems shall be scheduled with and approved by the Airport Manager prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

C. Contractor shall comply with the applicable requirements of NFPA 70E – Standard for Electrical Safety in the Workplace.

D. Install panelboards and load centers in accordance with NEMA PB1.1 per manufacturer's instructions and as detailed on the Plans. Install panelboards and load centers plumb. Provide filler plates for unused spaces in panelboards and load centers.

E. Panelboards and load centers shall be installed such that the center of the grip of the operating handle of the upper most circuit breaker, shall not exceed 6 ft-6 in. from finished grade elevation or the working platform to comply with NEC 404.8(A). Panelboards shall not be installed in classified hazardous locations. All installations shall conform to NEC 500, 501, 513, 514, 515 and the other applicable sections of NEC.

F. Any conduits that are to or from a classified hazardous area shall require explosion proof conduit seals, suitable for Class I, Division 1, Group D hazardous location, installed in conformance with the applicable sections of NEC 500, 501, 513, 514, and 515.

G. Where surge arrestors are required to be furnished on panelboards and/or load centers install them in conformance with manufacturer's instructions for the surge arrestor and the panelboard. Maintain leads as short and as straight as possible. Locate the surge protector device on the same side of the panelboard as the circuit breaker that connects it to the panelboard. Install the circuit breaker for the surge protector device as close as possible to the panelboard and/or load center main breaker or main lugs. For example for a top feed main breaker/main lugs type panelboard install the circuit breaker for the surge protector device in positions 1 and 3 or in circuit positions 2 and 4. For a bottom feed main breaker/main lugs type panelboard (42 circuit) install the circuit breaker for the surge protector device in positions 39 and 41 or in circuit positions 40 and 42.

H. Install grounding bushings with ground wire connections between the bushing and the ground bus at all metal conduit terminations that enter or leave the panelboard and/or load center through concentric knockouts. This does not apply to conduits sized to match the largest knockout.

I. Furnish and install circuit directory indicating the respective equipment fed by each circuit breaker. Circuit directory shall be typed or neatly hand written and shall correctly identify each circuit in the panelboard and/or load center. Revise directory to reflect circuiting changes as required.

J. Provide legend plates for all panelboards and load centers to identify the area and/or equipment controlled by the panelboard. Legend plates shall be weatherproof and abrasion resistant phenolic material as specified in Section 16195. Letters shall be black on white background.

3.04 TESTING

A. Panelboards and load centers shall be thoroughly tested after installation and connection to respective loads. Lighting panelboard phases shall be measured with all major items operating. Phase loads shall be within 20 percent of each other. Rearrange circuits if required maintaining proper phasing for multi-wire circuits.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. Panelboards and/or load centers will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END SECTION 16470

DIVISION 16 – ELECTRICAL
SECTION 16500 – LIGHTING

1. GENERAL

1.01 DESCRIPTION OF WORK:

A. The work included in this section is the furnishing and installing of lighting fixtures, lamps, poles, foundations, grounding, accessories and installation and connection to wiring and conduits required for a complete and operational lighting system at the facility.

1.02 RELATED WORK

A. Section 16010 – Basic Electrical Requirements.

B. Section 16111 – Conduit and Raceway.

C. Section 16120 – Building Wire and Cable.

D. Section 16450 – Grounding and Bonding.

1.03 REFERENCE TO STANDARDS

A. ANSI C80.1 – Rigid Steel Conduit, Zinc Coated.

B. ANSI C80.4 – Fittings Rigid Metal Conduit and EMT.

C. ASTM Specification B3 – Standard Specification for Soft or Annealed Copper Wire.

D. ASTM Specification B8 – Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft.

E. FAA AC No. 150/5370-2F (or most current issue) “OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION.

F. Federal Specification A-A-59544 Cable and Wire, Electrical (Power, Fixed Installation).

G. NEMA TC-2 – Electrical Plastic Tubing and Conduit.

H. NEMA TC-3 – Fittings Rigid PVC Conduit and Tubing.

I. NFPA 70 – National Electrical Code (most current issue in force).

J. NFPA 70E – Standard for Electrical Safety in the Workplace.

K. OSHA 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures.

L. UL Standard 6 – Rigid Metal Conduit.

M. UL Standard 44 – Thermoset-Insulated Wires and Cables.

N. UL Standard 83 – Thermoplastic-Insulated Wires and Cables.

O. UL Standard 651 – Schedule 40 and 80 Rigid PVC Conduit.

1.04 DELIVERY, STORAGE AND HANDLING

A. All fixtures, ballasts and lamps shall be delivered in manufacturer's cartons and shall be stored inside, away from construction until just prior to installation. Under no circumstances shall they be stored outdoors or subject to weather.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for all lighting fixtures and associated equipment and materials to be used on the project. **Shop drawings shall be clear and legible.** Shop drawings shall include the following information:

1. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements.**

2. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

3. Shop drawings shall include lighting fixture cut sheets with type, size, manufacturer, and catalog or part number, and accessories and options.

4. Shop drawings shall include cut sheets, specifications, manufacturer part numbers for the pole light fixtures, poles, mounting bracket, surge arrester,

and associated materials. Include certification of 100 percent domestic steel for the poles.

5. Concrete mix design.

6. Certification of rebar for pole foundation including certification of 100 percent domestic steel.

7. Provide cut sheets for all types of conduit used with the parking lot lights (for example galvanized rigid steel conduit and Schedule 40 PVC conduit). Include certification that steel conduits are made with 100 percent domestic steel.

8. Provide cut sheets with manufacturer's name, catalog number, dimensions, material and UL listing for each type and size ground rod. Include certification of 100 percent domestic steel for ground rods.

1.06 QUALIFICATIONS

A. The manufacturer, catalog number, type, wattage, and lamp data for each fixture as detailed on the Plans and specified herein establish the acceptable minimum standard of quality, type of construction, and size of respective item.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. All fixtures shall be warranted to be free from defects in material and workmanship for one (1) year from date of substantial completion. All ballasts shall be warranted to be free from defects in material and workmanship for two (2) years from date of substantial completion.

2. PRODUCTS

2.01 EQUIPMENT AND MATERIALS

A. Steel: All steel used in the construction of this item shall be domestically produced to comply with the requirements of the Airport Improvement Program Buy American Preference requirements and the Steel Products Procurement Act. Contractor shall provide shop drawings to certify domestic steel for the light poles, anchor bolts, rebar, steel conduits, and ground rods.

B. Lighting Fixtures: Lighting fixtures shall be as designated on the Plans. Provide fixtures complete with all required accessories. Lighting fixtures shall be listed suitable for the respective location or environment where they are installed.

C. Poles: Poles shall be as designated on the Plans. Contractor shall be responsible to verify compatibility of the lighting system luminaire, support brackets, mounting hardware, and pole.

D. Light Pole Foundations: Foundations for pole mounted light fixtures shall be as detailed on the Plans:

1. Anchor bolts shall be supplied by the pole manufacturer and shall be installed according to his recommendations for the respective pole. Anchor bolts shall conform to the pole manufacturer's recommendations.

2. Reinforcing steel shall be installed as detailed on the Plans.

3. Concrete shall conform to the requirements of 610 STRUCTURAL PORTLAND CEMENT CONCRETE of the Illinois Department of Transportation, Division of Aeronautics Standard Specifications for Construction of Airports. Concrete shall be 4000 psi strength at 28 days. The concrete mix design must be approved by the Division of Aeronautics prior to installation.

4. Contractor shall coordinate the installation of multiple galvanized rigid steel conduit elbows for power cable entrance and exit, and one 3/4-in. schedule 40 or 80 PVC conduit for the grounding electrode conductor entrance. Conduits shall be adequately sized to accommodate the respective wire sizes. Adjust conduit size where necessary to be compatible with the respective duct feeding the parking lot lights.

5. The poles shall be erected vertically on a concrete foundation. The contractor shall furnish and install leveling and locking nuts and required washers for mounting and plumbing the poles on the anchor bolts. All of the above hardware shall be galvanized steel. The anchor bolts and installation template shall be furnished with the poles.

E. Fixture wiring: Fixture wring shall be as shown on the Plans and as specified herein. Provide branch circuit conductors sized in accordance with NEC 75 deg. C. Ampacity tables. Fixture wiring shall comply with fixture manufacturer's recommendations and NEC requirements.

F. THWN Wire: Cable shall comply with Underwriters' Laboratories Standard UL-83 and Federal Specification A-A-59544. Conductor shall be soft-annealed, uncoated Copper and shall comply with ASTM B3 and B8. Insulation shall be rated for 600-Volts. Insulation shall be polyvinyl-chloride conforming to Underwriters' Laboratories requirements for Type THW. The outer covering shall be nylon-conforming to Underwriters' Laboratories for type THHN or THWN. Cable shall be UL-listed and marked THWN.

G. XHHW Wire: Cable shall comply with UL Standard 44, ICEA S-95-658/NEMA WC70, and Federal Specification A-A-59544. Conductors shall be Class B-stranded, annealed, uncoated Copper per UL Standard 44. Insulation shall be rated for 600-Volts. Insulation shall be cross-linked polyethylene complying with the physical and electrical requirements of UL Standard 44 for Type XHHW-2. Cable shall be UL-listed and marked XHHW-2.

H. Luminaire Fusing; Luminaire fusing shall be provided at the handhole or pedestal at the base of the light pole. Fuses shall be the size and type as recommended

by the luminaire manufacturer for the respective light fixture, and shall be installed in single pole or double pole (as applicable) in-line fuse holders, Bussmann HEY, or equivalent. Each luminaire shall be provided with separate individual fusing. Wiring runs from the base of the pole to the fixtures shall be #10 THWN Copper or #10 XHHW Copper minimum.

I. Surge Arrester for Pole Lights: An AC surge protector shall be furnished and installed in the base of each light pole, and wired in series with each respective light fixture's circuit. Surge protectors shall be suitable for use on a 120 VAC, 1 phase, 2-wire system, with ground. Surge protectors shall be Edco, Inc. of Florida Model SHA 1203 or Ditek Model DTK-DL120. Install per manufacturer's directions.

J. Ground rods shall be 3/4-in. diameter by 10-ft long UL Listed copper clad ground rods with 10-Mil minimum copper coating. Ground rods shall be produced from 100 percent domestic steel. Connections to ground rods shall be exothermic weld, Cadweld by Erico Products, Inc., Solon, Ohio, Thermoweld by Continental Industries, Inc., Tulsa, Oklahoma or Ultraweld by Harger, Grayslake, Illinois, or approved equal.

K. Galvanized rigid steel conduit: Galvanized rigid steel conduit (GRSC) shall be heavy wall hot dipped galvanized steel pipe bearing the UL label and conforming to UL-6 and ANSI Specification C80.1. Couplings, connectors, and fittings for rigid steel conduit shall be threaded galvanized steel or galvanized malleable iron specifically designed and manufactured for the purpose. All fittings shall be threaded type. Fittings shall conform to ANSI C80.4. Galvanized rigid steel conduit shall be produced from 100 percent domestic steel.

L. Explosion-Proof Conduit Seal-Off Fittings: Explosion-proof conduit seals shall be listed suitable for use in Class I, Division 1, Group D hazardous location. Explosion-proof conduit seals shall be Crouse-Hinds EYS or EZS Series, Appleton EYS, ESU, or EY Series, O-Z/Gedney EYA, EY, EZS Series explosion-proof sealing fitting, or approved equal.

M. Schedule 40 PVC Conduit: Conduit shall be Schedule 40 PVC, UL listed, rated for 90 degree C cable conforming to NEMA Standard TC-2 and UL-651 (Standard for rigid nonmetallic conduit).

3. EXECUTION

3.01 INSPECTION

A. All light fixtures shall be inspected for physical damage and corrected as required prior to installation. Gasketing shall be inspected for proper fit and sealing. Any defective or broken components shall be replaced at no additional cost to the Contract.

3.02 INSTALLATION

A. The Contractor shall furnish and install all materials necessary for complete installation of the light pole and fixture, as stipulated in this specification and as shown on the Plans.

B. The complete installation and wiring shall be done in a neat, workmanlike manner. All electrical work shall comply with the requirements of the National Electrical Code (most current issue in force) and all other applicable local codes, laws, ordinances, and requirements in force. Electrical equipment shall be installed in conformance with the respective manufacturer's directions and recommendations for the respective application. Any installations, which void the UL listing, Intertek Testing Services verification/ETL listing, (or other third party listing) and/or the manufacturer's warranty of a device, will not be permitted.

C. Contractor shall keep a copy of the latest NEC in force on site at all times during construction for use as a reference.

D. Contractor shall keep a copy of the Plans, Special Provision Specifications including any addenda, and copies of any change orders on site at all times during construction.

E. The Contractor should examine the proposed site to evaluate the complexity of the work.

F. Contractor shall coordinate work and any power outages with the Airport Manager and the Engineer. Any shutdown of existing systems shall be scheduled with and approved by the Airport Manager prior to shutdown. Once shut down, the circuits shall be labeled as such to prevent accidental energizing of the respective circuits. All personnel shall follow U.S. Department of Labor Occupational Safety & Health Administration (OSHA) 29 CFR Part 1910 Occupational Safety and Health Standards for electrical safety and lockout/tagout procedures including, but not limited to, 29 CFR section 1910.147 The Control of Hazardous Energy (lockout/tagout).

G. Contractor shall comply with the applicable requirements of NFPA 70E –Standard for Electrical Safety in the Workplace.

H. Contractor shall comply with the requirements of FAA Advisory Circular 150/5370-2 (current issue in effect) "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION".

I. Locate lighting fixtures as detailed on the Plans. Coordinate installation of lighting fixtures, poles, foundations, etc. with work of other trades. Adjust locations to avoid interferences with other equipment, structures, utilities, or components where applicable.

J. The Contractor shall furnish and install all wire to make electrical connections between the light fixtures and the feeder cables.

K. The concrete foundations to support the light poles shall each conform with the dimensions and details shown on the Plans and each be provided with four (4) anchor bolts per the respective pole manufacturer's requirements. Install multiple galvanized rigid steel conduit elbows for power cable entrance and exit, and one 3/4-in. schedule 40 or 80 PVC conduit for the grounding electrode conductor entrance. The pole shall be erected vertically on a concrete foundation. The Contractor shall furnish and install leveling and locking nuts and required washers for mounting and plumbing the pole. All mounting hardware shall be galvanized steel. After the entire assembly has been aligned and plumbed, a grout mixture shall be forced under the base casting so that after curing, the grout will be in contact with the bottom of the base at all points. The Contractor will be required to form the foundations to the lines and grades shown on the Plans or established by the Engineer in the field. The anchor bolts and conduit elbows shall be secured in proper position and alignment prior to pouring concrete and extreme care should be exercised during pouring and finishing of concrete so as not to displace the anchor bolts and the conduit elbow. The conduit elbows imbedded in the concrete foundations shall be oriented so as to face the direction of the underground cable and conduit serving the light.

L. The contractor shall bond each pole to a ground rod with a #6 AWG bare stranded copper grounding electrode conductor. The equipment ground wire run with power conductors to the pole shall also be bonded to the pole. Include a #10 AWG copper green insulated equipment ground wire with the branch circuit conductors from the base of the pole to each light fixture. The resistance to ground of any part of the ground system shall not exceed 25 Ohms.

M. Install explosion-proof conduit seal off fittings in conformance with the manufacturer's instructions. Per Article 501.15 (C) (6) of the 2005 NEC and UL Standard 886, the cross sectional area for conductors installed in a conduit seal off fitting shall not exceed 25 percent, unless the conduit seal off fitting has been specifically approved for a higher percentage of fill.

N. Light fixtures shall be cleaned inside and out just prior to installation.

3.03 TESTING

A. The installation shall be tested in operation as a completed unit prior to acceptance. All luminaries shall be tested for proper operation after installation and defective and/or broken equipment shall be replaced at no cost to the Contract. Tests shall include ground resistance tests, measurement of voltage and current readings, and operational tests of the lighting system. The contractor shall furnish all testing equipment. Tests shall be observed by the Resident Engineer/Resident Technician. Contractor shall record test results and provide copies to the Resident Engineer/Resident Technician and the Project Engineer. Any equipment or materials found to be defective or damaged shall be replaced by the Contractor at his own expense.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. The furnishing and installing each light pole with fittings, luminaire with lamp, driver, brackets, and braces; for all excavation, backfilling and restoration required for the construction of the concrete foundation; for furnishing all materials including forms necessary for construction of the concrete foundation complete with anchor bolts, conduit elbows, and conduit fittings; for furnishing and installing the grounding system, lightning arrester, and fusing, for all wiring at the pole and light fixture; for making all electrical connections; for testing the installation; and for all other incidentals necessary to place the light into proper operation to the satisfaction of the Owner will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16500

DIVISION 16 – ELECTRICAL
SECTION 16615 – SURGE PROTECTOR DEVICES

1. GENERAL

1.01 DESCRIPTION OF WORK:

A. Furnish and install AC Surge Protector/Transient Voltage Surge Suppressors as detailed on the Plans and as specified herein.

1.02 RELATED WORK

A. Section 16111 – Conduit and Raceway.

B. Section 16120 – Building Wire and Cable.

C. Section 16450 – Grounding and Bonding.

D. Section 16470 – Panelboards.

1.03 REFERENCE TO STANDARDS

A. NFPA 70 – National Electrical Code (most current issue in force)

B. UL 1449, fourth edition, Surge Protective Devices.

C. ANSI/IEEE C62.41, Recommended Practice on Surge Voltages in Low Voltage AC Power Circuits.

D. FAA-STD-019d, dated August 9, 2002, “LIGHTNING AND SURGE PROTECTION, GROUNDING, BONDING AND SHIELDING REQUIREMENTS FOR FACILITIES AND ELECTRONIC EQUIPMENT.”

1.04 DELIVERY, STORAGE AND HANDLING

A. Surge protector devices shall be stored in the original containers as delivered to the job site. Surge protector devices shall be stored in warm, dry, indoor area to prevent contact with the earth and to protect them from the weather.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for all AC surge protectors/Transient Voltage Surge Suppressors to be used on the project. **Shop drawings shall be clear and legible:**

1. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of**

compliance with the AIP Buy American Preferences. Shop drawings submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements.

2. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

3. Provide Shop Drawings for all AC surge protectors/Transient Voltage Surge Suppressors to be installed on this project. Include specification sheets and cut sheets with manufacturer, model number, voltage rating, surge rating, and housing/enclosure rating.

2. PRODUCTS

2.01 AC SURGE PROTECTORS

A. AC power surge protectors shall be as detailed on the Plans, UL listed per UL 1449, and shall be manufactured in the United States of America.

3. EXECUTION

3.01 INSTALLATION

A. Install Surge Protector Devices (SPD) in conformance with the respective manufacturer's directions and recommendations. Contractor shall confirm all connections to the surge arrester (phases, neutral, and ground) are completed and secure. Connection leads to the surge arrester shall be sized per the respective manufacturer's recommendation, and as detailed herein and shall be maintained as short as possible, maximum 2 ft in length where possible, and laced together for mutual coupling. The conduit or conduit nipple connecting the SPD enclosure to the panel enclosure shall be sealed with duct seal or other nonflammable medium to prevent soot from entering the enclosure in the event of a SPD/TVSS device failure.

B. Maintain leads as short and as straight as possible. Locate the surge protector device on the same side of the panelboard as the circuit breaker that connects it to the panelboard.

C. Install the circuit breaker for the surge protector device as close as possible to the panelboard main breaker or main lugs. For example for a top feed main breaker/main lugs type panelboard install the circuit breaker for the surge protector device in positions 1 and 3 or in circuit positions 2 and 4. For a bottom feed main breaker/main lugs type panelboard (42 circuit) install the circuit breaker for the surge protector device in positions 39 and 41 or in circuit positions 40 and 42. Install the surge protector device on the same side of the panelboard as the breaker connecting it to the panelboard.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. All surge protectors will not be paid for separately, but shall be considered incidental to the respective item of work for which the surge protective devices are being installed, and no additional compensation will be allowed.

END OF SECTION 16615

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DIVISION 16 – ELECTRICAL
SECTION 16902 – ELECTRICAL CONTROL DEVICES

1. GENERAL

1.01 DESCRIPTION OF WORK

A. Provide electrical controls stations including emergency fuel shutoff control stations.

1.02 RELATED SECTIONS

A. Section 16010 – Basic Electrical Requirements.

B. Section 16190 – Supporting Devices.

C. Section 16195 – Electrical Identification.

D. Section 16450 – Grounding.

1.03 REFERENCE TO STANDARDS

A. Comply with NFPA 70 – National Electrical Code (NEC) (most current issue in force) requirements for electrical materials and installation.

B. Keep copy of NFPA 70 – NEC (most current issue in force) in field office for duration of project.

C. Provide products and components which have been UL-listed and labeled, including UL marks indicating special type usage whenever applicable.

1.04 DELIVERY, STORAGE AND HANDLING

A. Controls and equipment shall be stored away from contact with the earth and protected from the weather.

1.05 SUBMITTALS

A. The Contractor shall furnish shop drawings for approval before ordering equipment and/or materials. Shop drawings are required for control stations to be used on the project. **Shop drawings shall be clear and legible:**

1. **Certification of compliance with the AIP (Airport Improvement Program) Buy American Preferences for all materials and equipment. Do not submit ARRA (American Recovery and Reinvestment Act) certification as a substitute for certification of compliance with the AIP Buy American Preferences. Shop drawings**

submitted without certification of compliance with the Airport Improvement Program Buy American Preferences or without certification of manufacture in the United States of America in accordance with the AIP Buy American Requirements will be rejected. See the FAA website at: http://www.faa.gov/airports/aip/buy_american/ for more information on the Airport Improvement Program Buy American Preferences requirements.

2. In order to expedite the shop drawing review, inspection and/or testing of materials and equipment, the Contractor shall furnish complete statements to the Engineer as to the origin and manufacturer of all materials and equipment to be used in the work. Such statements shall be furnished promptly after execution of the contract but, in all cases, prior to delivery of such materials and equipment.

3. Provide cut sheets and specifications for emergency shut off stations.

2. PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Emergency Fuel Shutoff Control Station Manufacturers: Allen-Bradley Co., Crouse Hinds, Appleton, Hubbell-Killark, or Square D Co.

2.02 EQUIPMENT SPECIFICATION

A. Emergency Fuel Shut-Off Push Button Station: Two (2) emergency fuel shut off stations shall be provided for the fuel facility. Each emergency fuel shut off station shall disconnect all power to the fuel dispensing systems when activated. One emergency fuel shut-off switch shall be located at the tank near the pumps. A second emergency fuel shut-off switch shall be located as detailed on the Plans. Emergency fuel shut off push button stations located at the dispenser site and at remote outdoor locations shall be front operated red mushroom knob, momentary contact or maintained contact push type (to properly operate the shunt trip of the respective circuit breaker) with universal contact blocks (one (1) normally open and one (1) normally closed for each block), with contacts rated 10 Amps at 120 VAC, in a NEMA 7 enclosure UL-listed or FM listed suitable for Class I, Division 1, Group D hazardous location and rain tight suitable for wet locations. The emergency fuel shut-off push button station located outdoors in a non-hazardous location may be in a NEMA 4 enclosure. Emergency fuel shut-off push button stations shall be manufactured by Crouse Hinds, Appleton, or approved equal. Include placard in accordance with NFPA 407 and as detailed on the Plans for each emergency fuel shut off station labeled “EMERGENCY FUEL SHUTOFF” and noting method to operate and reset the push button station.

3. EXECUTION

3.01 INSTALLATION

A. Comply with requirements for Class I, Division 1 and Class I, Division 2 locations for hazardous locations of building areas and fuel system areas, in accordance with NFPA 70, NEC (most current issue in force).

B. Verify exact locations and elevations of emergency fuel shut-off push button station with Engineer and/or Owner's Representative prior to installation, where dimensions are not indicated.

C. Install electrical materials as indicated with offsets, fittings and changes in elevations as required to make adjustments for obstacles or interferences.

D. Do not allow electrical materials installation to cause any equipment to be unserviceable or inoperable.

E. Install products in conformance with manufacturer's instruction and as detailed on the Plans.

4. PAYMENT

4.01 BASIS OF PAYMENT

A. All electrical control devices will not be paid for separately, but shall be considered incidental to the respective item of work for which it is necessary, and no additional compensation will be allowed.

END OF SECTION 16902

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APPENDIX A

Constant Current Regulator and
Cable Testing Forms

Engineering Firm	Hanson Professional Services Inc.
Airport Name	PRG-Edgar County Airport
Project	Apron Expansion and Relocate/Upgrade Fuel Facility
IDA Project	PRG-4144
Hanson Project	13A0062C
Date	

TESTING FORMS

Prior to beginning airfield lighting removals, modifications, replacements, and/or cable installation all existing series circuit cables shall be Megger tested with an insulation resistance tester and recorded at the vault. All existing series circuit cable loops shall have the resistance measured with an Ohmmeter and recorded for each circuit at the vault. Each constant current regulator shall be tested with results recorded. Note: output voltage measurements are not require for constant current regulators that are not equipped with output voltage meters. Provide a True RMS Ammeter for current measurements.

__ Record the manufacture and model number of the insulation resistance tester used for the Megger tests. Note: it is recommended to use the same insulation resistance tester again after airfield lighting modifications, additions, and/or upgrades have been completed.

__ Record the manufacture and model number of the Ohmmeter used to measure resistance of each series circuit cable loop. Note: it is recommended to use the same Ohmmeter again after airfield lighting modifications, additions, and/or upgrades have been completed.

__ Record the manufacture and model number of the Ammeter used to measure current readings.

__ Megger test and record Runway 9-27 series circuit cable loop at the vault.

__ Runway 9-27 series circuit cable loop shall have the resistance tested and recorded at the vault.

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TESTING FORMS

__ Megger test and record Taxiway series circuit cable loop at the vault.

__ Taxiway series circuit cable loop shall have the resistance tested and recorded at the vault.

__ Megger test and record Runway 18-36 series circuit cable loop at the vault.

__ Runway 18-36 series circuit cable loop shall have the resistance tested and recorded at the vault.

Engineering Firm	Hanson Professional Services Inc.
Airport Name	PRG-Edgar County Airport
Project	Apron Expansion and Relocate/Upgrade Fuel Facility
IDA Project	PRG-4144
Hanson Project	13A0062C
Date	

TESTING FORMS

Prior to beginning airfield lighting modifications and/or cable installation each constant current regulator shall be tested with results recorded. **Note: Output voltage measurements are not required for constant current regulators that are not equipped with output voltage meters.**

__ Test Runway 9-27 CCR by Manual Control and record input current, output amperage and output voltage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

__ Test Runway 9-27 CCR by L-854 Radio Control **(Photocell Bypass On)** and record input current, output amperage, and output voltage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

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TESTING FORMS

__ Test Runway 9-27 CCR by Photocell and record input current, output amperage, and output voltage at respective preset step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		

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TESTING FORMS

Prior to beginning airfield lighting modifications and/or cable installation each constant current regulator shall be tested with results recorded.

__ Test Backup CCR for Runway 9-27 by Manual Control and record input current and output amperage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT
B10	Phase A:	
	Phase B:	
B30	Phase A:	
	Phase B:	
B100	Phase A:	
	Phase B:	

__ Test Backup CCR for Runway 9-27 by L-854 Radio Control **(Photocell Bypass On)** and record input current and output amperage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT
B10	Phase A:	
	Phase B:	
B30	Phase A:	
	Phase B:	
B100	Phase A:	
	Phase B:	

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TESTING FORMS

__ Test Backup CCR for Runway 9-27 by Photocell and record input current and output amperage at respective preset step.

STEP	INPUT CURRENT	OUTPUT CURRENT
B10	Phase A:	
	Phase B:	

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TESTING FORMS

Prior to beginning airfield lighting modifications and/or cable installation each constant current regulator shall be tested with results recorded.

__ Test Taxiway CCR by Manual Control and record input current and output amperage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

__ Test Taxiway CCR by L-854 Radio Control **(Photocell Bypass On)** and record input current, output amperage, and output voltage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

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TESTING FORMS

Prior to beginning airfield lighting modifications and/or cable installation each constant current regulator shall be tested with results recorded.

__ Test Runway 18-36 CCR by Manual Control and record input current and output amperage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

__ Test Runway 18-36 CCR by L-854 Radio Control **(Photocell Bypass On)** and record input current, output amperage, and output voltage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

Engineering Firm	Hanson Professional Services Inc.
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Date	

TESTING FORMS

After airfield lighting modifications, additions, and/or upgrades have been completed, series circuit cables shall be Megger tested with an insulation resistance tester and recorded at the vault. All series circuit cable loops shall have the resistance measured with an Ohmmeter and recorded for each circuit at the vault. Each constant current regulator shall be tested with results recorded. Note: Output voltage measurements are not required for constant current regulators that are not equipped with output voltage meters. Note: Provide a True RMS Ammeter for current measurements.

__ Record the manufacture and model number of the insulation resistance tester used for the Megger tests.

__ Record the manufacture and model number of the Ohmmeter used to measure resistance of each series circuit cable loop.

__ Record the manufacture and model number of the Ammeter used to measure current readings.

__ Megger test and record Runway 9-27 series circuit cable loop at the vault.

__ Runway 9-27 series circuit cable loop shall have the resistance tested and recorded at the vault.

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TESTING FORMS

__ Megger test and record Taxiway series circuit cable loop at the vault.

__ Taxiway series circuit cable loop shall have the resistance tested and recorded at the vault.

__ Megger test and record Runway 18-36 series circuit cable loop at the vault.

__ Runway 18-36 series circuit cable loop shall have the resistance tested and recorded at the vault.

Engineering Firm	Hanson Professional Services Inc.
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TESTING FORMS

After airfield lighting modifications, additions, and/or upgrades have been completed, each constant current regulator shall be tested with results recorded. **Note: Output voltage measurements are not required for constant current regulators that are not equipped with output voltage meters.**

__ Test Runway 9-27 CCR by Manual Control and record input current, output amperage and output voltage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

__ Test Runway 9-27 CCR by L-854 Radio Control **(Photocell Bypass On)** and record input current, output amperage, and output voltage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

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TESTING FORMS

__ Test Runway 9-27 CCR by Photocell and record input current, output amperage, and output voltage at respective preset step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		

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TESTING FORMS

After airfield lighting modifications, additions, and/or upgrades have been completed, each constant current regulator shall be tested with results recorded.

__ Test Backup CCR for Runway 9-27 by Manual Control and record input current and output amperage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT
B10	Phase A:	
	Phase B:	
B30	Phase A:	
	Phase B:	
B100	Phase A:	
	Phase B:	

__ Test Backup CCR for Runway 9-27 by L-854 Radio Control **(Photocell Bypass On)** and record input current and output amperage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT
B10	Phase A:	
	Phase B:	
B30	Phase A:	
	Phase B:	
B100	Phase A:	
	Phase B:	

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__ Test Backup CCR for Runway 9-27 by Photocell and record input current and output amperage at respective preset step.

STEP	INPUT CURRENT	OUTPUT CURRENT
B10	Phase A:	
	Phase B:	

Engineering Firm	Hanson Professional Services Inc.
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TESTING FORMS

After airfield lighting modifications, additions, and/or upgrades have been completed, each constant current regulator shall be tested with results recorded.

__ Test Taxiway CCR by Manual Control and record input current and output amperage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

__ Test Taxiway CCR by L-854 Radio Control **(Photocell Bypass On)** and record input current, output amperage, and output voltage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

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TESTING FORMS

After airfield lighting modifications, additions, and/or upgrades have been completed, each constant current regulator shall be tested with results recorded.

__ Test Runway 18-36 CCR by Manual Control and record input current and output amperage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

__ Test Runway 18-36 CCR by L-854 Radio Control **(Photocell Bypass On)** and record input current, output amperage, and output voltage at each step.

STEP	INPUT CURRENT	OUTPUT CURRENT	OUTPUT VOLTS
B10	Phase A:		
	Phase B:		
B30	Phase A:		
	Phase B:		
B100	Phase A:		
	Phase B:		

APPENDIX B

IDOT Division of Aeronautics
Policy Memorandum 96-1

Item 610, Structural Portland Cement Concrete:
Job Mix Formula Approval & Production Testing

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State of Illinois
Department of Transportation
Division of Aeronautics

POLICY MEMORANDUM

April 1, 2010	Springfield	Number 96-1

TO: CONSULTING ENGINEERS

SUBJECT: ITEM 610, STRUCTURAL PORTLAND CEMENT CONCRETE:
JOB MIX FORMULA APPROVAL & PRODUCTION TESTING.

I. This policy memorandum addresses the Job Mix Formula (JMF) approval process and production testing requirements when Item 610 is specified for an airport construction contract.

II. PROCESS

a. The contractor may submit a mix design with recent substantiating test data or he may submit a mix design generated by the Illinois Division of Highways with recent substantiating test data for approval consideration. The mix design should be submitted to the Resident Engineer.

b. The Resident Engineer should verify that each component of the proposed mix meets the requirements set forth under Item 610 of the *Standard Specifications for Construction of Airports* and/or the contract special provisions.

c. The mix design should also indicate the following information:

1. The name, address, and producer/supplier number for the concrete.
2. The source, producer/supplier number, gradation, quality, and SSD weight for the proposed coarse and fine aggregates.
3. The source, producer/supplier number, type, and weight of the proposed flyash and/or cement.
4. The source, producer/supplier number, dosage rate or dosage of all admixtures.

d. After completion of Items b and c above, the mix with substantiating test data shall be forwarded to the Division of Aeronautics for approval. Once the mix has been approved, the production testing shall be at the rate in Section III as specified herein.

III. PRODUCTION TESTING

a. One set of cylinders or beams, depending on the strength specified, shall be cast for acceptance testing for each day the mix is used. In addition, at least one slump and one air test shall be conducted for each day the mix is used. If more than 100 c.y. of the mix is placed in a given day, additional tests at a frequently of 1 per 100 c.y. shall be taken for strength, slump, and air. The concrete shall have a maximum slump of three inches (3") and minimum slump of one inches (1") when tested in accordance with ASTM C-143. The air content of the concrete shall be between 5% and 8% by volume. At no time shall the temperature of the concrete exceed 90 degrees Fahrenheit.

b. If the total proposed amount of Item 610 Structural Portland Cement Concrete as calculated by the Resident Engineer is less than 50 c.y. for the entire project, the following shall apply:
   - The Resident Engineer shall provide calculations of the quantity of Item 610 to the Division of Aeronautics.
   - One set of cylinders or beams, depending the strength specified, shall be cast for acceptance testing.
   - One air content and one slump test shall be taken for acceptance testing.
   - The concrete shall have a maximum slump of three inches (3") and minimum of one inch (1") when tested in accordance with ASTM C-143. The air content of the concrete shall be between 5% and 8% by volume. At no time shall the temperature of the concrete exceed 90 degrees Fahrenheit.

c. The Resident Engineer shall collect actual batch weight tickets for every batch of Item 610 concrete used for the project. The actual batch weight tickets shall be kept with the project records and shall be available upon request of the Department of Transportation.

Steven J. Long, P.E.
Acting Chief Engineer

Supersedes Policy Memorandum 96-1 dated January 1, 2004