04A

Letting April 26, 2019

Notice to Bidders, Specifications and Proposal

Illinois Department of Transportation

Springfield, Illinois 62764

Contract No. SP025
Sparta Community Airport
Sparta, Illinois
Randolph County
Illinois Project No. SAR-4583
SBG Project No. 3-17-SBGP-99/105/111/120/133/139/144

(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 April 26, 2019, 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. SP025
   Sparta Community Airport
   Sparta, Illinois
   Randolph County
   Illinois Project No. SAR-4583
   SBG Project No. 3-17-SBGP-99/105/111/120/133/139/144

   Mill and Overlay Existing T-Hangar Site Taxilanes; Construct New T-Hangar Building and New Taxiway Approaches; Rehabilitate Hangar 1: Repaint Hangar Roof, Exterior Walls, & Upgrade Building Wiring

   For engineering information, please contact Christopher B. Groth, P.E. of Crawford, Murphy & Tilly, Inc. at 217.572.1101.

3. **INSTRUCTIONS TO BIDDERS**.

   (a) This Notice, the invitation for bids, proposal, letter of award, contract form, payment bond and performance bond, Specifications, Supplemental Specifications, Special Provisions, general and detailed plans, *Manual for Documentation of Airport Materials*, *Airport Construction Documentation Manual*, and any Agreements that are required to complete the construction of the work in an acceptable manner, including authorized extensions thereof, all of which constitute one instrument, shall 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 11.0%.

7. **SPECIFICATIONS AND DRAWINGS.** The work shall be done in accordance with the Specifications, the Special Provisions dated March 1, 2019, and the Construction Plans dated March 1, 2019 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 204 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

Omer Osman,
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: March 2, 2019

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 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 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, in the absence of unlawful discrimination and in an arena of fair and open competition, DBE companies can be expected to perform 11.0% 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 enough DBE participation has been obtained to meet the goal or,

(b) The bidder documents 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 a material bidding requirement and failure of the bidder to comply will render the bid not responsive.

The bidder shall submit a DBE Utilization Plan (form SBE 2026), and a DBE Participation Statement (form SBE 2025) for each DBE company proposed for the performance of work to achieve the contract goal, with the bid. If the Utilization Plan indicates the contract goal will not be met, documentation of good faith efforts shall also be submitted. 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. The required forms and documentation must be submitted as a single .pdf file using the "Integrated Contractor Exchange (iCX)" application within the Department's "EBids System".

The Department will not accept a Utilization Plan if it does not meet the bidding procedures set forth herein and the bid will be declared not responsive. In the event the bid is declared not responsive, 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.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan is approved. All information submitted by the bidder must be complete, accurate and adequately document enough DBE participation has been obtained or document the 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. This means 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 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 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 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 the 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 it is otherwise eligible for award. If the Department determines 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 will also include a statement of reasons for the adverse 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 to cure the deficiency.

(c) The bidder may request administrative reconsideration of an adverse determination by emailing the Department at "DOT.DBE.UP@illinois.gov" within the five calendar days after the receipt of the notification of the determination. The determination shall become final if a request is not made on or before the fifth calendar day. 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 reviewed by the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person 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 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 emailed to the Department at DOT.DBE.UP@illinois.gov.

(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, a new Request for Approval of Subcontractor will not be required. However, the Contractor must document efforts to assure 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 copies of DBE subcontracts to the Department 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) 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) The DBE is aware 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) 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 Contractor;

(3) The listed DBE subcontractor fails or refuses to meet the 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) The Contractor has determined the listed DBE subcontractor is not a responsible contractor;

(7) The listed DBE subcontractor voluntarily withdraws from the projects and provides written notice to the Contractor 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 Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the Contractor can self-perform the work for which the DBE contractor was engaged or so that the 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 will 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 30 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 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 may 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
Effective: November 2, 2017
Revised: April 1, 2019

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 the Specifications, the Contractor shall make a mobilization payment to each subcontractor.

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

Value of Subcontract Reported on Form AER 260A	Mobilization Percentage
Less than $10,000	25%
$10,000 to less than $20,000	20%
$20,000 to less than $40,000	18%
$40,000 to less than $60,000	16%
$60,000 to less than $80,000	14%
$80,000 to less than $100,000	12%
$100,000 to less than $250,000	10%
$250,000 to less than $500,000	9%
$500,000 to $750,000	8%
Over $750,000	7%

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
Effective: November 2, 2017

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 the 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. If reasonable cause is asserted, written notice shall be provided to the applicable subcontractor and/or material supplier and the Engineer within five days of the Contractor receiving payment. The written notice shall identify the contract number, the subcontract or material purchase agreement, a detailed reason for refusal, the value of payment being withheld, and the specific remedial actions required of the subcontractor and/or material supplier so that payment can be made.

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 204 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 80-08 Failure to Complete on Time of the 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

80-08 FAILURE TO COMPLETE ON TIME.

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

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 - IL - Kankakee	9.1

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 Sparta, Illinois; Randolph 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 Sparta Community Airport Authority, 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 Sparta Community Airport Authority 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

100% SPECIAL PROVISIONS

FOR

MILL AND OVERLAY EXISTING T-HANGAR SITE TAXILANES; CONSTRUCT NEW T-HANGAR BUILDING AND NEW TAXIWAY APPROACHES; REHABILIATATE HANGAR 1: REPAINT HANGAR ROOF, EXTERIOR WALLS, & UPGRADE BUILDING

AT

SPARTA COMMUNITY AIRPORT
SPARTA, ILLINOIS

IL. PROJECT NO. SAR-4583
FED PROJECT NO. 3-17-SBGP-99/105/111/120/133/139/144

MARCH 1, 2019

PEPARED FOR:

SPARTA COMMUNITY AIRPORT

LICENSED ARCHITECT
GEORGE T. CAIN
001-016369
STATE OF ILLINOIS
expires 11·30·2020
signature
3·1·2019
date

PREPARED BY:

CMT
Crawford, Murphy & Tilly

March 1, 2019
CHRISTOPHER B. GROTH
062-056232
LICENSED PROFESSIONAL ENGINEER
OF
ILLINOIS
Exp. November 30, 2019

CRAWFORD, MURPHY & TILLY, INC.
Consulting Engineers
2750 West Washington Street

Springfield, Illinois 62702

GENERAL INFORMATION

These Special Provisions, together with applicable Standard Specifications, Contract Requirements for Airport Improvement Project, Rules and Regulations, 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, Division of Aeronautics, and the representatives of the Sparta Community Airport Authority for the improvements at Sparta Community Airport, Sparta, Illinois.

GOVERNING SPECIFICATIONS AND RULES AND REGULATIONS

The "Standard Specifications for Construction of Airports", State of Illinois, Department of Transportation, Division of Aeronautics, adopted April 1, 2012 shall govern the project except as otherwise noted in these Special Provisions. In the case of conflict with any part or parts of said specifications, the said Special Provisions shall take precedence and shall govern.

Specifications may be obtained at:
http://www.idot.illinois.gov/home/resources/Manuals/Manuals-and-Guides.

Where referenced within the Special Provisions, the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction adopted April 1, 2016 shall apply.

INDEX TO SPECIAL PROVISIONS

ITEM NUMBER / DISCRIPTION *PAGE NUMBER*

DIVISION I – GENERAL PROVISIONS

SECTION 40 – SCOPE OF WORK

40-05 MAINTENANCE OF TRAFFIC

Maintenance of Airport Systems are critical to the operation of the Airport and the safety and/ or security of the traveling public. Prior to beginning work the contractor shall investigate existing systems which may be located within the work area and locate all existing utilities. The contractor may seek assistance from the JULIE, Engineer, Resident Engineer, Airport and FAA with locating utilities but the final responsibility for all utility locates lies solely with the contractor. If the contractor's investigation reveals that a utility must be relocated to allow for the performance of the work in the plans, the contractor shall immediately notify the Resident Engineer and remain clear of the utility until resolution has been determined by the Division and the Airport. Any system, including but not limited to systems associated with security, air navigation, weather, airfield lighting damaged by the contractor's operations shall be immediately repaired to the satisfaction of the owner. No delay shall be taken in the repair of the damaged facility. The contractor shall not be allowed to finish work for the day until the utility has been repaired.

To maintain airport operations and to facilitate the construction of the proposed work, the project has been divided into separate phases in accordance with Advisory Circular 150/5370-2G Operational Safety on Airports During Construction. References to Construction Safety and Phasing Plans (CSPP) in that document shall be interpreted to mean the phase limits, barricade locations, access points and notes shown on the construction activity plan sheets included in the as-bid contract documents. When "safety" is used or referred to in the contract documents and in the advisory circular(s) it shall be redefined by this contract as meaning "operational safety". The Construction Operational Safety and Phasing Plan (CSPP) establishes the airport and project specific requirements, supplementing the requirements in the AC, that are to be included in the contractor's bid for maintaining operational safety during construction.

The Construction Operational Safety and Phasing Plan (CSPP) contained herein has been approved by both the Airport and the FAA. The contractor shall be required to divide the overall work into separate phases in substantial conformance with the CSPP shown in the plans, except as allowed by the contract documents and approved by the Division on behalf of the FAA. Durations specified for individual phases shall become requirements of the contract and shall be subject to liquidated damages.

10 days prior to the preconstruction conference the contractor shall submit a Safety Plan Compliance Document (SPCD) to the airport describing how he will comply with the requirements of the advisory circular plus the CSPP and supplying any details that could not be determined before contract award. The SPCD must include a certification statement by the contractor that indicates he understands the operational safety requirements of the CSPP, that the contractor has incorporated these requirements into their overall work plan and that the contractor will maintain the right of control for all means, methods and details of the work performed by the contractor and any of his subcontractors within the framework of the operational safety plan.

The Contractor shall be fully aware and continuously monitor all requirements and activities for compliance with the contract documents and Advisory Circular 150/5370-2G.

Ten days prior to the commencement of each phase the contractor shall submit an updated Safety Plan Compliance Document for that phase that meets the requirement of Advisory Circular 150/5370-2G. The updated Safety Plan Compliance Document(s) shall detail implementation of the construction haul routes, procedures utilized by the contractor to eliminate conflicts between construction operations and aircraft traffic shall be included.

Significant Changes to the Construction Operational Safety and Phasing Plan (CSPP) may require aeronautical review by the Division through the FAA's OEAAA System. Modification of the Construction Operational Safety and Phasing Plan (CSPP) and/ or the critical points shown in the contract documents will require airspace approval from Division/ FAA and may require the contractor to submit FAA Form 7460 for Approval.

The Contractor shall not have access to any part of the active airfield (runway, taxiway or apron) for all equipment or personnel without the approval of the Resident Engineer and Airport Manager.

The Contractor will erect signs stating "Construction Access Only "at all gates or areas where they are gaining access to the airfield. These signs will be required to help keep the public off the airfield.

SECTION 50 – CONTROL OF WORK

50-04 COOPERATION OF CONTRACTOR

ADD: The completion of the individual phase shown in the project and the overall completion of this project prior to the contract completion date is of extreme importance to the Airport and the Airport Users. The Contractor shall update his progress schedule as required for the scheduled progress meetings. No compensation will be made for accelerated work to meet schedule and/or contract time.

50-06 CONSTRUCTION LAYOUT STAKES

DELETE: The first paragraph.

ADD: As the first paragraph:

The Contractor will be required to furnish and place construction layout stakes for this project.

The Resident Engineer will locate and reference three (3) control points and will establish benchmarks along the line of the improvement outside construction limits. The Contractor shall locate and reference the centerline of survey, which shall also consist of locating and referencing control points such as point of curvature, points of tangent, and sufficient points on tangent to provide a line of sight. Control points set by the Resident Engineer shall be identified in the field to the Contractor, and the field notes shall be kept in the office of the Resident Engineer.

RESPONSIBILITY OF THE RESIDENT ENGINEER

DELETE: Lines A & B.

ADD:

A. The Resident Engineer will locate and reference three (3) control points within the limits of the project.

B. Benchmarks will be established along the project outside of construction lines.

DELETE: Line D.

REVISE: Line E to read: The Resident Engineer may make random checks . . . .

DELETE: Line F.

DELETE: Line L.

50-12 LOAD RESTRICTIONS

ADD: Access to the construction work area is limited to the haul routes as shown on the site plan and construction activity plan drawings. The use of existing airfield pavements by the contractor construction traffic, including all haul traffic, is limited to the hauling routes as shown on the site plan and construction activity plan drawings. Use of existing airfield pavement other than as shown on the site plan and construction activity plan drawings is prohibited. Any damage to existing airfield pavement due to construction traffic operating beyond the approved work limits, hauling outside of the approved haul/access routes and construction traffic

operating in prohibited areas shall be repaired by the Contractor at his own expense to the satisfaction of the Owner.

If it is found the fully loaded delivery trucks are excessively damaging the Airport or local roadway pavement, the Contractor shall limit the weight of the material being hauled onto the site. The Resident Engineer shall determine what is considered excessive damage. No payments will be made for additional hauling that may be required due to load restrictions.

The Contractor shall coordinate construction hauling, construction access and load restrictions with the County Superintendent of Highways and/or the Township Road Commissioner and the City of Sparta as required. The Contractor shall be responsible for damage to any airfield pavement or public road caused by his construction operations. Any damage to existing airfield pavements or public roads shall be replaced by the Contractor at his own expense to the satisfaction of the Owner.

50-13 MAINTENANCE DURING CONSTRUCTION

ADD: The contractor shall make provisions in the work to maintain positive drainage from the work areas and to minimize the ponding of water. In areas where the contractor is required to core out or remove pavements the contractor shall cut temporary ditches or swales to maintain positive drainage. At locations where temporary ditches are not feasible, the contractor shall excavate storm water storage areas adjacent to but at a lower elevation than the bottom of the work and utilize mechanical pumps to promptly remove storm water from the excavations.

ADD: All existing pavement areas that are to remain open to aircraft traffic shall be kept clean to the satisfaction of Airport Operations and the Resident Engineer. At the request of the Resident Engineer or of the Airport, the Contractor shall provide a vacuum or regenerative (recirculating) air pavement sweeper. At a minimum, a pavement blower shall be kept on site at all times.

ADD: Material tracked onto public streets shall be removed continuously during the work.

ADD: No material capable of being blown onto airfield pavement will be allowed to be stored uncovered anywhere within the fence line, at any time during construction.

50-16 FINAL INSPECTION

DELETE: The first sentence of the first paragraph.

ADD: As the first sentence of the first paragraph.

Upon due notice to the Resident Engineer from the Contractor of presumptive completion of the entire project, the charging of Contract Time shall be suspended, and the Engineer will make an inspection.

ADD: After the first sentence of the second paragraph:

The charging of Contract Time shall resume on the day following the inspection and shall continue until the remaining work, including the applicable requirements of Section 40-08, Final Clean Up, is completed to the Engineer’s satisfaction.

50-18 PLANS AND WORK DRAWINGS

ADD: After the third paragraph:

Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals.

Prior to submission, the Contractor shall review all shop drawing submittals for accuracy, completeness, and compliance with the contract requirements. The Contractor shall stamp, sign and date each submittal indicating Contractor approval of the submittal.

When submittals require close coordination of a number of products, the Contractor shall coordinate a concurrent submittal of all such products. The Project Engineer may withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Any deviation from contract requirements shall be clearly identified on the shop drawing submittal and supporting documentation for such deviation shall be attached. The Project Engineer reserves the right to rescind inadvertent acceptance of submittals containing unidentified deviations.

REVISE: The second sentence of the seventh paragraph to read as follows:

Such review will not relieve the Contractor of the responsibility for complying with the contract document requirements or for any error that may exist in the submittal. The Contractor is responsible for the dimensions and designs of adequate connections, detail and satisfactory construction of all work.

EDIT: Information to be included on shop drawing submittals shall conform to the following:

PROJECT LOCATION:	Sparta Community Airport
PROJECT TITLE:	Mill & Overlay T-Hangar Taxilanes: Construct Pavement Surrounding the New T-Hangar Building Construct New 6-Unit T-Hangar
PROJECT NUMBERS:	Illinois Project No. SAR-4583 AIP Project: 3-17-SBGP - 99/105/111/120/133/139/144
CONTRACT ITEM:	(Pay Item Name & Number) i.e.: AR161510 - Class C Fence
SUBMITTED BY:	(Contractor/Subcontractor Name)
DATE:	(Date of Submittal)

This information shall be included on each page of each submittal.

ADD: The Project Engineer shall return incomplete or vague material shop drawing submittals for completion prior to review.

Shop drawing submittals shall contain a letter of certification from the producer stating that all materials furnished for the project conform to the requirements of the plans and specifications including conformance with the FAA Buy American Preference. Letters of certification from the producer shall be dated no more than six (6) months prior to the date it is submitted to the Project Engineer. Letters of certification from producers to verify submitted material conforms to the requirements of the contract shall be submitted on company letterhead and include the project name, location and project numbers. Submittals not including this information shall not be reviewed and returned as incomplete. Incomplete shop drawing submittals causing re-submittal(s) shall not be allowed as justification for additional contract time.

The Project Engineer will review each submittal; mark corrections or modifications required and return it to the Contractor. The Project Engineer will stamp each submittal with an action stamp and will mark the stamp appropriately to indicate action taken as follows. Submittals marked "Resubmit with Corrections" or "Rejected" shall not be used at the project site. All submittals must ultimately receive "No Exceptions Taken" stamp from the Project Engineer to be eligible for payment. Submittals stamped "Exceptions Taken as Noted" are not considered approved shop drawings.

1. "No Exceptions Taken": Means fabrication/installation may be undertaken. Submittals stamped as such do not authorize changes to the contract price or time.

2. "Exceptions Taken as Noted": Same as "No Exceptions Taken" provided the Contractor complies with the corrections noted on the submittal by the Engineer. The Contractor is still obligated to resubmit the submittal including the corrections made by the Engineer so ultimately a shop drawing stamped "No Exceptions Taken" may be forwarded to the Division. Submittals not stamped Approved are not considered approved shop drawings.

3. "Resubmit with Corrections": Fabrication and/or installation MAY NOT be undertaken. Make appropriate revisions and resubmit limiting corrections to items marked.

SECTION 60 – CONTROL OF MATERIALS

60-01 SOURCE OF SUPPLY AND QUALITY REQUIREMENTS

REVISE: The first sentence of the third paragraph as follows:

. . . shall provide, prior to delivery, . . .

ADD: At the end of this section:

C. Meets “Buy American Preference” requirements.

The materials used on the work shall be new and conform to the requirements of the specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

In order to expedite the inspection and testing of materials, the Contractor shall furnish complete statements to the Owner as to the origin, composition, and manufacture of all materials to be used in the work. Such statements shall be furnished promptly after execution of the contract or with the shop or working drawing submittals but, in all cases, prior to delivery of such materials. All materials shall meet the requirements of the Buy American Preference as stated in Appendix 3. The Contractor shall provide proof of 100% domestic materials prior to the issuance of the Notice to Proceed for construction. Materials that are unable to meet this requirement shall be reported in the bid documents under Certifications Required by State and/or Federal Law, Buy American Certificate.

Only FAA approved manufacturers meeting the Buy American preference requirements can provide the FAA approved equipment and materials specified in this document. The manufacturer shall certify in writing, all products are wholly produced in the US of US materials, or Request a waiver to use non-US produced products, or Certify that all equipment that is being used on the project is on the Nationwide Buy American conformance list.

The waiver can be considered if “at least 60% 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.”

In any calculation of Buy American percentage, the labor for the final assembly is excluded. This is because the Buy American statute is based on the cost of materials and equipment, not labor. For a building, this means that only the costs of the materials as they are delivered to the airport site are considered when calculating US and non-US component and subcomponent costs. For equipment, the costs of the final assembly at the manufacturing site are excluded.

The contractor must request waivers through the Resident Engineer in writing, with sufficient supporting information. The Contractor is solely responsible for ensuring their waiver request is complete and accurate using project specific information provided directly by the contractor or the contractor’s supplier. The Contractor shall request any waivers immediately following award. Approval of the waiver may require between 90 and 120 days.

The FAA will conduct its review and approval based on the information provided by the grant recipient.

The information that must be provided for equipment shall include but not be limited to:

- Project Number

- Project Name
- Airport Name
- Total Project Cost
- Total Equipment or Bid Item Cost for which the waiver is being requested
- Total Equipment or Bid Item Cost excluding labor for final assembly.
- The equipment or bid item for which the waiver is being requested
- The manufacturer and country of origin of the equipment or bid item.
- The location of the final assembly of the equipment or bid item (not the airport site)
- The cost of the US components and subcomponents for the equipment or bid item for which the waiver is being requested
- The cost of the non-US components and subcomponents for the equipment or bid item for which the waiver is being requested
- The resulting percent of US and non-US components

The contractor/ manufacturer are urged to submit waiver requests as early as possible. The Notice to Proceed will not be issued without all waivers being submitted and approved.

60-11 CERTIFICATION OF MATERIALS

ADD: The Contractor shall certify all materials contained in the contract. Certification and documentation shall be submitted to the Resident Engineer. It shall be the sole responsibility of the Contractor to ensure the delivery of adequate and accurate documentation prior to the delivery of materials. Materials incorporated into this project without approved certification and documentation will not be recommended for payment by the Resident Engineer. **It shall be the sole responsibility of the Contractor to provide certification that ALL materials to be used on the project meet the "Buy American" requirements.**

The certification shall be submitted as part of the shop drawing submittal.

As a guide to the certification process and requirements, the Contractor shall use the Illinois Department of Transportation/Division of Aeronautics MANUAL FOR DOCUMENTATION OF AIRPORT MATERIALS (latest edition). Copies of this manual are available from the Illinois Division of Aeronautics. The MANUAL FOR DOCUMENTATION OF AIRPORT MATERIALS defines the Resident Engineer's/Contractor's responsibilities (Sections 300/400). The Contractor shall have the sole responsibility to provide the Resident Engineer with appropriate documentation to satisfy the contract certification requirements prior to the delivery of materials.

The cost of providing the required material documentation and certifications shall not be paid for separately but shall be considered incidental to the associated item.

All submittals shall contain the following information:

PROJECT LOCATION:	Sparta Community Airport
PROJECT TITLE:	Mill & Overlay T-Hangar Taxilanes: Construct Pavement Surrounding the New T-Hangar Building Construct New 6-Unit T-Hangar
PROJECT NUMBERS:	Illinois Project No. SAR-4583
CONTRACT ITEM:	(AR161510 – Class C Fence)
SUBMITTED BY:	(Contractor/Subcontractor Name)
DATE:	(Date of Submittal)

If the Division of Aeronautics requires additional documentation, they shall request it through the Resident Engineer.

SECTION 70 – LEGAL REGULATIONS AND RESPONSIBILITY TO PUBLIC

70-10 BARRICADES, WARNING SIGNS AND HAZARD MARKINGS

ADD: After the second paragraph:

The Contractor shall provide and install any warning signs (trucks entering highway, etc.) and provide flagmen as required by the agency responsible for public roadway jurisdiction i.e. City of Sparta, Illinois Department of Transportation. Any cost for signage or traffic control shall be borne by the Contractor

IDOT Type 1 or low-profile barricades as approved by the FAA shall be provided per the details in the plan sheets. The barricades shall be lighted with steady burn omni-directional red lights supplemented with a 20” x 20” orange flag.

The barricades shall be sufficiently weighted with sandbags or other appropriate method to withstand high winds or jet blast without dislocation.

The barricades must be of low mass and easily collapsible upon contact with an aircraft.

Barricades shall be placed as shown in the plans or as directed by the Resident Engineer or Airport.

The Contractor shall be responsible for supplying, maintaining and any moving of all barricades. Lights shall be maintained in proper working order. No separate payment will be made for supplying, maintaining and moving barricades but shall be considered incidental to the contract.

70-13 RESPONSIBILITY FOR DAMAGE CLAIMS

REVISE: In the second sentence of the first paragraph, change the word “inspection” to “observation”.

REVISE: In the last sentence of the fourth paragraph, change the word “inspection” to “observation”.

70-17 CONTRACTOR’S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS

REVISE: The second paragraph as follows:

“. . ., the approximate locations and owners have been indicated on the plans.”

DELETE: “Person to Contact” table after the second paragraph.

ADD: After the third paragraph:

The Contractor shall be responsible for locating Airport owned utilities.

ADD: After the fifth paragraph:

The Contractor shall be responsible for locating Airport owned utilities. The following table includes contact numbers that may provide assistance for locating cable. The personnel listed in the table are in no way responsible for damage to existing utilities.

If, in the Contractor's opinion, additional assistance is needed to locate the utility service or facility, the contractor shall enlist the assistance of a qualified technician or professional utility location firm to accurately locate underground utilities or facilities prior to excavation. Prior to

commencing this detailed location work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such owner of his/her plan of operation and request the presence of a representative of the owner to observe the work. Such notification shall be given by the most expeditious means to reach the utility owner's PERSON TO CONTACT no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the Engineer.

Only after the investigation has been made should the contractor begin excavation operations. Upon beginning these operations, the contractor shall use extreme caution in the methods utilized. The contractor shall utilize exploratory trenching or small tool excavation practices when beginning operations in critical areas to verify that the utilities are clear of the area of interest or to verify the location and depth of these facilities.

Utility Service or Facility	Person to Contact	Contact Phone
FAA Control & Communications Cable	Airways Facility Unit	1-217-355-4042
Airfield Lighting Cables	Airport Manager	Arrangement made through Resident Engineer
Electric Cables	FEDERAL	811
Telephone Cables	FEDERAL	811
Gas Lines	FEDERAL	811
Water Lines	FEDERAL	811

Any utility damaged by the Contractor shall be repaired by the Contractor to the satisfaction of the Owner and shall be at the cost of the Contractor. In the event that an existing utility is damaged during construction, all other work on the project shall be suspended until the utility is repaired. No additional time will be awarded to the Contractor for delays in the project due to damaged utilities. It is a high priority to the airport that all existing Airport utilities, unless otherwise noted in the plans, remain in good working condition throughout the duration of the project.

Special care shall be taken on all operations and particularly near pavement edges to avoid damage to edge lights and all underground electrical cable on the airport. The approximate location of existing underground cable is shown on drawings. Any airfield lights or cable that are broken and require replacement because of the Contractor's operations will be replaced by the Contractor at his/her own expense.

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/her in the manner specified in Sections 108 and 125 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.

70-26 CONTRACTOR'S RESPONSIBILITY FOR SAFETY DURING CONSTRUCTION

ADD: At the end of this section:

E. Provide a safety officer/construction inspector(s) trained in airport safety to monitor construction activities and provide radio control.

F. Restrict movement of construction vehicles to construction areas with flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate or as shown in plans.

G. Ensure that no construction employees, employees of subcontractors or suppliers, or other persons enter any part of the aircraft operations area from construction site unless authorized.

H. All access gates to be maintained when open or closed to prevent unauthorized access.

SECTION 80 – PROSECUTION AND PROGRESS

80-05 LIMITATION OF OPERATIONS

ADD: A minimum distance of 65.5' shall be maintained between construction operations and the centerline of all active taxiways, 57.5' from active taxilane centerline and 75' from centerline of active runways. It is intended to plan, conduct, and complete the work in these critical traffic areas in such a manner that the length and amount of interruption to aircraft traffic at the Airport is minimized.

The Contractor shall comply with Federal Aviation Regulations Part 107 (Airport Security), Federal Air Regulation 139 (Airport Certification), and with all rules and regulations of the Airport, including, but not limited to, control and access to the airfield by Contractor's, employees and agents. In the event the Authority is assessed a fine by the Federal Aviation Administration for breach of security resulting from actions of Contractor's employees and agents, the Contractor shall fully reimburse the Authority for the amount of such fine in the form of additional rents.

80-08 DETERMINATION AND EXTENSION OF CONTRACT TIME

ADD: After the fourth paragraph:

The Engineer will make charges against Contract Time after the presumptive completion of the entire project as provided for in Section 50-16, Final Inspection.

ADD: After the last paragraph of this section:

For this project, the following number of calendar days available for work per month has been assumed to be:

Month	Site Construction Workable Calendar Days	Building Construction Workable Calendar Days
January	0	20
February	0	18
March	0	20
April	0	19
May	15	20
June	17	19
July	17	20
August	17	20
September	16	19
October	16	20
November	14	19
December	0	19

Building construction will be able to continue working when site work is unworkable. Contractor's progress schedule will determine if the working days for the site or the building shall govern.

For an extension of contract time due to inclement weather to be considered, the actual total number of calendar days available for work on controlling items must be less than the total number of workable calendar days assumed for the duration of the contract.

Requests for extension of contract time on calendar day projects caused by inclement weather, shall, as a minimum, be supported with National Weather Bureau data and project diaries. Requests for extension of contract time due to inclement weather will not be considered until after final acceptance.

As part of the request for contract time extension review, consideration may be given to how timely the Contractor prosecuted the work up to the point of the delays and the efforts by the Contractor to get back on schedule including the addition of labor or equipment and the extension of work hours and work days.

No allowance will be made for anticipated profits.

During the weekly progress meetings, the production rates of the Contractor will be analyzed. If it is determined by those in attendance that generally and reasonably the work has fallen behind schedule or will not be completed under normal circumstances in the specified time frames, the Contractor will be required to increase his forces and/or extend working hours per day. During runway closures, the Contractor shall have provisions set forth to work up to 16 hours a day.

80-13 CONTRACTOR'S ACCESS TO AIRFIELD

ADD: After the third paragraph:

The location of an area for parking by the Contractor's employees shall be as shown on the plans or as agreed to by the Airport.

Use of personal vehicles beyond the staging area will not be allowed.

DELETE: The last paragraph:

ADD: The Contractor shall submit a 10-year background and employment check on the superintendent and supervising foremen and complete a security form for all other personnel he proposes to use on the Airport. These forms shall be completed prior to that person being issued an identification badge and allowed on the airfield. A list of personnel authorized to work on the airfield shall be provided to the Resident Engineer by the Contractor. The Superintendent and foreman that are issued badges shall be directly responsible for the identity and location of those they are supervising while on the airfield. Badges shall be returned to the Airport once the project is complete or the person is no longer employed by the Contractor.

80-14 SECURITY DURING CONSTRUCTION

As a minimum, the Contractor shall be responsible for security during construction as follows:

(1) Possess a copy of the Airport's project security plan.

(2) Visibly delineate his construction zone by placing a line of barricades or flagging around the entire work zone during each phase of the contract.

(3) Comply with the Airport's security plan associated with the construction project and ensure that construction personnel are familiar with security procedures and regulations on the Airport.

(4) Provide a point of contact that will coordinate an immediate response to correct any construction-related activity that may adversely affect the operational security of the Airport.

(5) Restrict movement of construction vehicles to construction areas as flagging and barricading, erecting temporary fencing, or providing escorts, as appropriate or as shown in plans.

(6) Ensure that no construction employees, employees of subcontractors or suppliers, or other persons enter any part of the aircraft operations area from construction site unless authorized.

(7) The Contractor shall be required to maintain security on the Airport as specified or as directed by the Airport.

(8) The Contractor shall provide, in advance, a complete list of personnel that will be employed while on site and update the list as needed.

(9) The Contractor shall be responsible for keeping the access gate closed and locked during work hours. If the Contractor chooses to leave the gate open, then he shall post a competent, properly trained security guard to prevent unauthorized entries. The Contractor shall replace any unsatisfactory security guards if so directed by the Airport.

DIVISION II – PAVING CONSTRUCTION DETAILS

ITEM 150550 – CONSTRUCTION ACCESS

DESCRIPTION

150550-1.1 This item shall include the removal of the existing farm access as designated on plan sheets CD102 - Existing Conditions & Removals and GC101 – Construction Activity Plan Phase 1 then replacing the farm access 75 ft west of its existing location so that all construction equipment can access the site.

This Item shall include all the activities and materials associated with removing the existing farm access and constructing the new one, removing and replacing existing 10" CMP to provided proper drainage under new access road. Shall also include preparation and restoration of staging, storage and disposal areas.

CONSTRUCTION METHODS

150550-2.1 All existing drainage related items such as corrugated pipe and flared end sections associated with the existing farm access road will be reused to the best of the contractor's abilities to construct the new farm access unless it is determined by the resident engineer that the drainage related items are unusable due to damage or weathering then they shall be replaced with new matching items or ones approved by the resident engineer.

After the existing farm access has been removed the contractor shall regrade the area to match adjacent ditch side slopes and bottom.

The new farm access may be constructed by using aggregate and or soil from the existing farm access but will be capped with a foot of CA-7.

MATERIALS

150550-3.1 PIPE - New pipe used in the construction of the construction access shall meet the requirements of item 701 for corrugated steel pipe.

METHOD OF MEASUREMENT

150550-4.1 The installation of new construction access and the removal of the existing construction access shall be measured as a lump sum item completed and accepted by the Engineer.

BASIS OF PAYMENT

150550-5.1 This item shall be paid for at the lump sum price for CONSTRUCTION ACCESS. The payment for this item shall be full compensation for furnishing all materials including pipe and aggregate, construction of the access and installation of materials, restoration and for all labor, equipment, tools and incidentals necessary to complete the item.

150550-5.2 Payment will be made under:

Item AR150550 – Construction Access – per lump sum.

ITEM 152 – EXCAVATION AND EMBANKMENT

DESCRIPTION

152-1.1 ADD: This item shall consist of unclassified excavation needed for excavation needed to regrade swales throughout the project. Unclassified excavation shall consist of the embankment on site available for use in the construction of the embankment.

ADD: This item shall consist of constructing embankment using a source of acceptable soil from off of the Airport property and outside the construction limits. Estimates for this work have assumed a 25% shrinkage factor in the borrow material brought on site.

CONSTRUCTION METHODS

152-2.2 EXCAVATION

DELETE: Table 1 and all references to Table 1.

When excavating subgrade take precaution not to damage any underdrains that run below the pavement. Existing underdrain is typically installed between the bottom of the pavement structure and above the storm sewer lines. During this operation, minimize the turning of equipment on the milled surface.

Areas outside of the subgrade repair to be excavated shall be compacted to the satisfaction of the Resident Engineer.

METHOD OF MEASUREMENT

152-3.1, 3.3

DELETE: These sections.

BASIS OF PAYMENT

152-4.2, 4.3, 4.4

DELETE: These Sections.

Payment will be made under:

Item AR152410 – Unclassified Excavation – per cubic yard

ITEM 156000 – EROSION CONTROL

DESCRIPTION

156-1.1 ADD: The temporary erosion control measures contained herein shall be coordinated with the permanent erosion control measures specified as part of this contract to the extent practical to assure economical, effective, and continuous erosion control through the construction period.

Contractor's temporary control should include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

The contractor will be responsible for maintaining the work area in conformance with the requirements of the permits and the project SWPPP. The Contractor shall execute the SWPPP as provided in the appendix of this document. This work shall consist of constructing temporary and permanent erosion control systems as required to maintain the permit requirements during the life of the contract to control erosion and sediment damage to the adjacent properties and water resources through the use of ditch checks, inlet sedimentation control, and erosion control silt filter fence and rip rap.

The incorporation of additional erosion control measures will require coordination with the Division. The contractor should prepare a revised erosion control plan for submittal at the pre-construction conference if additional controls are required. Prior to initiating work at the site the contractor shall execute the SWPPP and initial the final plan sheets showing the erosion control. It is the sole responsibility of the contractor to maintain his operations and the impacted work areas in conformance with the permits. This includes monitoring of the site, documentation of monitoring and maintenance of the SWPPP documentation on site.

As part of this item, the Contractor shall be required to comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) Storm Water Permit for construction site activities. Information on the above-referenced permits may be obtained from:

Illinois Environmental Protection Agency
Division of Water Pollution Control
1021 North Grand Avenue East
Springfield, Illinois 62702

Contractor's temporary control should include work outside the construction limits such as borrow area operations, equipment and material storage sites, waste areas, and temporary plant sites.

If, upon delivery and incorporation of any materials, the Contractor has failed to provide the necessary submittals as required by Sections 50-18, 60-01, 60-03 and 60-11 of the Standard and Special Provisions, the pay item shall not be included on the Construction Progress Payment report until such submittals have been furnished.

MATERIALS

156-2.1 SILT FENCE

ADD: In lieu of silt fence, the Contractor may substitute 20 in. min. diameter Rolled Excelsior meeting the requirements of Section 1081.15(f), Temporary Erosion Control Materials, of the IDOT Standard Specifications for Roads and Bridges; and the Supplemental Specifications and Recurring Special Provisions (Latest Edition).

CONSTRUCTION METHODS

156-3.9 INLET PROTECTION

The installation and maintenance of the inlet protection shall be at the locations shown on the plans or as directed by the Engineer.

The Contractor shall maintain the inlet protection throughout the duration of the project. Efforts to maintain inlet protection shall include but not be limited to replacing installed inlet protection devices that are not functioning properly with new devices. The cost of maintaining the inlet protection throughout the project shall be considered incidental to the inlet protection pay item.

Upon completion or as directed, the Contractor shall remove the inlet protection and restore the area as needed.

METHOD OF MEASUREMENT

156-4.4 ADD: The number of inlet protection structures to be paid for shall be the number satisfactorily installed, maintained and accepted by the Engineer.

BASIS OF PAYMENT

156-5.2 ADD: Payment will be made at the Contract Unit Price for each Inlet Protection installed.

Payment will be made under:

Item AR156510 – Silt Fence – per linear foot.

Item AR156520 – Inlet Protection – per each.

ITEM 209 – CRUSHED AGGREGATE BASE COURSE

DESCRIPTION

209-1.1 ADD:

There will be 6" crushed aggregate proposed sections, typical sections and proposed improvements can be found on plan sheets CP-101, CP-301, and CP-302

This item shall consist of 6" crushed aggregate base course to be placed after the construction of the subgrade repair at locations determined by the Resident Engineer at the time of construction.

MATERIALS

209-2.1 ADD:

Table 1, Gradation B, 1 ½" maximum shall be used.

CONSTRUCTION METHODS

209-3.3 PLACING AND SPREADING

DELETE: The second sentence of the first paragraph.

209-3.4 ADD: After the first paragraph:

Aircraft weighing less than 60,000 pounds – (ASTM D698) shall apply for all locations.

209-3.7 SURFACE GRADE ACCURACY

REVISE: To read as follows:

"…..shall not vary by more than 3/8 inch from the surface elevations….."

METHOD OF MEASUREMENT

209-4.1 DELETE: This section.

209-4.3 DELETE: This section.

BASIS OF PAYMENT

209-5.1 DELETE: The first sentence.

ADD: Payment will be made at the contract unit price per square yard of the specified thickness for crushed aggregate base course.

Payment will be made under:

Item AR209606 – Crushed Agg. Base Course – 6" – per square yard.

ITEM 401 – BITUMINOUS SURFACE COURSE – SUPERPAVE

(Central Plant Hot Mix)

DISCRIPTION

401-1.1 ADD: This item shall consist of providing bituminous surface course for all new pavement areas being reconstructed within this project.

COMPOSITION

401-3.2 JOB MIX FORMULA

ADD: At the end of the third paragraph:

Table 1 - Superpave Design Criteria for Aircraft under 60,000 lbs. shall apply.

CONSTRUCTION METHODS

401-4.10 TRANSPORTING, SPREADING, AND FINISHING

ADD: Paving lanes of less than 100' will not require stringline.

REVISE: The fifth paragraph to read as follows:

"The automatic grade control system of the paver shall be used to control the grade of the center of the pavement section from a single reference stringline. The grade control for the adjacent lanes of pavement shall be maintained using a matching shoe with the previous laid pavement and depth or grade control to maintain the elevation of the outer edge of pavement. A matching shoe shall be used to pave all remaining lanes of surface course."

401-4.12 JOINTS

ADD: After the first paragraph of this section.

At any time during the bituminous surface course paving operation it becomes necessary to end a paving lane at a location other than the proposed finished pavement edge because of ending a day's paving, machinery breakdown, etc., the lane end will be sawed back a sufficient distance to provide a smooth, neat appearing joint from which to resume paving. The sawed face will be painted with liquid asphalt and this work shall be considered incidental to Item 401, Bituminous Surface Course, and no additional compensation will be allowed.

REVISE: The sixth sentence of the fourth paragraph as follows:

"…at a random location as determined by the Resident Engineer…"

401-4.15 ACCEPTANCE TESTING OF HMA MIXES FOR DENSITY

DELETE: All references to Method I for quantities over 2,500 tons.

BASIS OF PAYMENT

401-6.1 DELETE: The second paragraph.

Payment will be made under:

Item AR401610 – Bituminous Surface Course – per ton.

ITEM 401650 – BITUMINOUS PAVEMENT MILLING

DESCRIPTION

401-1.1 ADD: Existing bituminous pavement will be milled 2" on the taxilanes between the Corporate Hangar and Hangar 3 and the taxilanes to the east and west of Hangar 3. All milling areas and depths are designated in the Proposed Improvements – CP101 plan sheet.

CONSTRUCTION METHODS

401-3.1 REVISE: The second sentence of the first paragraph as follows:

The Airport shall have the first option to keep the milled bituminous material on site, if the quality of the material is deemed suitable and the Airport has an immediate need for the material, the material shall be disposed of as directed by the Airport. If the Airport has no need for the material, the material shall be disposed of off Airport property.

ADD: After the second paragraph:

The milled surface shall be tested by means of proof rolling the area with a loaded tandem in the presence of the Resident Engineer. During milling operation keep turning of all equipment to a minimum to prevent any damage to the remained bituminous surface course. Milling shall remove 2" of existing bituminous surface course where designated in the Proposed Improvements – CP101 plan sheet. Records have been found showing varying existing pavement thickness throughout the designated milling areas. These existing pavement thicknesses can be found on plan sheet CD101 - Existing Pavement Structures. Pavement courses and thickness shall be expected to vary as thicknesses shown are nominal.

BASIS OF PAYMENT

401-5.1 Payment will be made under:

Item AR401650 – Bituminous Pavement Milling – per square yard.

ITEM 401900 – REMOVE BITUMINOUS PAVEMENT

DESCRIPTION

401-1.1 ADD: Complete full depth pavement removal shall be completed where designated on plan sheet CD102 – Existing Conditions & Removals.

BASIS OF PAYMENT

401-4.1 Payment will be made under:

Item AR401921 – Remove Pavement – per square yard.

ITEM 602 – BITUMINOUS PRIME COAT

DISCRIPTION

602-1.1 ADD: This item shall consist of the application of a prime coat between the aggregate surface and bituminous surface course.

BASIS OF PAYMENT

602-5.1 Payment will be made under:

Item AR602510 – Bituminous Prime Coat – per gallon.

ITEM 603 – BITUMINOUS TACK COAT

DISCRIPTION

603-1.1 ADD: This item shall consist of the application of a tack coat for the following items:

1. Between the Bituminous Surface Course individual paving lifts;
2. Between the Bituminous Surface Course and the milled bituminous surface;
3. Along the edge of the milled/sawed bituminous face.

BASIS OF PAYMENT

603-5.1 Payment will be made under:

Item AR603510 – Bituminous Tack Coat – per gallon.

ITEM 610 – STRUCTURAL PORTLAND CEMENT CONCRETE

DISCRIPTION

610-1.1 ADD: This item shall include concrete used for the purpose of light can bases, duct banks, clean outs, drainage structures and other miscellaneous concrete.

The cost of furnishing and install structural concrete shall be considered incidental to the contract unit price for the item utilizing Item 610 Structural Portland Cement Concrete. The prices shall be full compensation for furnishing all materials and or preparation, delivering and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete the item.

If, upon delivery and incorporation of any materials, the Contractor has failed to provide the necessary submittals as required by Sections 50-18, 60-01, 60-03 and 60-11 of the Standard Specifications, the pay item shall not be included on the Construction Progress Payment report until such submittals have been furnished.

ITEM 620 – PAVEMENT MARKING

DESCRIPTION

20-1.1 ADD: The marking colors shall match FAA standards.

MATERIALS

620-2.2 PAINT

ADD: Paint type shall be Waterborne.

CONSTRUCTION METHODS

620-3.3 PREPARATION OF SURFACE

ADD: Shot blasting will not be allowed.

ADD: Existing marking that will need to be re-painted shall be cleaned using sand blasting or high pressure water to remove dirt, grease, laitance, and loose or flaking paint.

ADD: Water blasting equipment shall be adjustable to prevent damage to the pavement.

620-3.5 APPLICATION

DELETE: Table 1 reference to Epoxy paint type.

620-3.7 PAVEMENT MARKING REMOVAL

DELETE: In the first sentence “shot blasting,”

ADD: Shot blasting will not be allowed.

METHOD OF MEASUREMENT

620-4.1 ADD: No distinction will be made between color of paint for payment purposes.

The quantity of pavement marking to be paid for shall be the number of square feet of surface covered with paint and beads, completed and accepted by the Resident Engineer. Measurement shall not be made separately for each paint application.

Mobilization will not be measured for payment. Several mobilizations may be required for the pavement marking.

BASIS OF PAYMENT

620-5.1 ADD: If, upon delivery and incorporation of any materials the Contractor has failed to provide the necessary submittals as required by Sections 50-18, 60-01, 60-03 and 60-10 of the Standard and Special Provisions, the pay item shall not be included on the Construction Progress Payment (CPP) until such submittals have been furnished.

Payment will be made under:

Item AR620520 – Pavement Marking – Waterborne – per square foot.

DIVISION III – FENCING (WIRE FENCES)

ITEM 161 – WIRE FENCE WITH STEEL POSTS

(Class C Fence)

DISCRIPTION

161-1.1 ADD: This item shall consist of removing the existing 4' Class C woven wire farm fence along Airport Road, which is along the south edge of the projects limits.

BASIS OF PAYMENT

161-5.1 ADD: Payment will be made under:

Item AR161900 – Remove Class C Fence – per linear foot.

ITEM 162 – CHAIN-LINK FENCES

DISCRIPTION

161-1.1 ADD: This item shall consist of removing the existing 4' Class E fence connected to the west side of the ARCH Hangar building. Installation of a new 6' Class E chain linked fence topped with three strands of barbed wire along the south edge of the project limits.

MATERIALS

162-2.1 FABRIC

REVISE: The list of fabric types:

Zinc coated steel

Aluminum coated steel

162-2.3 FENCE POSTS, POST TOPS AND EXTENSIONS, RAILS, GATES, BRACES, STRETCHER BARS, AND CLIPS.

REVISE: The Third Paragraph to Read:

"shall conform to the dimensions shown in the plans."

REVISE: Section A. Second Paragraph to Read:

"shall conform to the dimensions shown in the plans."

162-2.10 SIGNS

DELETE THIS SECTION:

ADD: The Contractor shall provide and install signage on fence and gates as shown on the plans. Sign material shall meet the requirements of the Illinois Department of Transportation's "Standard Specifications for Road and Bridge Construction", Latest Edition, Section 1091 – Sign Face. Signs shall match the requirements of Table 1 for a Type 1, Reflectorized Sign Face and Reflectorized Sign Legend type sign.

CONSTRUCTION METHODS

162-3.2 INSTALLING POSTS

REWRITE: The first three sentences of the first paragraph to read:

All posts shall be spaced not more than 10 feet apart as shown on the plans. Terminal (end, corner, pull and brace) and gate posts shall be set 42 inches in concrete base as shown on the plans. All line posts shall be set 36 inches in concrete bases as shown on the plans.

REWRITE: The Last Paragraph

The fence shall not be erected until the concrete encasement around the post has cured 7 days or reached a compressive strength of 2,500 psi. If a high-early strength concrete is used the fence may be erected once the concrete has reached a compressive strength of 2,500 psi. The Contractor shall be responsible for concrete testing other than at 7 and 14 days.

ADD: After the last paragraph:

Fence posts to be installed in pavement shall require the contractor to core the pavement with equipment approved by the Resident Engineer prior to excavating for the post footings.

162-3.5 INSTALLING FABRIC

ADD: After the Last Paragraph

At terminal (end, corner, and pull) and gate posts the fabric shall be fastened with stretcher bars and bands.

All disturbed ground shall be backfilled and compacted to the Resident Engineer's satisfaction.

162-3.11 FENCE AND GATE REMOVAL

DELETE: The First Paragraph

ADD:

This work shall consist of the removal and disposal of existing chain link fence, plastic fence, fence posts and gates. The existing fence shall be removed completely including posts and foundations.

In the turf areas, the existing fence posts shall be pulled and not cut off. All resulting holes in turf shall be filled and compacted in accordance with Item 152.

The removed fence fabric shall be rolled into manageable sized bundles and be turned over to the Airport at a location to be determined by the Airport. The remaining removed material shall be disposed of off airport property.

Turf areas disturbed by the removal process shall be restored in accordance with Item 901 at no additional cost to the contract.

162-3.13 RESTORATION

All areas disturbed by the Contractor's operations shall be restored to their original condition to the satisfaction of the Engineer and the Airport. The restoration shall include any necessary backfilling, grading, compacting and additional turfing required. The Contractor shall be responsible for maintaining all disturbed areas until final acceptance. No additional payment shall be made for the contractor's efforts to maintain and restore the site disturbed as part of the fencing construction.

BASIS OF PAYMENT

Payment will be made under:

Item AR162506 – Class E Fence 6' – per linear foot.

Item AR162900 – Remove Class E Fence – per linear foot.

DIVISION IV – DRAINAGE

ITEM 701 – PIPE FOR STORM SEWERS AND CULVERTS

DESCRIPTION

701-1.1 ADD: Pipe for concrete storm sewers shall be new Reinforced Concrete Pipe (RCP) meeting the requirements of ASTM C76. All reinforced concrete pipe shall be Class IV. Concrete pipe will be installed as a new pipe at the locations shown in the plans.

MATERIALS

701-2.10 TRENCH BACKFILL

ADD: Foundation, bedding, cradle and backfill material shall meet the requirements of an IDOT FA-1, FA-2, or FA-6. In wet trench conditions, an IDOT CA-7 may be used with the approval of the Resident Engineer.

CONSTRUCTION METHODS

701-3.2 CRADLE

DELETE: This section and replace with the following.

ADD: Granular cradle shall be constructed and compacted prior to the placement of the storm sewer for the entire length of the pipe as detailed in the plans.

Material for the cradle shall meet the requirements of 701-2.10.

Moist cradle materials shall be compacted to the Resident Engineer's satisfaction by ramming or tamping with tools approved by the Resident Engineer.

701-3.4 PIPE JOINTS

DELETE: Paragraphs B, C, and D of the Standard Specifications.

701-3.5 BACKFILLING

DELETE: This section and replace with the following.

ADD: As soon as the condition of the pipe will permit, the entire width of the trench shall be backfilled with moist fine aggregate meeting the requirements specified in 701-2.10 to a height of at least the elevation of the center of the pipe. The fine aggregate shall be placed longitudinally along the pipe. The elevation of the backfill material on each side of the pipe shall be the same. Special care shall be taken to completely fill the space under the pipe. The fine aggregate backfill material shall be placed in 8-inch layers, loose measurement and compacted to the satisfaction of the Engineer by ramming or tamping with tools approved by the Engineer. The fine aggregate used for backfilling shall meet the approval of the Engineer.

The remainder of the trench and excavation shall be backfilled to the natural line or finished surface as rapidly as the condition of the sewer will permit. The backfill material shall consist of the excavated material or of trench backfill, as herein specified. All backfill material shall be deposited in the trench or excavation in such a manner as not to damage the sewer. The filling of the trench shall be carried on simultaneously on both sides of the pipe in such a manner that

injurious side pressures do not occur. The backfill for trenches and excavation made in the subgrade of the proposed improvement shall be made with trench backfill material.

All backfill material up to a height of 12 inches above the pipe shall be carefully deposited in uniform layers not exceeding 8 inches thick (loose measure). The material in each layer shall be firmly compacted by ramming or tamping with tools approved by the Engineer in such a manner as not to disturb or injure the pipe. For backfilling above this height, the material shall continue to be deposited in uniform layers not exceeding 8 inches thick (loose measure), and each layer shall be compacted by ramming or tamping with tools approved by the Engineer.

Under proposed pavements, backfilling shall be with an aggregate material which meets the requirements specified in 701-2.9 and shall be compacted to a minimum 95% compaction using a standard proctor.

Costs associated with backfilling and compaction of bedding and porous backfill shall be considered incidental to the cost of the underdrain.

BASIS OF PAYMENT

701-3.5 ADD: Payment will be made under:

Item AR701512 – 12” RCP, Class IV – per linear foot.

Item AR701900 – Remove Pipe – per linear foot

ITEM 705 – UNDERDRAINS FOR AIRPORTS

DESCRIPTION

705-1.1 ADD: This item shall consist of installing underdrain pipe at locations along the new taxilanes of hangar 4. Perforated underdrain with sock shall be placed as shown in the plans and connect to existing or new structures and pipes.

MATERIALS

705-2.5 POROUS BACKFILL

DELETE: References to IDOT CA-16.

ADD: Porous backfill material shall conform to the requirements of IDOT FA-1 or FA-2, Class B or C Quality.

705-2.15 BUY AMERICAN CERTIFICATIONS AND WAIVERS

All materials for this item shall meet the requirements of the Buy American Preference as stated in Appendix 7. Contractor shall provide proof of 100% domestic materials prior to delivering materials to the site. Materials that are unable to meet this requirement shall be reported in the bid documents under Certifications Required by State and/or Federal Law, Buy American Certificate.

CONSTRUCTION METHODS

705-3.6 BACKFILLING

ADD: The Contractor may also compact backfill by waterflooding. Waterflooding shall be done by introducing water through holes jetted into the backfill to a point approximately two feet above the top of the pipe. The holes shall be spaced no farther than six feet apart. The water shall be injected at a pressure just sufficient to sink the holes at a moderate rate of speed. The pressure shall be such that the water will not cut cavities in the backfill material nor overflow the surface. Water shall be injected as long as it will be absorbed by the backfill material. Injection shall continue until compaction is completed to the satisfaction of the Engineer.

BASIS OF PAYMENT

705-5.1 Payment will be made under:

Item AR705524 – 4” Perforated Underdrain W/ Sock – per linear foot.

Item AR705544 – 4” Non-Perforated Underdrain – per linear foot.

Item AR705640 – Underdrain Cleanout – per each.

Item AR705645 – Underdrain Connection – per each.

ITEM 751 – MANHOLES, CATCH BASINS, INLETS AND INSPECTION HOLES

DESCRIPTION

751-1.1 ADD: This item shall contain the following:

- Inlet (Standard 4'x4' square inlet as detailed in the plans and to be placed in the locations shown in the plans.)
- Repair Inlet (Existing Inlet West side of Hangar 3)

MATERIALS

751-2.9 PRECAST DRAINAGE STRUCTURES

Pre-cast drainage structures shall meet the applicable requirements of IDOT, Division of Highways, "Highway Standards", where applicable.

CONSTRUCTION METHODS

751-3.9 BACKFILLING

DELETE: Paragraph A. of this section.

ADD: Backfill materials shall be an IDOT Division of Highways FA1, FA2, CA-06 or CA-10 conforming to IDOT D quality.

751-3.11 INLET REPAIR

ADD: Reconstruction of existing inlet shall be accomplished by removing the existing precast top and barrel sections as required and frame and grate and constructing a new precast top and barrel sections as required and place a new frame and closed lid as detailed on the plans. The contractor shall be responsible for field checking existing inlet storm sewer configurations and size for the necessary inlet reconstructions before ordering new materials.

501-3.12 PROPORTIONS

ADD: PCC mix shall meet requirements of Item 610

BASIS OF PAYMENT

751-5.1 Payment will be made under:

Item AR751411 – Inlet – Type A – per each.

Item AR751530 – Manhole – per each.

Item AR751961 – Repair Inlet – per each.

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

DESCRIPTION

752-1.1 ADD: This item shall consist of installing concrete flared end sections as shown in the plans.

BASIS OF PAYMENT

752-5.1 REVISE: This price shall be full compensation for furnishing all materials and for preparation, excavation, backfilling and placing of materials including grating;

Item AR752412 – Precast Reinforced Conc. FES-12” – per each.

Item AR752900 – Remove End Section – per each.

ITEM 800216 – SINKHOLE MITIGATION

DESCRIPTION

800-1.1 This item shall consist of filling sink hole shown on plan sheet CD102 – Existing Conditions & Removals. The sink hole may be the remains of an abandoned well but the Airport record drawings in the area are unclear on the features origins.

The location of the sinkhole is between the existing hangar 3 and existing beacon foundation. Mitigation efforts shall not disturb the surrounding features or existing utilities.

CONSTRUCTION METHODS

800-2.1 The Contractor shall fill the designated area using equipment and or hand shovels. Acceptable material fill shall be PCC, CLSM, rock or bentonite with PCC cap, or approved equal by the Resident Engineer. All of this must be while under the supervision of Resident Engineer.

The Resident Engineer shall have final approval of the proposed repair methods.

METHOD OF MEASUREMENT

800-3.1 Sinkhole filling shall be paid for on a lump sum basis for a complete unit in place, accepted and mitigated.

BASIS OF PAYMENT

800-4.1 Payment shall be made at the contract lump sum price completed and in place. This price shall be full compensation for furnishing all materials and for all preparation, excavation, backfilling and placing of materials; and for all labor, equipment, tools and incidentals necessary to complete the mitigation.

Payment will be made under:

Item AR800216 – Sinkhole Mitigation – per lump sum

DIVISION V – TURFING

ITEM 901 – SEEDING

DESCRIPTION

901-1.1 ADD: Restoration, seeding and mulching beyond the limits of seeding and mulching shown in the plans (such as cabling, staging, storage and access) shall be incidental to the project.

MATERIALS

901-2.2 LIME

DELETE: This Section.

ADD: Lime will not be required unless considered necessary by the Contractor.

901-2.3 FERTILIZER

DELETE: This Section.

ADD: Fertilizer will not be required unless necessary to establish vegetation.

CONSTRUCTION METHODS

901-3.2 DRY APPLICATION METHOD

DELETE: Paragraph (C.), Seeding.

ADD: Grass seed shall be sown at the rate shown in 901-2.1.

Grass seed shall be sown with a machine that is capable of cutting a slit in the soil, free from leaves and debris, placing the seed in the slit and compacting the seed into the soil of the slit in one continuous operation.

901-3.3 WET APPLICATION METHOD

DELETE: This Section.

BASIS OF PAYMENT

ADD: If, upon delivery and incorporation of any materials, the Contractor has failed to provide the necessary submittals as required by Sections 50-18, 60-01, 60-03 and 60-11 of the Standard and Special Provisions, the pay item shall not be included on the Construction Progress Payment report until such submittals have been furnished.

Payment will be made under:

Item AR901510 – Seeding – per acre.

ITEM 908 – MULCHING AND KNITTED STRAW MAT

DESCRIPTION

908-1.1 ADD: Restoration, seeding and mulching beyond the limits of seeding and mulching shown in the plans (such as cabling, storage, staging and access) shall be incidental to the project.

This item shall consist of furnishing and installing a 4' width of knitted straw mat to be placed along the edge of all new pavement and on all disturbed resulting from construction activities.

MATERIALS

908-2.3 KNITTED STRAW MAT

ADD: Straw mat shall meet the requirements of IDOT specification 1081.10 (b).

908-2.4 BUY AMERICAN: All materials for this item shall meet the requirements of the Buy American Preference as stated in Appendix 7. Contractor shall provide proof of 100% domestic materials prior to delivering materials to the site. Materials that are unable to meet this requirement shall be reported in the bid documents under Certifications Required by State and/or Federal Law, Buy American Certificate.

BASIS OF PAYMENT

908-5.2 ADD: Payment will be made at the contract unit price per square yard for knitted straw mat at locations shown on the plans. This price shall be full compensation for furnishing all materials and for placing and anchoring the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item AR908510 – Mulching – per acre

Item AR908525 – Knitted Straw Mat – per square yard.

DIVISION VI – LIGHTING INSTALLATION

ITEM 108 – INSTALLATION OF UNDERGROUND CABLE FOR AIRPORTS

DESCRIPTION

108-1.1 ADD: This item of work shall include the following:

Install new cable in conduit for new electric service to new Hangar # 4, existing airfield lighting vault and existing Arch Hangar as shown on the plans.

EQUIPMENT AND MATERIALS

108-2.1 GENERAL

ADD:

F. Shop drawings for all components of this section shall be submitted an approved prior to ordering materials to be used in construction.

ADD: All materials used in the construction of this item shall follow the provision found in Division 16 of Appendix 1

108-2.2 CABLE

ADD: Cable material requirements shall follow those found in Division 16 of Appendix 1

108-2.6 CONCRETE

ADD: Concrete for the cable protection slab shall conform to Specification Item 610, “Structural Portland Cement Concrete.”

108-2.13 UNIT DUCT.

DELETE: 1st Paragraph.

ADD: Where indicated on the Plans, unit-duct shall be as described under this item. The duct shall comply with NEMA Standards Publication No. TC7-1990, Part 4, ASTM D 3485, and ASTM D 3350, with additions, options, and exceptions as detailed herein. The duct shall be annealed during the extrusion process. The duct shall be manufactured from black, virgin, high density polyethylene resin.

108-2.14 BUY AMERICAN: All materials for this item shall meet the requirements of the Buy American Preference as stated in Appendix 4. Contractor shall provide proof of 100% domestic materials prior to delivering materials to the site. Materials that are unable to meet this requirement shall be reported in the bid documents under Certifications Required by State and/or Federal Law, Buy American Certificate.

CONSTRUCTION METHODS

108-3.1 GENERAL

DELETE: Entire Section.

ADD: Cable installation and testing requirements shall follow those found in Division 16 of Appendix 1. All lighting circuits are considered critical. It is, therefore, imperative that the Contractor carefully review the plans showing electrical layout.

If the Contractor desires to lay cable on a line other than that shown on the plans, he shall obtain the approval of the Engineer before doing so, and any additional cable required to do so will not be paid for unless being completely necessary to make a more proper connection or more convenient location.

The location of existing cables are taken from available record maps and it will be necessary for the Contractor to make field investigations to determine the exact locations of underground cable and conduits at critical points. ANY EXISTING CABLES CUT AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED IN ACCORDANCE WITH PARAGRAPH 108-2.4. COST TO BE BORNE BY THE CONTRACTOR.

At locations at which the Contractor utilizes the existing duct for a particular new circuit, the Contractor shall first remove the associated existing circuit conductors. The removed conductors shall be turned over to the airport at a site on airport property designated by the Resident Engineer. At all other locations the conductors shall be abandoned in place.

108-3.3 TRENCHING

ADD: Trenching shall be at no additional cost to the Contract.

108-3.10 LOCATING OF EXISTING CABLES

ADD: The existing FAA and airfield lighting circuit cables within the limits of this project are critical to air navigation and cannot be shut down. It is imperative that the Contractor exercise extreme caution when excavating to expose and encase these cables.

After the FAA locates the alignment of the existing FAA buried cable within the project limits, but prior to any work on this contract, the Contractor shall expose the cables at critical locations.

Hand excavation of the existing cables is required. As a minimum the Contractor shall pothole the cables in the ditch lines, but in a sufficient amount of other locations to accurately define the alignment and vertical profile of the cable.

This work shall be considered incidental to the contract and no additional compensation shall be allowed.

108-3.11 TERMINATIONS AND CONNECTIONS

ADD: Contractor shall ensure that adequate cable is available prior to install to avoid short cable runs.

BASIS OF PAYMENT

108-5.1 ADD: prices shall be full compensation for furnishing all materials and for all preparation, removals, modifications, assembly, and installation of these materials, coordination with the manufacturers and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item AR108020 – 1/C # 2/0 600V UG CABLE – per lineal foot.

Item AR108040 – 1/C # 4/0 600V UG CABLE – per lineal foot.

Item AR108082 – 1/C # 2 XLP-USE – per lineal foot.

Item AR108752 – 1/C # 2 GROUND – per lineal foot.

Item AR108756 – 1/C # 6 GROUND – per lineal foot.

ITEM 109 – INSTALLATION OF AIRPORT TRANSFORMERS AND VAULT EQUIPMENT

DESCRIPTION

109-1.1

DELETE: This Section.

ADD:

The Contractor shall furnish all equipment, materials and labor necessary to furnish the proposed electrical vault equipment shown in the plans or as specified herein.

This item shall include the new electric service for existing airfield lighting vault, circuit breakers for existing Hangar # 2 and new Hangar # 4 as detailed on the plans and specified herein. Any parts and labor required by the Contractor to make these changes shall be incidental to this item.

This item shall also include installation of new LB's and testing of the vault power distribution system.

EQUIPMENT AND MATERIALS

109-2.22 OTHER ELECTRICAL EQUIPMENT

1. New Electric Service for Vault

   Locate and intercept existing electric service conduit and install new electric service form the new pad mounted utility transformer. Re-connect and re-install metering equipment and service conductors as required per utility's requirement.

2. Electric Service to Hangar # 2 and Hangar # 4

   Install new circuit breaker to feed existing hangar # 2 and new circuit breaker to feed new hangar # 4 as shown on the pans. Remove existing circuit breakers, balance loads and rearrange circuit breakers for new circuit breakers.

3. Electric Service to Arch Hangar

   Install secondary cable and conduit from new pad mounted transformer to existing panelboard located inside the existing arch hangar as shown on the plans. Core hole through exterior wall of the hangar and install new conduit LB to connect new electric service to the existing main circuit breaker.

109-2.23 ELECTRICAL EQUIPMENT TO BE INSTALLED INSIDE THE VAULT

Contractor shall install all equipment necessary for a complete and operational airfield lighting vault including conduits and cabling inside the existing vault.

109-2.24 WIRE

REVISE paragraph (a) "Control Circuits" first sentence to read:

Wire size shall not be less than #12AWG, unless otherwise detailed on the plans, and shall be insulated for 600 volts.

DELETE paragraph (b) 2 and (b) 3.

109-2.25 SHOP DRAWINGS

In addition to the requirements of Section 60 Paragraph 60-09 of the General Provisions of Division I of these specifications, shop drawings shall also be submitted for review for all items specified in Paragraphs 109-2.10 through and including Paragraph 109-2.23.

CONSTRUCTION METHODS

109-3.1 GENERAL

ADD:

Match new circuit breakers with existing circuit breakers. Core hold through exterior wall of the vault to install new conduit with LB for new feed to the Hangar # 4.

The equipment installation and mounting shall comply with the requirement of the National Electrical Code and local code agency having jurisdiction.

109-3.15 WIRING AND CONNECTIONS

ADD:

Plastic wire duct shall be used for routing wires inside control panels. After wiring is completed, covers are to be installed on all plastic duct.

109-3.16 MARKING AND LABELING

ADD:

All new or relocated equipment, control wires, etc. installed under this contract shall be tagged, marked, or labeled as required.

109-3.17 TESTING

ADD:

The installation shall be tested in operation as a completed unit prior to acceptance. Tests shall include resistance, voltage, current readings and remote operations of ALCMS as required by the Engineer. Testing equipment shall be furnished by the Contractor. Tests shall be conducted as directed by the Engineer and shall be to his satisfaction. The Contractor shall be responsible for all equipment and conduit in place which will be connected to the new equipment, and any equipment or materials found to be defective or damaged shall be replaced by the Contractor at his own expense.

All testing shall be in the presence of the Engineer and an Airport Representative.

109-3.18 OPERATION AND MAINTENANCE MANUALS

ADD:

The Contractor shall supply four (4) copies of Operational and Maintenance Manuals for the Regulator Doors.

METHOD OF MEASUREMENT

109-4.1, 4.2, 4.3

DELETE: These Sections.

109-4.4

The quantity of materials and work to be paid for under this item shall be as follows:

1) The proposed vault modifications shall include installation of new electric service to the vault, new circuit breakers for hangar # 2 and hangar # 4, installation of cable, conduit and LB at the vault and any incidental items required for a complete and operational system.

2) The proposed replace electric services shall include coordination with serving utility for new electric services to vault and arch hangar, installation of cable, conduit and LB at arch hangar and any incidental items required for a complete and operational system.

BASIS OF PAYMENT

109-5.1

ADD:

Payment will be at the contract unit price per lump sum for each item as described below, complete and accepted for each item. This price shall be compensation in full for all preparation, assembly, removal, materials, labor, equipment, tools and incidentals necessary to complete the item as specified herein or as directed by the Engineer.

Payment will be made under:

Item AR109210 – VAULT MODIFICATIONS – per Lump Sum.

Item AR109924 – REPLACE ELECTRIC SERVICES – per Lump Sum.

ITEM 110000 – INSTALLATION OF AIRPORT UNDERGROUND ELECTRICAL DUCT

DESCRIPTION

110-1.1

ADD:

This item shall consist of the construction of direct buried PVC and GRS conduits and concrete utility pad for utility transformer, including appropriate duct markers, at the locations shown in the plans or as directed by the Engineer.

Trenching and backfilling for direct buried conduit shall not be paid for separately, but shall be considered incidental to the associated duct item. Contractor shall provide pull wire for each conduit and cap the unused conduits for future use.

EQUIPMENT AND MATERIALS

110-2.9 DUCT MARKERS

The Contractor shall provide brass duct markers for each new or existing duct being used as detailed in the plans. The cost of installation of the duct markers shall be incidental to the associated electrical work.

110-2.10 AGGREGATE BACKFILL

ADD: Crushed aggregate material conforming to the requirements of Item 209, or as approved by the Engineer shall be used for backfill at the pavement crossings for the proposed duct installation. The granular material shall be compacted to not less than 95% of Modified Proctor laboratory density. In lieu of aggregate, the Contractor may substitute Controlled low strength material (CLSM) backfill for those areas requiring aggregate backfill. This substitution must be approved in writing prior to construction and must be completed at no additional cost to the contract. CLSM shall meet the requirements of IDOT Standard Specifications for Road and Bridge Construction (latest edition), Section 593. The CLSM material will be considered incidental to the associated duct item.

CONSTRUCTION METHODS

110-3.5 BACKFILL

ADD:

Crushed Stone conforming to the requirements of Item 209 gradation shall be used for backfill at the pavement crossings for the new duct installation. The granular material shall be compacted to not less than 95% of Modified Proctor laboratory density.

METHOD OF MEASUREMENT

110-4.2

DELETE: This Section.

ADD: The quantity of direct buried conduits duct to be paid for shall be the number of lineal feet installed, measured in place, completed, and accepted. The cost of trench excavation and backfill shall not be measured separately for payment, but shall be considered incidental to the respective pay item associated with the work.

The quantity of concrete utility pad to be paid for shall be each unit installed, measured in place, completed, and accepted. The cost of trench excavation and backfill shall not be measured separately for payment, but shall be considered incidental to the respective pay item associated with the work.

BASIS OF PAYMENT

110-5.1

DELETE: Entire Section.

ADD: Payment will be made at the contract unit price per lineal foot for each type and size of direct buried conduits completed and accepted. These prices shall be full compensation for furnishing all materials and for all preparation, assembly, aggregate backfill, backfill, compaction, duct markers, pull rope/wire, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete these items as specified herein.

Payment will be made at the contract unit price per each for concrete utility completed and accepted. These prices shall be full compensation for furnishing all materials and for all preparation, assembly, aggregate backfill, backfill, compaction, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete these items as specified herein.

Topsoiling and seeding of the duct and conduit trench shall not be paid for separately but shall be considered incidental to the associated duct.

Payment will be made under:

Item AR110202 – 2” PVC DUCT, DIRECT BURY – per Linear Foot.

Item AR110204 – 4” PVC DUCT, DIRECT BURY – per Linear Foot.

Item AR110214 – 4” STEEL DUCT, DIRECT BURY – per Linear Foot.

Item AR110600 – CONCRETE UTILITY PAD – per Each.

DIVISION VIII – SPECIALTY ITEMS

ITEM 800252 – T-HANGAR BUILDING 6-UNIT

DISCRIPTION

800-1.1 **GENERAL**. The work described herein includes architectural, structural, and electrical components for the construction of the T-Hangar Building. Specifically, the work items show on the following sheets shall be paid for under this item

- A101 – Floor Plan and Exterior Elevations
- A102 – T-Hangar Building & Location
- A103 – Architectural Details
- EL101 – T-Hangar Wiring Plan
- EL102 – Electrical Wiring Details
- EL103 – Electrical Details – 1
- EL104 – Electrical Details – 2
- EL105 – Electrical Details – 3

MATERIALS

800-2.1 BUY AMERICAN. All materials used for this work shall meet the requirements of Buy American in accordance with Title 49 U.S.C. Section 50101. A certification statement or waiver request shall be submitted by the supplier for each proposed material. All waiver requests shall be submitted prior to issuance of the Notice to Proceed.

800-2.2 BUILDING EQUIPEMENT AND MATERIALS**.** The equipment and materials needed to complete the construction of the T-Hangar Building are shown in Appendix 1 of these specifications.

CONSTRUCTION METHODS

800-3.1 BUILDING CONSTRUCTION. Construction methods for the individual features that comprise the T-Hangar Building are outlined in Appendix 1of these specifications.

QUALITY ASSURANCE

800-4.1 Quality assurance for the individual features that comprise the T-Hangar Building shown in Appendix 1 of these specifications.

METHOD OF MEASUREMENT

800-5.1 The unit of measurement for the T-Hangar Building shall be per lump sum.

BASIS OF PAYMENT

800-6.1 The unit price bid per lump sum shall include all effort and materials required to construct the T-Hangar Building within the footprint of the building shown. This price shall be full compensation for all labor and materials required in the construction of the building required to complete this item.

Payment will be made under:

Item AR800252* – T-Hangar Building 6-Unit* – per lump sum.

ITEM 800256 – EXTERIOR PAINTING

PART 1 GENERAL

1.01 SUMMARY

A. Section includes surface preparation and the application of paint systems on exterior substrates. Galvanized metal.

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product. Include preparation requirements and application instructions.

B. Include printout of current "MPI Approved Products List" for each product category specified, with the proposed product highlighted.

C. Samples: For each type of paint system and each color and gloss of topcoat.

1.03 QUALITY ASSURANCE

A. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.

1. Architect will select one surface to represent surfaces and conditions for application of each paint system.

2. Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. Other Items: Architect will designate items or areas required.

Final approval of color selections will be based on mockups.

If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sherwin Williams or approved equal.

B. Products: Subject to compliance with requirements, provide product listed in the Exterior Painting Schedule for the paint category indicated.

2.02 PAINT, GENERAL

A. MPI Standards: Products shall comply with MPI standards indicated and shall be listed in its "MPI Approved Products Lists."

B. Material Compatibility:

1. Materials for use within each paint system shall be compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.

2. For each coat in a paint system, products shall be recommended in writing by topcoat manufacturers for use in paint system and on substrate indicated.

C. Colors: As selected by Architect from manufacturer's full range.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of the Work.

B. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.

C. Proceed with coating application only after unsatisfactory conditions have been corrected.

1. Application of coating indicates acceptance of surfaces and conditions.

3.02 PREPARATION

A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates and paint systems indicated.

B. Remove hardware, covers, plates, and similar items already in place that are removable and are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.

C. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection.

1. Previously Coated Surfaces: Maintenance painting will frequently not permit or require complete removal of all old coatings prior to repainting. However, all surface contamination such as oil, grease, loose paint, mill scale, dirt, foreign matter, rust, mold, mildew, mortar, efflorescence, and sealers must be removed to assure sound bonding to the tightly adhering old paint. Glossy surfaces of old paint films must be clean and dull before repainting. Thorough washing with an abrasive cleanser will clean and dull in one operation, or, wash thoroughly and dull by sanding. Spot prime any bare areas with an appropriate primer. Recognize that any surface preparation short of total removal of the old coating may compromise the service length of the system. Check for compatibility by applying a test patch of the recommended coating system, covering at least 2 to 3 square feet. Allow to dry

one week before testing adhesion per ASTM D3359. If the coating system is incompatible, complete removal is required.

2. Hand Tool Cleaning: Hand Tool Cleaning removes all loose mill scale, loose rust, and other detrimental foreign matter. It is not intended that adherent mill scale, rust, and paint be removed by this process. Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife. Before hand tool cleaning, remove visible oil, grease, soluble residues, and salts by the methods outlined in SSPCSP1. For complete instructions, refer to Steel Structures Paint Council Surface Preparation Specification No. 2 (SSPC-SP2)

3. Water Blasting NACE Standard RP-01-72: Removal of oil grease dirt, loose rust, loose mill scale, and loose paint by water at pressures of 2,000 to 2,500 psi at a flow of 4 to 14 gallons per minute.

3.03 APPLICATION

A. Apply paints according to manufacturer's written instructions and recommendations in "MPI Manual."

B. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

3.04 CLEANING AND PROTECTION

A. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

B. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.05 EXTERIOR PAINTING SCHEDULE

A. Existing Painted Surfaces: Steel:

1. High Performance Acrylic:

Prime Coat:

Basis of Design: Sherwin Williams Pro-Cryl Universal Primer. Stripe coat all areas of existing rust.

Intermediate Coat: Light industrial coating, exterior, water based, and matching topcoat.

Topcoat: High performance acrylic exterior, semi-gloss

Basis of Design: Sherwin Williams Sher-Cryl HPA.

4.04 METHOD OF MEASUREMENT

4-4.1 Exterior Painting shall be measured per lump sum installed and approved by the Engineer.

5.05 BASIS OF PAYMENT

5-5.1 Payment shall be made at contract unit price for the unit of measurement as specified for Exterior Painting. This price shall be full compensation for furnishing all materials and for all preparation, delivering and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item AR800256 EXTERIOR PAINTING (6000 SF) – per lump sum

END OF ITEM 800256

ITEM 800259 – ELECTRICAL REMOVALS AND INSTALLATION

DESCRIPTION

3-1.1 GENERAL. This item shall consist of the following:

3.1.1.1. REMOVALS Work under this item in each T-Hangar Bay shall include the removal of all existing light fixtures, toggle switches, receptacles, mounting hardware, junction boxes, conduit, wiring and appurtenances from each T-Hangar Bay to the existing Panelboard in Storage Room "S1".

Prior to these removals, the Owner shall be given the opportunity to note any items deemed suitable for salvage. These items shall be disconnected, removed and stored neatly at a location on the Airport designated by the Owner.

All other removal items shall be disposed of offsite by the Contractor in accordance with Federal, State and Local regulations and requirements.

Work under this item shall include the disconnection and abandonment in place of the existing lighting panelboard in Storage Room "S1" which currently provides lighting and receptacle power to the T-Hangar Bays. The Contractor shall note any existing circuits powered by this panelboard other than lighting and receptacle circuits to each T-Hangar Bay, and shall bring these circuits to the attention of the Owner.

NOTE: The existing circuits to each T-Hangar Bay

3.1.1.2. Removal of all existing interior light fixtures in each T-Hangar Bay and installation of new enclosed and gasketed nonmetallic T-5 fluorescent light fixtures as shown on the plans. This work will include the installation of new NEMA 1 junction boxes, new EMT metallic conduit, fittings, hardware, and new #12 THWN wiring as needed.

This item shall also include, as incidental to the item, the installation of new toggle switches in NEMA 1 device boxes in the Hangar as detailed on the plans.

3.1.1.3. Removal of all existing interior receptacles in each T-Hangar Bay and installation of new heavy duty industrial specification grade Ground Fault Circuit Interrupter (GFCI) receptacles as shown on the plans. This work will include the installation of new cast aluminum FS style device boxes for receptacles, new NEMA 1 junction boxes, new EMT metallic conduit, fittings, hardware, and #12 THWN wiring. (If existing receptacle is installed flush with wall, install cover plate and mount one new receptacle in device box next to it.)

This work shall also include the installation of one new exterior weatherproof corrosion resistant heavy duty industrial specification grade Ground Fault Circuit Interrupter (GFCI) receptacle. This work will include the installation of new cast aluminum FS Style device box for receptacle, new weather-proof-while-in-use cover, new junction boxes, new EMT metallic conduit, fittings, hardware, and new #12 THWN wiring as needed.

3.1.1.4. Removal of existing photocells where indicated on plans and replacement with new photocells and weatherproof junction boxes as specified.

3.1.1.5. Removal of existing exterior lighting where indicated on plans and replacement with new LED exterior lighting as specified.

EQUIPMENT

3.2.1 New equipment shall consist of the following:

3.2.1.1. Interior light fixtures in T-Hangar Bays

Interior Light Switches shall be installed in Cast Aluminum Device Boxes with stainless steel cover plates.

3.2.1.2. Interior Ground Fault Circuit Interrupter (GFCI) receptacles shall be 20 Amp, 125 Volt with NEMA 5-20R receptacle configuration. Provide self-protected GFCI receptacles at each required location. Receptacles shall be back and side wire compatible, feed-thru type (whether or not feed-thru feature is utilized on project). GFCI Receptacles, Leviton 7899, or equivalent. Receptacle shall be rendered permanently inoperative at its "end of useful life" (EOL) as defined in UL 943. Receptacle shall be Off-White with Off-White Cover. Device box shall be cast aluminum, FS Style.

Exterior Ground Fault Circuit Interrupter (GFCI) receptacle shall meet National Electrical Code Weather-Resistant requirements, shall be listed to the Weather-Resistant supplement of UL498, and shall exceed UL corrosion requirements. Rubber curtains shall let plug blades in, keep dust, water and insects out. Provide integral gasket to seal receptacle. Receptacles shall be of high-impact-resistant thermoplastic construction with matching Nylon wall plate. GFCI Receptacles shall be Pass & Seymour Cat. # 2095DSWRBK, or equivalent. Receptacle shall be installed in cast aluminum FS Style device box.

Exterior Receptacle cover shall comply with NEC Article 406.9B1, and shall remain rain tight whether or not a plug and cord is inserted. Cover shall be extra-deep, padlockable, cast aluminum construction, listed and identified as "extra duty" as manufactured by Intermatic WP1010HMXD, Hubbell, WP26MH, or equivalent, horizontal, for use with GFCI receptacle.

3.2.1.3. LED Exterior Lighting shall be FFLED39SF (150W MH Equiv.), 39W, 120V, as manufactured by RAB Lighting, or equivalent.

3.2.1.4. Exterior photocells shall be Tork 2101, or equivalent. Weatherproof device box or weatherproof junction box shall be provided for use as described below.

3.2.1.5. EMT conduit shall be hot dip galvanized steel with an organic corrosion resistant coating and shall be produced in accordance with U.L. Standard 797, ANSI C80.3 and NEMA RN2. Fittings for EMT conduit shall be compression type only, set-screw type fittings shall not be utilized. Conduit and installation shall comply with all requirements in NEC Article 358.Mounting hardware shall be corrosion resistant: zinc, galvanized steel, aluminum or stainless steel.

3.2.1.6. THWN Cable shall be 600 Volt rated, #12 AWG. Cable shall comply with Underwriters Laboratories Standard U.L. 83. Cables shall be rated 90°C in dry locations 75°C in wet locations.

CONSTRUCTION METHODS

3-3.1 Work shall be done in conformance with Underwriter's Laboratory (UL), National Electrical Code (Current Edition in force) and manufacturer's instructions.

3-3.2 T-Hangar Bay fluorescent lighting shall be installed higher than the door opening in the Bay. Strut-type framing shall be used for mounting fixtures as needed. If approved by the Resident Inspector lights may be suspended from stainless steel chain.

3-3.3 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. Unless otherwise shown on the project drawings, minimum conduit trade-size shall be 3/4". Larger sizes shall be installed where noted or where required by NEC. Use pre-manufactured factory elbows or bends fabricated with hydraulic bending machine. 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 quarter turn bends (360°), including bends immediately at an outlet or fitting. Support exposed rigid metal conduit runs on walls or ceiling every five feet (5') with stainless steel one 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. Perforated metal strapping of any kind is prohibited.

3-3.4 Install duplex outlets with ground blade on the bottom if mounted vertically or to the right if mounted horizontally. Install GFCI receptacles in such that “Test” and “Reset” wording are oriented correctly.

DO NOT utilize "feed-thru" feature to protect downstream GFCI outlets.

On this project, all receptacles shall be mounted horizontally unless otherwise directed by the Resident Inspector.

3-3.5 When installing the new photocell, install a weatherproof junction box or weatherproof device box on existing conduit. Mount new photocell on junction box or device box and splice new photocell pigtails to existing wiring in junction box or device box.

METHOD OF MEASUREMENT

3-4.1 Work shall be measured as completed items as described in Basis of Payment for completed, operational and accepted items of work.

3-4.1.1. Interior T-5 Light Fixture shall include fixture, T-5 fluorescent bulbs, and mounting hardware.

3-4.1.2. Interior GFCI receptacle shall include receptacle, cast aluminum FS style device box, and mounting hardware.

3-4.1.3. Exterior GFCI receptacle shall include receptacle, cast aluminum FS style device box, extra deep weather-proof-while-in-use cover, and mounting hardware.

3-4.1.4. LED Exterior Light Fixture shall include fixture and mounting hardware.

3-4.1.5. Exterior Photocell shall include photocell, weatherproof junction box or device box and mounting hardware.

3-4.1.6. EMT conduit shall include conduit, junction boxes, fittings, elbows and mounting hardware.

BASIS OF PAYMENT

3-5.1 Payment will be made at the contract unit price for each completed item of work, furnished and installed in place by the Contractor and accepted by the Engineer. This price shall be full compensation

for furnishing all materials and for all preparation, removals, modifications, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item AR800259 ELECTRICAL REMOVALS AND INSTALLATION – per lump sum

END OF ITEM 800259

ITEM 800260 – STRUCTURAL REPAIRS

DESCRIPTION

2-1.1 GENERAL. This item shall consist of repairing a small hole in the hangar roof. This item will include furnishing and installing all items related to the re-building and reinforcing the building roof.

EQUIPMENT

2-2.1 All equipment shall be specified hereinafter or as industry standards require to perform the work without damaging equipment or property that is to be turned over to the Sponsor, FAA or equipment that is to be re-used in the construction of improvements.

CONSTRUCTION METHODS

2-3.1 This work shall consist of repairing the hangar roof hole as shown in the plan sheets. This work shall include any removal of rubbish, trash and/or contents produced by work on these items.

2-3.2 PCC Patching. Where directed, patching along slabs shall be repaired by first making a vertical saw cut at least 3 in (25 mm) outside the patch area and to a depth of at least 4 in (50 mm). Saw cuts shall be straight lines forming rectangular areas. The concrete between the saw cut and the joint, or crack, shall be chipped out to remove all unsound concrete and at least 1/2 in (12 mm) of visually sound concrete. The cavity thus formed shall be thoroughly cleaned with high-pressure water jets supplemented with compressed air to remove all loose material. Immediately before filling the cavity, a prime coat of epoxy resin, Type III, Grade I, shall be applied to the dry cleaned surface of all sides and bottom of the cavity, except any joint face. The prime coat shall be applied in a thin coating and scrubbed into the surface with a stiff-bristle brush. Pooling of epoxy resin shall be avoided. The cavity shall be filled with low slump Portland cement concrete. Concrete shall be used for patching. Portland cement concrete shall be proportioned as directed and shall be mixed, placed, consolidated, and cured as directed. Mechanical vibrators and hand tampers shall be used to consolidate the concrete. Any repair material on the surrounding surfaces of the existing concrete shall be removed before it hardens. Where the patching area abuts a joint, an insert or other bond-breaking medium shall be used to prevent bond at the joint face. A reservoir for the joint sealant shall be sawed to the dimensions required for other joints, or as required to be routed for cracks. The reservoir shall be thoroughly cleaned and sealed with the sealer specified for the joints.

METHOD OF MEASUREMENT

2-4.1 Repairing the roof hole shall be measured per lump sum in conformance with the plan, installed and approved by the Engineer.

BASIS OF PAYMENT

2-5.1 Payment shall be made at contract unit price for the unit of measurement as specified for repair roof. This price shall be full compensation for furnishing all materials and for all preparation, delivering and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item AR800260 STRUCTURAL REPAIRS – per lump sum

END OF ITEM 800260

ITEM 800262 – METAL ROOF COATING SYSTEM

PART 1 GENERAL

1.01 SUMMARY

A. Installation of fluid applied roof coating to rustproof, restore, and waterproof metal roofs. The system shall include waterproofing of all metal roof panels, flashings, valleys, ridges, joints and junctions integrally related to the roof.

B. Work included is labor, materials, equipment and accessories and related services to complete the application in accordance with guidelines and details as approved by the product manufacturer.

C. Work excluded is replacement of roof accessories such as gutters, drains, vents and other penetrations including structural roof repair.

1.02 QUALITY ASSURANCE

A. Manufacturer Qualifications: Furnish upon request, certification the material meets the properties stated in this specification.

B. Contractor Qualifications: All work to be completed must be done by an applicator, certified by the manufacturer.

1.03 SUBMITTALS

A. Product Information.

B. Sample Warranty.

C. Technical Data.

1.04 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver material in original, unopened packages and containers.

B. Containers are to be labeled with manufacturer's name, product name, description, and identification.

C. Store materials in a dry area above 40^{o}F and protect from water and direct sunlight.

D. Any materials damaged in handling or storage must not be used.

E. Deliver MSDS for each product. Consult MSDS and Product Data Guideline for each product used before beginning work.

1.05 JOB CONDITIONS

A. All mechanical equipment, vents, skylights, etc. should be in place before the roofing system is installed.

B. Mechanical units (blowers, HVAC) should be prevented from distributing fumes into the building.

C. Coatings should be protected from traffic and other abuse until completely cured and installation is complete.

D. Application of coatings with spray equipment may require some masking and possible erection of wind screens to prevent over-spray and drift damage. Protect surfaces of unrelated areas from coatings and over-spray possibility.

E. Application shall proceed to dry, clean surfaces only. In planning work consider environment and weather related conditions such as frost, mist, dew, condensation, humidity, and temperature. Temperature should be above 45^{o}F, rising, and stay above 40^{o}F long enough for initial cure to occur. Moisture should not be imminent.

F. Sufficient safety belts and lines should be provided. A wet surface or a surface that is not thoroughly cured can be very slippery. All work environments should comply with current OSHA regulations.

G. Contractor shall ensure adhesion of roof coating system prior to bidding. Contractor is responsible for providing product compatible with existing surface. Applied product must meet warranty requirements.

1.06 WARRANTY

A. Provide manufacturer's warranty of materials and labor for a period of 10 years from the date of application. Contractor shall be responsible for replacement of any existing building components required to achieve stated warranty period in their bid.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL

A. Source Limitations: Obtain primary roof coating system materials and accessories from single manufacturer.

B. Follow product manufacturer's requirements and directions to ensure proper installation and warranty.

2.02 PRODUCT

A. Provide metallic pigmented coating used for rustproofing and weatherproofing metal roofs

B. Manufacturers: available manufacturers offering products that may be incorporated into the Work include the following:

1. Basis of design product: Alumanation 301 Metal Roof Coating System as manufactured by Republic Powdered Metals, Inc. Provide all necessary accessory materials, including but not limited to Geogard Seam Sealer, Permafab Reinforcement Fabric and Durathane Fastener Sealer.
2. Conklin Company, Inc. Rapid Roof system. Provide all necessary accessory materials.
3. UNIFLEX 500 Aluminum Coating System. Provide all necessary accessory materials.
4. Approved equal.

PART 3 EXECUTION

3.01 SURFACE PREPARATION

A. Roof Panels

1. Loose rust, mill scale, and paint must be removed by any of the following: hand tool cleaning to include scraping, sanding, and wire brushing; power tool cleaning to include power sanding, power wire brushing, or power grinding; water blasting to include high pressure water blast at not less than 2,000 psi.

2. Roof surfaces containing heavy soot, dirt, chemical contaminants, oil, grease, or wax deposits must be cleaned with a surface cleaner and rinsed thoroughly with high pressure water blast.

3. Severe chalking, if evident, must be removed to ensure adhesion, as must all debris, dust and dirt by using high pressure water wash.

4. Remove all existing acrylic and asphalt coatings and all existing sealants and mastics prior to installing Seam Sealer or roof coating.

5. If previously coated, check for adhesion and compatibility of any remaining, tightly adhered, existing coating with manufacturer technical department for further information. A test application is the best method of determining compatibility with and adhesion to a previously coated surface. An X-Cut Tape Test is used to determine adhesion of the existing coating to the substrate. Contact manufacturer technical department for further information.

6. Roof panels exhibiting holes and/or posing safety concerns should be replaced with new metal panels with a similar panel design.

7. Closely inspect underside of all metal panels for corrosion at endlaps, curbs and penetrations. Replace as required.

B. Penetrations

1. The base of all roof penetrations, curbs, stacks and vents must be checked for splits and cracks and, if evident, repaired using manufacturer’s seam sealer and fabric per manufacturer’s directions.

C. Seams

1. Faulty seams shall be repaired as required, using manufacturer's seam sealer and fabric per manufacturer's directions.

D. Fasteners

1. Where loose fasteners are evident, tighten and encapsulate with manufacturer's seam sealer or fastener sealer.

2. Replace stripped or missing fasteners using an oversize "repair type" fastener; BUILDEX TRAXX® or TEKS®, FABCO®, FAB-LOK®, or equivalent. Add additional fasteners, where necessary, to draw uplifted sheets together.

E. Follow manufacturer's written instructions for all surface preparation.

3.02 ROOF COATING APPLICATION

A. General: Do not apply material to wet surfaces, during rain or the threat of rain in work day.

B. Application: Follow manufacturer's written instructions for the application of all products to ensure compliance with warranty requirements.

C. Follow manufacturer's steps for priming, sealing and coating all roof conditions.

PROTECTION AND CLEAN-UP

A. Protection

1. The roof system and all components must be protected from all other trades at the job site.

2. All damage to the system must be repaired to comply with the manufacturer's guidelines prior to final inspection for warranty approval.

B. Clean-Up

1. Site clean-up is the responsibility of the Contractor.

2. All debris, containers, materials, equipment, and protection materials must be removed from the premises and properly disposed of. All work and storage areas must be in an undamaged and acceptable condition upon completion of clean-up.

4.01 METHOD OF MEASUREMENT

4-4.1 Metal Roof Coating System shall be measured per square foot installed and approved by the Engineer.

5.01 BASIS OF PAYMENT

5-5.1 Payment shall be made at contract unit price for the unit of measurement as specified for Metal Roof Coating System. This price shall be full compensation for furnishing all materials and for all preparation, delivering and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item AR800262 METAL ROOF COATING SYSTEM (8000 SF) – per lump sum

END OF ITEM 800262

APPENDICES

(PAGE LEFT INTENTIONALLY BLANK)

APPENDIX 1 – T-Hangar Building Specifications

Specs Regarding the Proposed 6 – Unit T-Hangar Building

SPARTA COMMUNITY AIRPORT
SPARTA, IL
IL PROJ. NO.: SAR-4583
AIP PROJ. NO.: 3-17-SBGP-111/120/133/139
CONSTRUCT NEW 6 UNIT T-HANGAR BUILDING

TABLE OF CONTENTS

DIVISION 2 – SITEWORK
Section 02316 – Excavating for Structures

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Excavation and stockpiling of existing earth materials and dewatering of excavations as required under the project.

1.02 RELATED SECTIONS

A. Section 02317 – Backfilling and Compacting.

1.03 REFERENCE TO STANDARDS

A. American Society for Testing and Materials (ASTM).

B. Illinois Department of Transportation (IDOT): Standard Specifications for Road and Bridge Construction adopted April 1, 2016 and applicable sections of the Supplemental Specifications and Recurring Special Provisions adopted April 1, 2016, hereinafter referred to as IDOT Standard Specifications.

C. Occupational Safety and Health Administration (OSHA): Current OSHA Occupational Safety and Health Standards - Excavations, 29 CFR Part 1926, including any successor regulations.

1.04 REGULATORY REQUIREMENTS

A. Codes and Standards

1. Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

2. Prior to the commencement of construction, the Contractor shall be aware of, and become familiar with applicable local, state and federal safety regulations, including the current OSHA Occupational Safety and Health Standards - Excavations, 29 CFR Part 1926, including any successor regulations.

3. Additionally, the Contractor shall be aware that slope height, slope inclination and excavation depths (including utility trench excavations) should in no case exceed those specified in local, state or federal safety regulations.

1.05 COORDINATION

A. Do not interrupt existing utilities serving facilities occupied and used by Owner or others except when permitted in writing by the Engineer and then only after acceptable temporary utility services have been provided. Provide minimum of 48 hour notice prior to enacting an approved temporary interruption.

1.06 SUBMITTALS

A. Submit under the provisions of Division 1, Section 01330 – Submittal Procedures. All materials shall be submitted for approval. Samples shall be submitted when requested by the Engineer.

B. The Contractor shall submit a list of equipment intended to be utilized on this project to the Engineer.

PART 2 PRODUCTS – Not Used.

PART 3 EXECUTION

3.01 EXAMINATION

A. Site Information

1. Data indicated on subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner, and Engineer will not be responsible for interpretations or conclusions drawn therefrom by Contractor. Data are made available for convenience of Contractor.

2. Contractor shall be responsible for determining the actual ground water elevation and soil conditions at the specific site prior to commencing with the excavation. It may be expedient to drill auger holes, excavate test pits or make additional soil borings at or adjacent to the construction area immediately prior to construction to determine the prevailing soil conditions and water table elevation. It is the Contractor's responsibility to make auger holes, excavate test pits or make additional soil borings as he deems appropriate to determine the ground water and soil conditions that will be encountered. Additional test borings and other exploratory operations made by the Contractor shall be at no cost to the Owner.

3.02 PREPARATION

A. Establish extent of excavated areas.

B. Set specified lines, levels, contours and grades.

C. Maintain bench marks, monuments and other reference points.

D. Before starting excavation, establish location and extent of underground utilities occurring in work area. Contact Joint Utility Locating Information For Excavators (J.U.L.I.E.) (800)892-0123, or 811 and all other utility companies on the project site which are not members of this system. If the Contractor ruptures or causes damage to such objects while digging or during any construction, it is the responsibility of the party performing the construction work to pay the utility company for repairs and such costs shall not be borne by the Owner or the Engineer.

E. Maintain, reroute or extend existing utility lines to remain which pass through work area.

3.03 EXCAVATION

A. General

1. Excavation consists of removal of material encountered when establishing required grade and subgrade elevations and cross sections.

2. The Contractor is solely responsible for designing and constructing stable excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. All excavations shall comply with applicable local, state and federal safety regulations including the current OSHA Occupational Safety and Health Standards - Excavations, 29 CFR Part 1926, including any successor regulations.

3. All sheeting, shoring and bracing of trenches, pits and excavations shall be the sole responsibility of the Contractor.

4. Construction site safety is the sole responsibility of the Contractor, including but not limited to, the means, methods, and sequencing of construction operations.

5. Earth excavation consists of removal and disposal of pavements and other obstructions visible on ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in data on sub-surface conditions, and other materials encountered that are not classified as unauthorized excavation.

B. Unauthorized Excavation

1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the Engineer. Unauthorized excavation, as well as remedial work directed by the Engineer, shall be at Contractor's expense. Under footings, foundation bases, or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, only when determined necessary by the Engineer. Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of the same classification, unless otherwise directed by the Engineer.

C. Additional Excavation

1. When excavation has reached required sub-grade elevations, notify the Engineer who will make an inspection of conditions. If unsuitable bearing materials are encountered at required sub-grade elevations, carry excavations deeper and replace excavated material as directed by the Engineer. Removal of unsuitable material and its replacement as directed will be paid on basis of contract conditions relative to change in work.

D. Dewatering

1. Prevent surface water and subsurface or ground water from flowing into excavation and from flooding project site and surrounding area.

2. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

3. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or run-off areas. Do not use trench excavations as temporary drainage ditches.

4. Dewatering for supported excavations shall be accomplished in accordance with Articles 3.03.D.1 through 3.03.D.3 (above) and Section 02140 – Dewatering.

E. Material Storage

1. Stockpile satisfactory excavated materials in the location approved by the Engineer, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage. Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain. Contain excavated silt/soil runoff with hay bales and silt fences as directed by the Engineer and in accordance with Local, State and Federal Requirements.

F. Excavation for Structure

1. Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10 feet, and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction and for inspection.

2. In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other work. After completion of excavation and prior to placement of concrete for footings, excavations shall be inspected by the

Engineer to insure that suitable bearing has been obtained. Twenty-four (24) hours notice shall be given to the Engineer.

3. Placing of footings and foundations on earth fill will not be permitted. Fill excess cuts under footings and foundations with IDOT CA-6 Class C compacted to 100% Standard Proctor ASTM D698 and fill any excess cuts under slabs with lean concrete.

G. Excavation Near Utilities

1. Protect, support, shore, brace, etc. all utility services uncovered by excavation.

2. Accurately locate and record abandoned and active utility lines rerouted or extended, on Project Record Documents.

3. Repair damaged utilities to the satisfaction of the Utility Owner.

H. Disposal of Excess and Waste Materials

1. Removal from Owner's Property

a. Remove waste materials, trash and debris and legally dispose of it off Owner's property at no expense to Owner.

3.04 FIELD QUALITY CONTROL

A. The Contractor shall allow bearing surfaces at the bottom of excavations to be inspected by the Engineer prior to placement of any backfill materials.

B. Proofrolling: Subgrades shall be proofrolled to detect areas of insufficient compaction. Proofrolling shall be accomplished by making minimum of 2 complete passes with fully-loaded tandem-axle dump truck with a maximum weight of 20 tons, or approved equal, in each of 2 perpendicular directions while under the supervision and direction of the independent testing laboratory. Areas of failure shall be excavated and recompacted as specified herein. Continual failure areas shall be stabilized in accordance with Section 02340 at no additional cost to Owner. Subgrade exposed longer than 48 hours or on which precipitation has occurred shall be re-proofrolled.

3.05 PROTECTION

A. Stability of Excavation

1. Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible either because of space restrictions or stability of material excavated. Maintain sides and slopes of excavations in a safe condition until completion of backfilling.

2. Comply with current OSHA Occupational Safety and Health Standards - Excavations, 29 CFR Part 1926, including any successor regulations.

3. Where indicated on the drawings, sloped and vertical sides of excavations shall be stabilized with an erosion control system as specified in Section 02370 –Erosion Control.

B. Cold Weather Protection

1. Protect excavation bottoms against freezing when atmospheric temperature is less than 35°F (1°C).

C. Protection of Persons and Property

1. Barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights during hours from dusk to dawn each day and as otherwise required by authorities having jurisdiction.

2. Protect structures, landscaping, utilities, sidewalks, pavements or other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

3. Comply with current OSHA Occupational Safety and Health Standards - Excavations, 29 CFR Part 1926, including any successor regulations.

END OF SECTION 02316

DIVISION 2 – SITEWORK

Section 02317 – Backfilling and Compacting for Structures

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Backfilling and compacting for structures, pavement and general site.

B. Site rough and finish grading.

C. Preparation of subgrade for slabs, pavements and installation of footings.

D. Modified Proctor density testing and compaction testing.

E. Providing suitable soil and constructing the structural fill.

1.02 RELATED SECTIONS

A. Section 02316 – Excavating.
B. Division 3 – Concrete.

1.03 REFERENCE TO STANDARDS

A. ASTM D1557 - Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3).

B. ASTM D 4253 Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table.

C. ASTM D 4254 Standard Test Method for Minimum Index Density and Unit Weight of Soils and Calculation of Relative Density.

D. Illinois Department of Transportation Standard Specifications for Road and Bridge Construction adopted April 1, 2016 and applicable sections of the Supplemental Specifications and Recurring Special Provisions adopted April 1, 2016, hereinafter referred to as IDOT Standard Specifications.

1.04 REGULATORY REQUIREMENTS

A. Codes and Standards

1. Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.

2. Prior to the commencement of construction, the Contractor shall be aware of, and become familiar with applicable local, state and federal safety regulations, including the current OSHA Occupational Safety and Health Standards - Excavations, 29 CFR Part 1926, including any successor regulations.

3. Additionally, the Contractor shall be aware that slope height, slope inclination

and excavation depths (including utility trench excavations) should in no case exceed those specified in local, state or federal safety regulations.

1.05 COORDINATION

A. Do not interrupt existing utilities serving facilities occupied and used by Owner or others except when permitted in writing by the Engineer and then only after acceptable temporary utility services have been provided. Provide minimum of 48 hour notice prior to enacting an approved temporary interruption.

1.06 SUBMITTALS

A. Submit under the provisions of Division 1, Section 01330 – Submittal Procedures.

B. Manufacturer's Certificate and Product Data: Certify that products meet or exceed specified requirements.

1.07 FIELD TESTS

A. Provide in accordance with Division 1, Section 01450 – Quality Control and Testing Services.

B. Compaction Tests

1. Modified Proctor Density Testing and Compaction Testing of fill materials and inspection of subgrades and fill layers will be performed by the Contractor or Contractor's representative. Contractor shall inform Engineer 24 hours in advance of soil compaction operations.

2. If in opinion of the Engineer, based on testing and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense to the Owner.

3. When, during progress of work, tests indicate that compacted materials will not meet specifications, remove defective work, replace and retest at no additional cost to the Owner.

4. Ensure that all compacted fills are tested before proceeding with placement of surface materials.

PART 2 PRODUCTS

2.01 DEFINITIONS

A. Suitable Soil: Suitable soil is a soil having a standard dry density of not less than 90 lb./cu. ft. and having less than 6% organic matter by weight as determined by Loss on Ignition Test (determine weight loss caused by heating sample to 500 degrees C for six hours after drying in accordance with ASTM D-2216, "Laboratory Determination of Moisture Content of Soil").

B. Unsuitable Soil: Unsuitable soil is a soil that contains 6% or more organic matter as determined by the Loss on Ignition. Test previously specified, rubbish, vegetable matter of any kind, roots and boulders larger than five inches in dimension which might interfere with the proper bonding to adjacent contact surfaces, or as otherwise determined unsuitable by Engineer.

2.02 STRUCTURAL FILL MATERIALS

A. General

1. Structural fill for all structures listed above shall meet the requirements of IDOT CA-6 or shall be composed of suitable lean (silty or sandy) clay with liquid limit no greater than 45% and plasticity index no greater than 25%. The on-site lean clay materials obtained from excavations may be used as structural fill except below foundations.

2. Contractor shall engage a qualified independent testing laboratory to test materials from on-site and off-site sources to test materials for conformance to this specification.

2.03 BACKFILL MATERIALS

A. Base Materials

1. Under floors and concrete landings, base material shall be IDOT CA-6 crushed limestone Class C Quality material with a Plasticity Index (PI) range of 0 to 4, minimum of 6 inches in depth unless otherwise shown. All materials to be compacted to 95% Modified Proctor Density in accordance with ASTM D-1557.

2. Under exterior walks, steps and grade slabs, base material shall be naturally or artificially graded mixture of natural or crushed gravel, crushed stone or sand as acceptable to the Engineer - minimum depth 6 inches unless noted otherwise.

B. Backfill Materials

1. Controlled Low Strength Material: Provide Controlled Low Strength Material (CLSM) backfill in accordance with Section 03001 – Controlled Low Strength Material at the locations indicated on the drawings.

2. Granular Backfill: When called for on the plans, granular backfill under steps, concrete landings, walks, slabs and against substructure walls is defined as granular soils IDOT FA-1 or FA-2, Class C quality, or CA-6 Class C quality with a Plasticity Index (PI) range of 0 to 4.

3. Cohesive Backfill: Provide acceptable soil materials in accordance with geotechnical report for backfill free of clay lumps, rock or gravel larger than 2 inches in dimension, debris, waste, frozen materials, vegetable and other deleterious matter.

PART 3 EXECUTION

3.01 EXAMINATION

A. Prior to placement of any fill or backfill and prior to placement of all subsequent fill lifts, Contractor shall contact his/her independent testing laboratory for inspection and testing of excavation subgrade and testing of each compacted layer of fill and backfill material. Results of this testing shall be submitted to the Engineer in a timely manner for review.

3.02 PREPARATION

A. Provide all items and perform all preparation and work for access roads and culverts in accordance with IDOT Standard Specifications, referenced sections:

1. Section 205. Embankment.
2. Section 502. Excavation for Structures.
3. Section 542. Pipe Culverts.

B. Backfilling and compaction shall not occur until the following conditions are satisfied:

1. Acceptance by the Engineer of construction below finish grade including, where applicable, dampproofing, geocomposite wall drain, perimeter insulation and filter fabric.

2. Inspection, testing, approval and recording locations of underground utilities.

3. Removal of concrete formwork.

4. Removal of trash and debris, vegetation, snow or ice, water, unsatisfactory soil materials, obstructions and deleterious materials.

5. Removal of shoring and bracing and backfilling of voids with satisfactory material.

6. Ensure that ground surface within excavated area to be backfilled is not frozen.

7. When existing ground surface has a density less than that specified under Article 3.03-C of this Section for particular area classification, break up ground surface, pulverize, moisture-condition to optimum moisture content and compact to required depth and percentage of maximum density.

3.03 BACKFILLING AND COMPACTING

A. General

1. Definition

a. Backfilling shall consist of placing and compacting the necessary fill materials within the space excavated for the structures to the grade limits shown on the drawings or as directed by the Engineer.

2. Place acceptable material in layers to required subgrade elevations, for each area classification listed below.

   a. In lawn or unpaved areas, use satisfactory excavated or borrow exterior fill material.
   b. Building, access drive and parking related, use granular fill or base material as indicated.
   c. Under walks and steps, use granular fill material.

B. Placement and Compaction

1. Place backfill, base and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand operated tampers. Heavy equipment including compaction equipment shall not operate within 2 feet of substructure walls. Compaction in these areas shall be obtained with hand operated compaction equipment or devices.

2. Before compaction, moisten or aerate each layer as necessary to provide a placement with moisture content between 2% below and 3% above the optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen or contain frost or ice.

3. Place backfill and fill materials evenly adjacent to structure to required elevations. Take necessary precautions to prevent wedging action of backfill against structures by carrying the material uniformly around structure to approximately same elevation in each lift

C. Percentage of Maximum Density Requirements

1. Unless otherwise noted on the plan sheets, the Contractor shall compact each layer of soil to not less than the following percentages of maximum density for soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D1557, Modified Proctor Compaction Test; and not less than the following percentages of relative density, determined in accordance with ASTM D 4253 and ASTM D 4254, for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils).

REQUIRED COMPACTIVE EFFORT				
MATERIAL TESTED	PROCTOR TYPE	MIN % DRY DENSITY	MOISTURE CONTENT	MIN FREQUENCY OF TESTING
Structural Fill (cohesive)	Modified	95%	-2 to +3%	1 per 2,500 sf of fill placed
Structural Fill (granular)	Modified	95%	-2 to +3%	1 per 2,500 sf of fill placed
Base Under Slab (cohesive)	Modified	95%	-2 to +3%	1 per 2,500 sf of fill placed

Base Under Slab (granular)	Modified	95%	-2 to+3%	1 per 2,500 sf of fill placed
Utility Trench / Wall Backfill	Modified	95%	-2 to +3%	1 per 200 lf of backfill placed

D. Moisture Control

1. Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to top surface of subgrade or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations.

2. For subgrade soil materials that are too wet to permit compaction to the specified density and optimum moisture content, scarify and air-dry or remove and replace with suitable materials meeting the satisfaction of the Engineer.

E. Grading

1. General

a. Uniformly grade areas within limits of grading under this Section, including adjacent transition areas. Smooth finished surface within specified tolerances. Compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

b. Loosen grades of lawn areas not receiving additional topsoil to a minimum depth of 4". Remove stones over 1-1/2" in any dimension and sticks, roots, rubbish and other extraneous matter.

c. Grading Outside Building Lines:

i. Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

ii. Finish surfaces free from irregular surface changes, and as follows:

a) Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 0.10' above or below proposed subgrade elevation.

2. Grading Surface of Backfill Under Walks and Slabs

a. Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 1/4" when tested with a 10' straightedge.

3. Compaction

a. After grading, compact subgrade surfaces to the depth and percentage of maximum or relative density for each area classification.

F. Maintenance

1. Protection of Graded Areas

a. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.
b. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

2. Reconditioning Compacted Areas

a. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape and compact to required density prior to further construction.

3. Settling

a. Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment. Restore appearance quality and condition of surface or finish to match adjacent work and eliminate evidence of restoration to greatest extent possible.

3.04 FIELD QUALITY CONTROL

A. Quality Control Testing During Construction

1. Proofrolling: Subgrades shall be proofrolled to detect areas of insufficient compaction. Proofrolling shall be accomplished by making minimum of 2 complete passes with fully-loaded tandem-axle dump truck with a maximum weight of 20 tons, or approved equal, in each of 2 perpendicular directions while under the supervision and direction of the independent testing laboratory. Areas of failure shall be excavated and recompacted as specified herein. Continual failure areas shall be stabilized in accordance with Section 02340 at no additional cost to Owner. Subgrade exposed longer than 48 hours or on which precipitation has occurred shall be re-proofrolled.

2. The Testing Service firm, employed by and paid by the Contractor shall conduct compaction testing at intervals no less than the minimum requirements defined in IDOT Standard Specifications or as specified herein.

3. Provide and forward copies of all compaction testing reports to the Engineer.

4. Allow the Engineer to inspect subgrades and fill layers before further construction work is performed.

5. If in opinion of the Engineer, based on field density testing and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense to the Owner.

6. Allow the Engineer to inspect drainage system before work is covered.

END OF SECTION 02317

DIVISION 3 - CONCRETE
Section 03100 - Concrete Formwork

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

1.02 WORK INCLUDES

A. Concrete formwork, shoring and accessories as shown on the drawings and as herein specified for following:

1. Footings and concrete foundations
2. Floor slabs
3. Concrete sidewalks
4. Entrance slabs
5. Miscellaneous items

1.03 RELATED WORK

A. Specified Elsewhere:

1. Division 1 – General Requirements
2. Section 03200 – Concrete Reinforcement
3. Section 03300 – Cast-In-Place Concrete

1.04 REFERENCES

A. ACI 301 (R 2005) - Specifications for Structural Concrete for Buildings.

B. ACI 347-04 - Recommended Practice for Concrete Formwork.

1.05 SYSTEM DESCRIPTION

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

1.06 QUALITY ASSURANCE

A. Construct and erect concrete formwork in accordance with ACI 301 (R 2005) and 347.

1.07 SUBMITTALS

A. Submit shop drawings under provisions of Division 1 – Submittal Procedures.

B. Indicate pertinent dimensions, materials and arrangement of joints and sites.

C. Submit product data under provisions of Division 1 – Submittal Procedures.

1.08 DELIVERY, STORAGE AND HANDLING

A. Deliver form materials in manufacturer's packaging with installation instructions.

B. Store off ground in ventilated and protected area to prevent deterioration from moisture or damage.

PART 2 PRODUCTS

2.01 WOOD FORMS

A. Wood forms for exposed concrete shall be equivalent to B-B Plyform, Class 1, as designated by American Plywood Association.

2.02 FORM OIL

A. Coat inside of forms with non-staining oil prior to erecting forms.

B. Use only specified products of following manufacturers:

1. Symons Manufacturing Co., Deerfield, IL - Magic Kote
2. Lambert Corporation - Formcel
3. Guardian Chemical Coatings, Inc., Houston, Texas - Guardian Form Coating
4. Concrete Service Co., Philadelphia, PA - Form-Coat
5. Euclid Chemical Co. - Ecoslip

2.03 FORM TIES

A. Form ties shall have 1" minimum break-off depth from face of concrete. Ties shall be removed after forms are removed and holes shall then be filled with mortar that matches adjacent surfaces. Provide stainless steel form ties for exterior surfaces exposed to view.

B. Use only specified products of following manufacturers:

1. Dayton - Sure Grip snap-in form tie
2. Heckmann - Snapties
3. Richmond - Snap-Tys

2.04 METAL FORMS

A. Centering shall be as manufactured by U.S. Steel Deck; Wheeling Corrugating Co.;

Vulcraft or Engineer approved equal. Metal forms shall be minimum 9/16" deep, 26 gauge galvanized. Metal forms shall be installed in strict accordance with manufacturer's directions and specifications.

B. Metal forms shall be capable of safely supporting dead and live loads as shown on drawings.

2.05 ANCHORS AND DOVETAIL ANCHOR SLOTS (RESERVED)

PART 3 EXECUTION

3.01 INSPECTION

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

3.02 PREPARATION

A. Earth forms, except for footings, not permitted.

B. Minimize form joints. Symmetrically align joints.

C. Arrange and assemble formwork to permit stripping so that concrete is not damaged during its removal.

3.03 ERECTION

A. Provide bracing to ensure stability of formwork. Strengthen formwork liable to be overstressed by construction loads.

B. Provide temporary ports in formwork to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain. Close ports with tight fitting panels, flush with inside face of forms, neatly fitted so that joints will not be apparent in exposed concrete surfaces.

C. Provide chamfer strips on external corners of beams, joists and columns.

D. Construct formwork to maintain tolerances in accordance with ACI 301(R 2005).

E. Steel centering shall be placed with corrugation edges up and with corrugations perpendicular to supports. Sheets shall be placed end to end along one side of building. Adjacent rows are to be placed in like manner, side lapping one corrugation with previously placed row. End laps shall always occur over supporting joists, beams or purlins and should be centered over support. Minimum end lap is 2" for welded attachment. Bottom sheet shall not extend beyond edge at support flange. Sheets shall be attached to supports by plug welding through curved washers to supporting top chords. Centering attached by welding shall have following minimum welding requirements:

1. End Laps - each lap is to be fastened using a weld washer at each side lap plus one intermediate weld (3 welds per sheet).

2. Intermediate Supports - weld sheet at side laps at each intermediate support plus one intermediate weld (3 welds per sheet).

3. Spacing between deck attachments to top chord shall not exceed 36".

3.04 APPLICATION OF FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's instructions. Apply prior to placing reinforcing steel, anchoring and devices and embedded items.

B. Do not apply form release agent where concrete surfaces are scheduled to receive special finishes, which may be affected by agent. Soak contact surfaces of untreated forms with clean water. Keep surfaces wet prior to placing concrete.

3.05 INSERTS, EMBEDDED PARTS AND OPENINGS

A. Provide formed openings where required for work embedded in or passing through concrete.

B. Coordinate work of other sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors and other inserts.

C. Install accessories in accordance with manufacturer's instructions, level and plumb. Ensure items are not disturbed during concrete placement.

3.06 FORM REMOVAL

A. Do not remove forms and shoring until concrete has sufficient strength to support its own weight and construction and design loads which may be imposed upon it. Remove load-supporting forms when concrete has attained 75% of required 28-day compressive strength.

B. Do not damage concrete surfaces during form removal.

3.07 CLEANING

A. Clean forms to remove foreign matter as erection proceeds.

B. Ensure that water and debris drain to exterior through clean-out ports.

C. During cold weather, remove ice and snow from forms. Do not use deicing salts. Do not use water to clean out completed forms, unless formwork and construction proceed within heated enclosure. Use compressed air to remove foreign matter.

END OF SECTION 03100

DIVISION 3 – CONCRETE
Section 03200 – Concrete Reinforcement

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Reinforcing steel bars, welded wire fabric and accessories for cast-in-place concrete.

1.02 RELATED SECTIONS

A. Section 03100 – Concrete Formwork.
B. Section 03300 – Cast-in-Place Concrete.

1.03 REFERENCE TO STANDARDS

A. ACI 301 - Structural Concrete for Buildings, latest edition.

B. ACI 318 - Building Code Requirements for Reinforced Concrete, latest edition.

C. ACI 315 - Details and Detailing of Concrete Reinforcement, latest edition.

D. ACI 350 – Code Requirements for Environmental Engineering Concrete Structures

E. ANSI/ASTM A82 - Cold Drawn Steel Wire for Concrete Reinforcement.

F. ANSI/ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.

G. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.

H. ASTM A775 - Epoxy-Coated Reinforcing Steel Bars.

I. ASTM A884 – Standard Specification for Epoxy Coated Steel Wire and Welded Wire Reinforcement

J. AWS D12.1 - Welding Reinforcement Steel, Metal Inserts and Connections in Reinforced Concrete Construction.

K. CRSI - Concrete Reinforcing Steel Institute - Manual of Practice.

L. ACI SP-66 - Detailing Manual.

M. CRSI MSP-1-86 - Manual of Standard Practice.

1.04 SUBMITTALS

A. Shop Drawings: Indicate bar sizes, lengths, splices, spacing, locations, and quantities of reinforcing steel and wire fabric, bending and cutting schedules, supporting and spacing devices and type of steel.

B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

A. Perform Work in accordance with CRSI 63, 65 and Manual of Practice, ACI 301, ACI 315, ACI 318, ACI 350 and ANSI/ASTM A185.

B. Maintain one copy of each document on site.

C. Submit certified copies of mill test report of reinforcement materials analysis, indicating physical and chemical analysis.

1.06 QUALIFICATIONS

A. Welder's Certificates: Submit under provisions Division 1 - General Requirements, Manufacturer's Certificates, certifying welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.07 COORDINATION

A. Coordinate work under provisions of Division 1 – General Requirements.

B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 PRODUCTS

2.01 REINFORCEMENT

A. Reinforcing Steel: ASTM A615 or A706, 60-ksi yield grade; deformed billet steel bars, unfinished.

B. Welded Steel Wire Fabric: ASTM A185 Plain Type; unfinished.

2.02 ACCESSORY MATERIALS

A. Tie Wire: Minimum 16 gage annealed type.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions, including load bearing pad on bottom to prevent vapor barrier puncture.

C. Special Chairs, Bolsters, Bar Supports, and Spacers Adjacent to Weather Exposed Concrete Surfaces: Plastic coated steel type; size and shape as required.

2.03 FABRICATION

A. Fabricate concrete reinforcing in accordance with CRSI Manual of Practice, ACI 315 and ANSI/ASTM A185.
B. Locate reinforcing splices not indicated on drawings, at point of minimum stress.

PART 3 EXECUTION

3.01 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position. Reinforcement shall be tied at a minimum of 50 percent of the bar intersections. Tack welding of reinforcing for maintaining position and welding of splices shall not be permitted. Reinforcement shall not be flame cut or heated to bend.

B. Do not displace or damage vapor barrier.

C. Accommodate placement of formed openings.

D. Conform to ACI 301 for concrete cover over reinforcement, unless noted otherwise on drawings.

E. Wall reinforcement shall not be placed in the work until one side of the wall forms has been erected, aligned and braced. As the wall reinforcement is placed, it shall be secured to the wall form with the proper clearance between the steel and forms.

F. Slab reinforcement shall be supported by manufactured steel bolsters only. Concrete brick may be permitted only in slab on grade or footing construction.

G. Where walls or other items are shown as built integrally with other sections, but are placed as separate pours, keys and dowels shall be provided. Dowels shall be same size and at same spacing as reinforcing.

H. Provide 6 x 6 - W 2.9 x W 2.9 electrically welded wire fabric, ASTM A185 reinforcing in all concrete slabs on ground unless shown otherwise.

I. Provide corner bars of same size and spacing as main reinforcement at all intersections and corners, unless noted otherwise.

J. Where openings occur in walls or slabs, and unless otherwise noted on the plans, provide two (2) #5 bars at all sides and extending at least 2 feet beyond corners and two (2) #5 bars at least 4 feet long diagonally across each re-entrant corner.

K. The Contractor shall give sufficient notice to the Engineer for inspection of the reinforcing prior to the placement of the concrete.

L. The reinforcing for the concrete placement shall be completed before ordering concrete.

3.02 FIELD QUALITY CONTROL

A. Field inspection will be performed under provisions of Division 1 – General Requirements.

END OF SECTION 03200

DIVISION 3 - CONCRETE
Section 03300 – Cast-In-Place Concrete

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Cast-in-place concrete footings and foundation walls.

B. Floors and slabs on grade.

C. Control, expansion and contraction joint devices associated with concrete work, including joint sealants.

D. Non-Shrink Grout

1.02 RELATED SECTIONS

A. Section 02317 – Backfilling and Compacting for Structures
B. Section 03100 – Concrete Formwork
C. Section 03200 – Concrete Reinforcement
D. Section 03390 – Concrete Curing

1.03 REFERENCE TO STANDARDS

A. ACI 212 - Guide for Use of Admixtures in Concrete.

B. ACI 301 - Structural Concrete for Buildings.

C. ACI 302 - Guide for Concrete Floor and Slab Construction.

D. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.

E. ACI 305R - Hot Weather Concreting.

F. ACI 306R - Cold Weather Concreting.

G. ACI 308 - Standard Practice for Curing Concrete.

H. ANSI/ASTM D994 - Preformed Expansion Joint Filler for Concrete (Bituminous Type).

I. ANSI/ASTM D1190 - Concrete Joint Sealer, Hot-Poured Elastic Type.

J. ANSI/ASTM D1751 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).

K. ANSI/ASTM D1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.

L. ASTM B221 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes, and Tubes.

M. ASTM C33 - Concrete Aggregates.

N. ASTM C40 - Test for Organic Impurities in Sands for Concrete.

O. ASTM C42 - Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.

P. ASTM C88 - Test for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate.

Q. ASTM C94 - Ready-Mixed Concrete.

R. ASTM C117 - Test for Materials Finer Than No. 200 Sieve in Mineral Aggregates by Washing.

S. ASTM C123 - Test for Lightweight Pieces in Aggregate.

T. ASTM C127 - Test for Specific Gravity and Absorption of Coarse Aggregate.

U. ASTM C136 - Test for Sieve or Screen Analysis of Fine and Coarse Aggregates.

V. ASTM C138 - Test for Unit Weight, Yield, and Air Content (Gravimetric) of Concrete.

W. ASTM C142 - Test for Clay Lumps and Friable Particles in Aggregates.

X. ASTM C143 - Test for Slump of Portland Cement Concrete.

Y. ASTM C150 - Portland Cement.

Z. ASTM C172 - Method of Sampling Fresh Concrete.

AA. ASTM C231 - Test for Air Content of Freshly Mixed Concrete by the Pressure Method.

BB. ASTM C260 - Air Entraining Admixtures for Concrete.

CC. ASTM C494 - Chemicals Admixtures for Concrete.

DD. USDA Bull. 949 Dorry Hardness Test.

1.04 SUBMITTALS

A. Submit copies of product manufacturer's literature and MSDS.

B. Product Data: Provide data on joint devices, attachment accessories, admixtures, form release agents and bonding agent.

C. Material Certifications: For each item listed, provide information indicated.

1. Coarse and Fine Aggregate

a. Producer Name.
b. Quarry Location.
c. Contact Person and Phone Number.
d. IDOT Certification Sheets with Material Quality Results.
e. Specific Gravity.
f. Moisture Content.

2. Cement

a. Mill Test Report.
b. Producer Name and Location.

3. Water

a. Specify Potable Water Source.

D. Concrete Mix Properties: Provide the following information:

1. Mix Design

a. Cement (Lbs./C.Y.)
b. Fine Aggregate (Lbs./C.Y.)
c. Coarse Aggregate (Lbs./C.Y.)
d. Water (Lbs./C.Y.)
e. Admixtures.

2. Slump Specified.

3. Air Content Specified.

E. Mix Plant Certification: Provide IDOT certification of plant inspection (within past 12 months) and provide contact person name, address, and phone number at plant.

F. Manufacturer's Installation Instructions: Indicate installation procedures and interface required with adjacent work.

G. Submittal Timing: Within 30 days of award, the Contractor shall indicate his intentions regarding mix design. Should Method 1 be used, the submittal should be submitted with back-up documentation as indicated under the provision of Method 1. Should Method 2 be utilized, the proposed mix trial proportions and w/c ratios made

should be submitted. This would then be followed with 7 and 28 day breaks. Concrete placement shall not be permitted prior to approval of mix designs.

1.05 PROJECT RECORD DOCUMENTS

A. Contractor shall accurately record actual locations of embedded utilities and components which are concealed from view.

1.06 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301.

B. Maintain one copy of each document on site.

C. Acquire cements and aggregates from same source for all work.

D. Conform to ACI 305R when concreting during hot weather.

E. Conform to ACI 306R when concreting during cold weather.

1.07 FIELD TESTS

A. Provide under provisions of Division 1 - General Requirements.

B. Cylindrical Compression Tests

1. Contractor shall employ and pay for an independent testing firm for making compression strength tests. The Contractor shall also make arrangements with the independent testing firm to have cylinders picked up and transported to a location of curing and testing.

2. Specimens for making compressive strength tests shall be made using standard 6" x 12" cylindrical molds. The Contractor shall arrange with the Engineer to take samples and fill molds. Specimens shall be made, cured and tested in accordance with ASTM C-31 and ASTM C-39.

3. Test cylinders shall accurately represent concrete placed in forms. For each 50 cubic yards or fraction thereof or for each 4,000 square feet of surface area poured per day in each separate structure of each class of concrete, one set of four standard cylinders shall be cast. Casting, handling and curing of all cylinders shall be in accordance with ASTM C21. Additional cylinders may be required if an error in batching is suspected. For first 24 hours after molding, cylinders shall be kept moist in storage box constructed and located so that its interior air temperature will be between 60 and 80 degrees F. At end of 24 hours, cylinders shall be transported to laboratory. Exception: Where the Contractor intends to remove load supporting forms (when conditions permit), a sufficient number of additional test cylinders shall be made and shall be field cured at the site of the structure. Field curing shall continue up to within four hours prior to laboratory testing. The

Contractor shall be responsible for the safe field storage of the concrete cylinders during the field curing process.

4. Contractor shall inform Engineer 24 hours in advance of any concrete pours, indicating location and size of pour by submitting completed pre-pour checklist.

5. Testing of specimens for compressive strength shall be in accordance with ASTM C39. Tests shall be made at 7 and 28 days from time of molding. One test cylinder from each group of four shall be tested at end of 7 days and two will be tested at end of 28 days, all in accordance with ASTM C39. Fourth cylinder shall be held for testing as a check cylinder.

6. Laboratory test reports shall include following information:

   a. Mix design designation
   b. Number of specimens
   c. Date specimen taken
   d. Date specimen tested
   e. Portion of structure represented by specimen
   f. Design strength of concrete
   g. Slump of concrete
   h. Temperature of concrete
   i. Percent entrained air
   j. Test strength of specimen

C. Slump Test

1. Contractor shall employ and pay for an independent testing firm for taking slump tests. Concrete shall be tested for consistency at place of deposit in accordance with ASTM C-143. Contractor shall arrange for slump tests to be made from first load of concrete of each placement**, each time compressive test cylinders are made** and as often thereafter as Engineer determines necessary.

D. Air Entrainment

1. Contractor shall employ and pay for an independent testing firm for taking air tests. Air content of air entrained concrete shall be determined in conformance with ASTM C-231. Contractor shall arrange for sufficient tests to be made to insure uniform air content in placement**, including each time compressive test cylinders are made.**

1.08 DELIVERY, STORAGE AND HANDLING

A. Delivery: Deliver cementitious materials to the ready-mix plant in bulk or in packages.

B. Storage: Store bulk material in clean silos. Store bagged material in a dry area off ground protected from rain, snow and other sources of moisture.

1.09 COORDINATION

A. Coordinate work under provisions of Division 1 – General Requirements.

B. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

A. Cement

1. Mix A: ASTM C150, Portland Type I - Normal.

2. Only one brand of cement shall be used for exposed concrete throughout any one structure or composite element. Cement used for rubbing and/or patching shall be of same type and brand as that used in element of work.

B. Concrete Aggregate

1. Concrete aggregate shall conform to ASTM C33. Maximum size of coarse aggregate shall be in accordance with guidelines listed below:

Maximum Aggregate Size, Inches	Type of Structure
1/2"	Concrete Toppings
3/4"	Mud Slabs Stairs and Steps Columns Beams Elevated Slabs Flowable Fill
1"	Grade Beams Equipment Pads All Other Structures
1-1/2"	Caissons, Piles and Piers Footings Slabs on Grade, Interior & Exterior Tank Walls

2. Aggregate gradations shall be Class A quality for coarse and fine materials in accordance with the Standard Specifications for Road and Bridge Construction, Illinois Department of Transportation and shall conform to the following:

1-1/2" Coarse Aggregates

Sieve Size	% Passing
1-3/4"	100
1-1/2"	98 ± 2
1"	72 ± 22
1/2"	22 ± 12
No. 4	3 ± 3

1" Coarse Aggregates

Sieve Size	% Passing
1-1/2"	100
1"	95 ± 5
1/2"	42 ± 18
No. 4	5 ± 5

3/4" Coarse Aggregates

Sieve Size	% Passing
1"	100
3/4"	95 ± 5
1/2"	55 ± 15
3/8"	33 ± 15
No. 4	5 ± 5

Fine Aggregate

Sieve Size	% Passing
3/8"	100
No. 4	97 ± 3
No. 16	65 ± 20
No. 50	16 ± 13
No. 100	5 ± 5

Results of durability tests shall be required for coarse and fine aggregates used for concrete. In lieu of durability test results, a certificate from the aggregate supplier(s) indicating that the aggregate furnished is from a supply approved for use in concrete by the Illinois Department of Transportation will be acceptable.

C. Fly Ash

1. Fly ash used in concrete shall meet ASTM C618, Type C or F with 5% maximum loss on ignition.

2. Supplier shall furnish certifications/fly ash analysis.

D. Water

1. Water used in mixing concrete and mortar and water used for curing concrete shall be clean, clear and free from deleterious amounts of sugar, acids, alkalies, salts or organic matter. Water approved by public health agencies for drinking may be accepted without being tested. All other sources shall be approved by Engineer.

2.02 ADMIXTURES

A. When required or permitted, admixtures shall conform to requirements specified below. Use of one or more admixtures in concrete shall be approved by Engineer prior to its use at job site. Admixtures for concrete Mix B shall be compatible with the blended cement to be used based on past experiences with Type K cement manufacturer and shall be tested in trial mixes (Item 1.06C) with job materials and proportions under simulated ambient conditions.

B. Field Service: When requested, the Contractor shall arrange to have a qualified concrete technician employed by manufacturer be available to assist in proportioning concrete materials for optimum use, to advise on proper use of admixture and adjustment of concrete mix proportions to meet job site and climatic conditions.

1. Air Entraining Admixture: Shall conform to ASTM C260 and shall be Darex AEA by W. R. Grace; MB-VR by Master Builders, Sealtight AEA by W. R. Meadows, or equal.

2. Water Reducing Admixture: Shall conform to ASTM C494, Type A and shall be WRDA by W. R. Grace, Pozzolith by Master Builders, Plastiment by Sika Corporation or equal.

3. Water-Reducing and Retarding Admixture: Shall conform to ASTM C 494, Type D and shall be Daratard-17 by W. R. Grace & Co., or equal.

4. Non-Chloride Accelerating Admixture: Shall conform to ASTM C 494, Type C and shall be Daraset or DCI Corrosion Inhibitor by W. R. Grace & Co., or equal.

5. Superplasticizers: Shall conform to ASTM C494 Type F. Material shall contain no calcium chloride and shall be WRDA-19 or Daracem-100 by W. R. Grace & Co., or equal, furnished in liquid form ready for use.

C. Calcium chloride shall not be permitted under any circumstances. Non-corrosive accelerator may be used in concrete, other than when it is required, when approved by Engineer.

D. Admixtures containing chloride shall not be used where aluminum conduit, couplings or accessories are embedded in concrete without adequate corrosion protection for embedded items.

2.03 ACCESSORIES

A. Bonding Agent: Bonding agent shall be Larsens "Weld-Crete" or equal. Installation shall be according to manufacturer's recommendations.

B. Vapor Barrier: 6-mil thick clear polyethylene film type recommended for below grade application.

2.04 JOINT DEVICES AND FILLER MATERIALS

A. Fiber Expansion Joint Filler: ASTM D1751, Federal Spec. HH-F-341F, Type I - asphalt saturated organic fiber, 1/2 inch thick (unless otherwise shown).

B. Joint Sealant:
1. Interior Locations: Sikaflex –1c SL, High Performance, Self-leveling, 1-part polyurethane sealant (fuel resistant), or approved equal.
2. Exterior locations if required: ASTM D3569 Standard Specification for Joint Sealant, Hot Applied, Elastometric, Jet Fuel Resistant type, for Portland Cement Concrete Pavements
3. Exterior Locations if required: ASTM D 7116 Standard Specification for Joint Sealants, Hot Applied, Jet Fuel Resistant Types, for Portland Cement Concrete Pavement

2.05 CONCRETE MIX

A. Strength:

1. Concrete for all parts of work shall be homogeneous and, when hardened, shall have required strength, resistance to deterioration, durability, resistance to abrasion watertightness, appearance and other specified properties.

Mix Design	A
Cement	Type I
Fly Ash	Optional
7 Day Strength, psi	2,500
28 Day Strength, psi	4,000
W/C or W/C&P (Max.)	0.45
Air Content %	4-1/2 to 7-1/2

Note: Cement/fly ash may require a retarding admixture during hot weather (> 80° F) and reduced ash content during cold weather (< 40° F). The Contractor will be required to submit proposed mix designs utilizing Method 2, paragraph 2.05F.1.b.

2. Revised mix designs shall be submitted to the Engineer when weather conditions require use of additional admixtures or changes in mix design. Revised mix designs shall be submitted to the Engineer if the source for any component of the concrete changes for any reasons whatsoever. This shall include changes in cement, aggregate or admixture supplier. Trial mixes shall be developed in accordance with Method 2. New mix designs shall be assigned alpha numeric designations beginning with "D".

3. Design of the fly ash mix shall be based on the technique where the fly ash replaces a part of the cement with a greater weight of fly ash and then compensates for the large amount of fines by a subsequent reduction in fine aggregate content.

4. Strength level of an individual class of concrete shall be considered satisfactory if both of following requirements are met:

    a. Average of all sets of three consecutive strength tests equal or exceed f'_c = 4000 psi.

    b. No individual strength test falls below f'_c by more than 500 psi.

5. If either of above requirements is not met, steps shall be taken to increase average of subsequent strength test results. Engineer shall have right to order a change in proportions of mix for remaining work. Engineer shall also have right to require conditions of temperature and moisture necessary to secure required strength. If requirement (b) is not met, following steps shall be taken.

    a. If any strength test of laboratory-cured cylinders falls below specified values of f'_c by more than 500 psi or if tests of field-cured cylinders indicate deficiencies in protection or curing, steps shall be taken to assure that load-carrying capacity of structure is not jeopardized.

    b. If likelihood of low-strength concrete is confirmed and computations indicate that load-carrying capacity may have been significantly reduced, tests of cores drilled from area in question may be required in accordance with "Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete" (ASTM C42). In such cases, three cores shall be taken for each strength test more than 500 psi below specified value of f'_c. If concrete in structure will be dry under service condition, cores shall be air dried (temperature 60° to 80° F., relative humidity less than 60%) for 7 days before test and shall be tested dry. If concrete in structure will be more than superficially wet under service conditions, cores shall be immersed in water for at least 40 hours and be tested wet.

    c. Concrete in an area represented by core tests shall be considered structurally adequate if average of three cores is equal to at least 85% of f'_c and if no single core is less than 75% of f'_c. To check testing accuracy, locations represented by erratic core strengths may be retested.

d. If criteria of paragraph (c) are not met, and if structural adequacy remains in doubt, the Engineer may order load tests as outlined in Chapter 20 of ACI 318-05 for questionable portion of structure or require other appropriate action.

e. All costs associated with performing analytical investigations, core testing and load testing shall be paid for by Contractor.

B. Slump:

1. Slump of concrete of normal weight as determined by "Method of Test for Slump of Portland Concrete" (ASTM C-143) shall be as follows:

Kinds of Construction	Maximum Slump
Footings, caissons and sub-structure walls	3"
Slabs, Beams, Columns, Reinforced Walls and Concrete Toppings	4"

Additional slump required to offset slump loss of concrete Mix B shall not increase the water content beyond the specified ratio in Item 2.06A. Water reducing admixtures compatible with the blended cement is preferable.

All concrete containing a water reducer shall have a maximum slump as recommended by the manufacturer of the water reducer and approved by the Engineer.

C. Durability:

1. Concrete, which will be subject to exposure conditions such as freezing and thawing, severe weathering or chemicals, shall contain total entrained air between 4-1/2% and 7-1/2% of concrete by volume.

2. Interior floor slabs and other elements located indoors and not subjected to any of above mentioned exposure conditions need not contain entrained air for purposes of durability but may be included from standpoint of increased workability at Contractor's option.

D. Proportioning of Ingredients:

1. Proportion of ingredients shall be selected to produce proper placability, durability, strength and other serviceability requirements. Proportion of ingredients shall be such as to produce a mixture which will work readily into corners and angles of forms and around reinforcement by methods of placing and consolidation employed on work, but without permitting materials to segregate or excessive free water to collect on surface.

E. Mix Design Use Locations:

1. All cast-in-place concrete on this project shall be placed utilizing Mix A as specified in Paragraph 2.06(A)(1) above.

F. Procedures for Mix Design Acceptance:

1. Determination of proportions of cement, aggregate, admixtures and water to attain required strengths shall be made by one of following methods:

a. Method 1 - Field Test Data:

i. This procedure shall be acceptable when production facility has a control record, based on at least 30 consecutive strength tests of the identical mix or mixes obtained within the past year representing materials and conditions to those expected. Compressive strength tests shall equal to or exceed specified strength. Air and slump shall meet the requirements specified herein. Contractor shall submit to Engineer mix design and test results for approval.

ii. In all respects, the components of the proposed concrete mix shall be identical to the components represented by the field test data. This includes cement type and cement manufacturer, material gradation and material sources admixture suppliers and concrete plant.

iii. Under no circumstances shall applicable requirements for cement, water, admixtures and aggregate durability as stated in this specification be waived in approval of mix design. Contractor shall submit in writing certification of the performance of proposed mix design and guarantee materials proposed in mix design will be used throughout duration of the project.

iv. Use Flow Chart Fig. 5.3 of ACI 318-05 for approval procedure.

b. Method 2 - Trial Mixes - Applicable Standards:

i. ACI 211-1 (ACI 613) Recommended Practice for Selecting Proportions for Concrete.

ii. ASTM C-192 Method for Making and Curing Concrete Compression and Flexure Test Specimens in the Laboratory.

iii. ASTM C-39 Method of Test for Compressive Strength of Cylindrical Concrete Cylinders.

iv. Trial mixtures having proportions and consistencies suitable for work shall be made in accordance with ACI 211-1 (ACI 613), USING AT LEAST THREE DIFFERENT WATER-CEMENT RATIOS which will produce a range of strengths encompassing those required for work. Trial mixes shall be designed to produce slump within 1" of maximum permitted and for air-entrained concrete, maximum allowable air content. Temperature of concrete used in trial batches shall be reported.

v. For each water-cement ratio, at least 3 compression test cylinders for each test age shall be made and cured in accordance with ASTM C-192. They shall be tested for strength at 28 days or at earlier or later age specified according to ASTM C-39. The water cement ratio to be used in concrete shall be selected to produce minimum specified compressive strength. No substitutions shall be made in materials used on work without additional tests in accordance herewith to show that quality of concrete is satisfactory.

2.06 GROUT

A. Non-shrink Grout: Locations noted in drawings shall be grouted with Type 1 Grout. Type 1 Grout shall be “N-S Grout” by the Euclid Company, “Masterflow 928" by Masterbuilders, “Sika Grout 212" by Sika.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify site conditions under provisions of Division 1 - General Provisions.

B. Verify requirements for concrete cover over reinforcement.

C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.02 PREPARATION

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

B. In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

3.03 TESTING

A. Plant Tests

Sufficient testing shall be done by the supplier to assure the quality and consistency of the mix produced. The field tests are not to be used as a gauge of this quality.

B. Field Tests

See Article 1.07 of this specification section.

3.04 BATCHING, MIXING AND TRANSPORTING CONCRETE

A. Concrete shall be transit-mixed and batched at stationary batch plant which has been certified by the Illinois Department of Transportation. Name of concrete supplier shall be submitted to Engineer for approval prior to beginning of concrete work. Engineer reserves right to reject supplier at any time and to require Contractor to obtain different supplier.

B. Concrete batch shall be transferred from plant hoppers to revolving-drum type truck mixers and it shall be completely mixed while in transit to job site. Truck mixers shall be modern and dependable and be maintained in good working condition. Engineer reserves right to disallow any truck mixers that have excessively worn mixing blades or fail to conform to any other requirements of this specification, or hinder operations of placing and finishing at job site.

C. Delivery and discharge of concrete shall be made within 1-1/2 hours or before drum has revolved 300 revolutions after addition of mixing water to cement and aggregates. Delivery of mixed concrete shall be regulated so that there will not be an interruption of more than 20 minutes duration in placement of concrete in forms. Engineer may waive these requirements if slump and temperature requirements are met without adding water.

D. Each load of transit-mixed concrete shall have delivery ticket showing following information:

1. Mix design designation
2. Quantity of concrete
3. Concrete design strength
4. Quantity of cement
5. Quantity of water
6. Time of charging of mixer (mechanically stamped ticket only)
7. Total amount of admixtures
8. Quantity of water added to concrete at job site shall be noted on ticket. No water is to be added at job site unless acceptable to the Engineer.

E. One copy of delivery ticket shall be furnished to Engineer at time truck arrives at job site.

3.05 PUMPING CONCRETE

A. Pumping of concrete shall be in accordance with ACI 304.2 except as modified herein.

B. Contractor, at his option, may elect to use concrete pump for final placement of concrete. It is responsibility of Contractor to furnish and maintain in good working condition, modern and dependable equipment for pumping concrete. All equipment shall be appropriate for work in accordance with these specifications and subject to approval of Engineer.

C. Selection of pipe diameter for pumping shall be such that smallest inside diameter is no less than 4 inches or 3 times nominal maximum size coarse aggregate, whichever is greater.

D. Pumping lines shall be lubricated with minimum of 1 cubic yard of grout prior to pumping regular mix through lines.

E. Contractor shall show sufficient evidence prior to use of pump that mix is pumpable. This shall be accomplished by submitting a certification from supplier that mix has performed satisfactorily on previous jobs of similar nature or by performing full scale field test for pumpability with line height and other variables being identical (or nearly so) to that of actual placing conditions.

F. No increase in water content shall be allowed for concrete that is to be pumped. An admixture (water reducer or superplasticizer) shall be used if improvement of pumpability of concrete is necessary. Mix design requirements of this specification shall apply for concrete containing admixtures not previously included in mix.

3.06 PLACEMENT SEQUENCE (RESERVED)

3.07 CONVEYING AND PLACING CONCRETE

A. Concrete shall be conveyed and placed in conformance with ACI 318, ACI 309, and ACI 304. Method and manner of placing concrete shall be such as to avoid segregation or separation of aggregates or displacement of reinforcing steel. Contractor shall instruct laborers on proper vibration techniques required for each situation.

B. Chutes shall extend as nearly as practicable to point of deposit. Concrete shall not be dropped more than 6 feet. For walls or column placements in excess of 6 feet vertical height, tremie shall be used in placing concrete. If reinforcing steel or formwork is such that tremie cannot be used, method of placement shall be approved by Engineer.

C. Placement of concrete shall be regulated so that pressures caused by wet concrete will not exceed those used in design of forms. Concrete placed in vertical forms shall be placed in lifts of not more than two (2) feet which shall be kept practically level.

D. On horizontal construction joints at mid-height of a wall, a mixture of grout shall be applied to joint immediately prior to placing concrete. This shall be a manually mixed and poured (via tremie) just ahead of concrete placement.

3.08 CONSOLIDATION

A. Consolidation of concrete in formwork and in slabs shall be accomplished by use of hand-held internal type vibrators and shall be adequately powered to operate at minimum frequency of 4500 cycles per minute. They shall be applied internally to fresh concrete in manner that will result in homogeneous mass without segregation.

B. Hand spading, tapping forms and other external vibration techniques shall be used only when permitted by Engineer and will not be allowed as sole means of consolidation of concrete.

C. At beginning of concrete placement, a spare vibrator shall be on job site in addition to vibrators to be used during placement.

D. When concrete is placed in vertical forms, vibrator shall slowly penetrate newly placed concrete well into concrete layer below. Vibrator shall penetrate concrete at frequent regular spacings amply close together to insure complete consolidation of concrete.

E. Use of vibrator to aid in lateral movement of concrete in slabs or wall forms shall not be permitted under any circumstances.

F. If electrical power for equipment used in the concrete placement is provided by a portable electric generator, an additional back-up portable electric generator or an alternate reliable electrical source shall be available prior to and during the concrete placement.

3.09 CURING AND PROTECTION

A. Freshly deposited concrete shall be protected from premature drying and excessively hot or cold temperatures and shall be maintained with minimal moisture loss at relatively constant temperature for period of time necessary for hydration of cement and proper hardening of concrete.

B. Initial curing shall immediately follow finishing operation and shall continue for a minimum of 24 hours after placement. Concrete shall be kept continuously moist by one of following methods listed below.

1. Polyethylene Sheeting: Unformed surfaces shall be covered with polyethylene sheeting as soon as concrete has hardened sufficiently to prevent marring surface. Surface of concrete shall be wetted immediately before sheeting is placed. Use of a layer of wetted burlap beneath sheeting may be required at option of Engineer. Edges of sheeting shall have sufficient lap and shall be fastened securely by any means satisfactory to Engineer to provide an airtight cover. Tears or holes in sheeting will not be permitted.

2. Membrane Curing:

   a. After concrete has been finished and immediately after water sheen is no longer visible on surface of concrete, surface shall be cured with membrane curing compound. Curing compounds may be used to cover all exposed surfaces. Membrane curing will not be permitted at construction joints. Application shall be such to completely cover all exposed surfaces and rate of coverage shall be in accordance with manufacturers recommendations.

   b. Application of curing compound shall be by power sprayer. Garden sprayers will not be allowed. Curing compound shall be applied immediately after form removal. Notify Engineer when curing compound is to be applied so that application rate can be verified.

   c. Curing compounds specified in Section 03390 – Concrete Curing shall be used unless other special floor treatments are required.

3. Continuous Wetting:

   a. After concrete has been finished and is hardened sufficiently to prevent any type of surface damage, curing shall be accomplished by continuous steam not exceeding 150°F, a continuous vapor mist bath or by use of burlap fabric kept continuously saturated.

      Mechanical equipment used in this method shall be modern and maintained in good working condition throughout specified curing period. All equipment and procedures shall meet approval of Engineer prior to its use.

C. Final Curing

Immediately following initial curing and before concrete has dried, additional curing shall be accomplished by one of the following methods:

1. Continuing method used in initial curing.

2. Waterproof Paper: While concrete surface is still wet, surface shall be covered with waterproof paper meeting approval of Engineer. Paper shall be lapped minimum of 12" end to end and such laps and ends shall be securely held in place to form closed joint. Tears or holes in paper will not be permitted.

3. Other moisture-retaining coverages, which are practical and meet approval of Engineer.

4. Final curing shall continue until cumulative number of days of initial and final curing totals not less than 7 days. Rapid drying at end of curing period shall be prevented.

5. Steel forms heated by sun and all wood forms in contact with concrete during final curing period shall be kept wet. If forms are to be removed during curing period, one of above curing methods shall be employed immediately. Such curing shall be continued for remainder of curing period.

3.10 COLD WEATHER CONCRETING AND CURING

A. Special precautions described below shall be applicable to cold weather concreting and curing under following weather conditions:

1. In fall, when mean daily temperature falls below 40°F for more than one day.

2. In spring, until mean daily temperature rises above 40°F for three consecutive days.

3. Mean daily temperatures below 40°F are forecast.

B. Minimum temperature of concrete and protection method shall be as follows:

Atmospheric Temperature Range	Minimum Fresh Concrete Temperature	Protection Method
Above 30°F	60°F	1
0°F - 30°F	65°F	2
Below 0°F	70°F	3

C. Protection Method 1:

1. Following finishing procedure and after concrete surface is such that no damage to surface will occur, concrete shall be covered with 12" of dry straw and then covered completely with layer of polyethylene sheeting or equivalent. Covering shall be sealed and tied down to prevent flapping and shall remain in place for minimum of 7 days.

D. Protection Method 2:

1. Concrete shall be covered with minimum of 2" of an insulating material such as fiberglass or another commercial insulating material of not less than 2" and meeting approval of Engineer. Waterproof cover of 40 lb. asphalt-impregnated paper shall then be placed and maintained for minimum of 7 days.

2. After surfaces are formed, 2" insulating material shall be attached tightly to forms with suitable fastening devices so as to prevent circulation of air under insulation. Insulating material shall be installed prior to placement of concrete in forms. Special care shall be exercised at edges and ends so as to exclude air and moisture. This material shall remain in place for period of 7 days after concrete is placed.

E. Protection Method 3:

1. An adequate enclosure shall be erected to house formwork and exposed concrete such that temperature is not less than 50°F or greater than 80°F for a period of at least 7 days after placement of concrete. All enclosures shall be in place and meet approval of Engineer prior to placement of concrete. Salamanders and other heaters which produce carbon dioxide may be allowed, provided surfaces of concrete are adequately covered to prevent direct exposure to carbon dioxide. All heating devices shall meet approval of Engineer.

F. Additional Protection Methods:

1. Other suitable means of placing and protection may be permitted provided procedure is in conformance with ACI 306R-78 Section 5.3 and all other applicable sections, and meets approval of Engineer prior to its use.

2. If mean daily temperatures are above 40°F but weather forecast indicates low temperature of 32°F or below, concrete less than 72 hours old shall be protected by one of the following procedures:

a. Two layers of polyethylene sheeting or 2 layers of waterproof paper.
b. One layer of polyethylene and 1 layer of burlap.

This curing procedure shall remain in place until the concrete is at least 96 hours old.

3. Changes in temperature of concrete shall be as uniform as possible and shall not exceed 5°F in any one-hour or 50°F in any 24 hour period.

4. Contractor shall maintain temperature records of concrete. When concrete is placed, record time, date, weather conditions, outside air temperature and temperature of concrete. Record temperatures at several locations (or as directed by Engineer) within enclosures and on concrete surfaces, edges and corners to obtain the range of temperatures. Record maximum and minimum temperatures in each 24-hour period. Using measuring devices embedded in concrete surface or place thermometer against surface under temporary cover of thick insulation until constant temperature is registered.

3.11 HOT WEATHER CONCRETING AND CURING

A. Special precautions contained herein shall be applicable to hot weather concreting and curing when following conditions exist:

1. Any combination of high air temperature, low relative humidity and high wind velocity. Refer to ACI 305R, Figure 2.1.5 for more detailed information on specific conditions, which create need for special precautions to be taken.

2. Any combination of rising air temperature and falling relative humidity.

B. Hot weather concreting and curing shall be performed in accordance with requirements of this Specification and ACI 305R, latest edition.

C. Under hot weather conditions, Contractor shall be responsible for making arrangements for installation of windbreaks, shading, fog spraying, sprinkling, ponding or wet covering of light color.

Arrangements shall be made in advance of placement and such protective measures shall be taken as quickly as concrete hardening and finishing operations will allow.

D. Maximum allowable temperature of concrete at time of placement shall not be greater than 90°F. Concrete in excess of 90°F shall be rejected at no additional cost to Owner. Contractor shall have provisions at plant for maintaining temperature of concrete less than 90°F but greater than 55°F. Introduction of ice in an amount equal to 50% of mixing water by weight will be permitted. Use of higher quantities shall be approved by Engineer.

Addition of water to increase the workability of the concrete at the site shall not be permitted. Changes in temperature of the concrete shall be as uniform as possible and shall not exceed 5°F in any one-hour or 50°F in any 24-hour period.

3.12 FINISHES FOR CONCRETE

A. Surface Finish for Formed Concrete Surfaces:

1. Defects in new concrete such as rock pockets and tie holes shall be repaired when forms are removed. All form ties shall be removed to a point 1" beneath surface of concrete and resulting depression shall be carefully pointed with mortar or sand, water and cement in a proportion of 2:1. Bonding admixture, "Flex-Con" by Euclid Company, Sika Latex, or equal, shall be used in mortar. This shall be done for all surface finishes of formed concrete surfaces.

2. Formed concrete surfaces which will be covered by earth fill need not be finished except for repair of defects and pointing of form tie depressions.

3. Surfaces that will be exposed to view after completion of work shall be given an ordinary finish consisting of removal, by rubbing, of any fins left by form work and rubbing of pointed areas to remove roughness and projection as well as repairing rock pockets and tie holes as explained above. This includes interior wall surfaces above and below water surfaces.

4. Exposed exterior wall surfaces of all proposed structures shall receive a scrubbed finish.
   a. Exterior wall finish shall extend minimum of one foot below final grade.

   b. A scrubbed finish shall be performed in the following manner:

1. Immediately following removal of the forms, remove all surface roughness, projections and other defects by grinding or chipping. Wet down the entire area and fill all air pockets, voids and other depressions with grout to produce a smooth dense surface free from pits and other irregularities. Thoroughly scrub into the wetted surface a mortar mixture consisting of 1 part well graded sand passing the No. 30 sieve, 1 part portland cement and a sufficient quantity of a bonding admixture (described previously) to produce a workable mixture. Scrubbing shall be accomplished by use of a rubber or wood float following by finishing with a cork float or a light brush. The resulting surface shall be true and uniform, with no discernible thickness of mortar on the surface.

B. Surface Finish for Unformed Concrete Surfaces.

1. Scratched Finish. A scratched finish is required on unformed concrete surfaces which will be covered with fill material and topping. The concrete shall be placed, consolidated, struck off and leveled. The surface shall then be roughened with stiff brushes or rakes before final set.

2. Float Finish. A float finish is required on unformed concrete surfaces that will be covered by built-up roofing. After the surface has been leveled and has stiffened sufficiently to allow the operation, the surface shall be floated at least twice to a uniform sandy texture.

3. Trowel Finish. A "hard, steel troweled finish" is required on all unformed concrete surfaces that are exposed in the finished work. After floating, the surface shall be troweled at least twice to a dense, uniform surface free of blemishes, ripples and trowel marks. Care shall be taken to prevent an excess of fine material and water from being worked to the surface. Exterior slabs and sidewalks shall be given a "light broom finish" in lieu of the final steel troweling.

C. Miscellaneous

All areas. Edges and corners of structures, which are exposed in the completed structures, shall be chamfered 3/4", unless noted otherwise. Edges of walks and slabs on grade shall be finished with an edging tool.

Walks and slabs on grade shall have contraction joints scored in the concrete to control cracking. The spacing of the scored joints shall be equal to the width of the walk or slab unless otherwise specified or noted on the plans.

3.13 REPAIR OF DEFECTIVE AREAS

A. All repair work on defective areas, regardless of size shall have prior approval of Engineer. Methods and procedures shall be in accordance with ACI 301, Chapter 9 except as modified herein.

B. As early as possible, after removal of forms, Contractor shall patch any poor joints, voids, air pockets and minor honeycomb. Large areas of honeycomb and other weak areas shall be chipped out with light pneumatic chip-hammer. When chipping is performed, edges shall be perpendicular to surface. Feather edging will not be permitted.

C. Repair of all defects shall be accomplished by first wetting area followed by application of a bonding grout consisting of one part cement and one part sand (passing the No. 30 sieve) mixed to consistency of thick cream. Patching material shall consist of one part of gray Portland and white Portland cement so proportioned with 2-1/2 parts of sand (passing the No. 30 sieve) and enough water to produce workable mixture which, when in place and cured will match color of unmarred surfaces.

D. In lieu of cement bonding grout, bonding compound shall be Euco-Weld by Euclid Company, Duraweld by W. R. Grace Company, or equal. In lieu of Portland cement patching material, for non-architectural and non-structural areas only, patching compound may be "Poly-patch" by Euclid Company, Thorocrete by Standard Drywall, or equal.

END OF SECTION 03300

DIVISION 3 - CONCRETE
Section 03390 - Concrete Curing

PART 1 GENERAL

1.01 SUMMARY

A. Initial and final curing, sealing of vertical foundation wall surfaces and exterior concrete flat work and curing, sealing and dust proofing of interior concrete floor slab surfaces.

B. Related Sections:

1. Section 03300 - Cast-In-Place Concrete

1.02 REFERENCE TO STANDARDS

A. ACI 301 - Structural Concrete for Buildings.

B. ACI 302 - Recommended Practice for Concrete Floor and Slab Construction.

C. ACI 308 - Standard Practice for Curing Concrete.

D. ASTM C171 - Sheet Materials for Curing Concrete.

E. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.

F. ASTM D2103 - Polyethylene Film and Sheeting.

1.03 SUBMITTALS

A. Submit under the provisions of Division 1 – Submittal Procedures.

B. Product Data: Provide data on curing compounds, compatibilities, and limitations.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301 and ACI 308.

B. Maintain one copy of each document on site.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect, and handle products under provisions of Division 1 - General Requirements.

B. Deliver curing materials in manufacturer's packaging including application instructions.

PART 2 PRODUCTS

2.01 CONCRETE CURING / SEALER / DUSTPROOFER

A. Basis of Design Manufacturers: Specific product materials have been identified in the preparation of the drawings and these specifications. Other listed manufacturers will be considered, subject to compliance with the same product specifications and requirements of the drawings and specifications and approval by the Architect / Engineer.

B. Wherever, substitute products are to be considered, submit adequate supporting technical literature, performance data, test reports and a completed Substitution Request form for a valid comparison of the products by the Architect / Engineer. The Basis of Design products specified herein shall be considered base bid.

C. Floor Slab:

1. Transparent solvent-based, 25% solids, solvent-based compound for curing, sealing and dust proofing concrete, semi-gloss finish, VOC compliant.

a. Acceptable Product: BASF MasterKure CC 250XS.

b. Acceptable Product: Euclid Super Rez-Seal.

2.02 COATING SCHEDULE

A. Exterior Concrete Flatwork: One coat application

B. Interior Concrete Floor Slabs: Two coat application

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify substrate conditions under provisions of Division 1 - General Requirements.

B. Verify that substrate surfaces are ready to be cured.

3.02 EXECUTION

A. Cure surfaces in accordance with ACI 308.

B. See Section 03300 - Cast-In-Place Concrete - Article 3.09 for curing methods.

3.04 PROTECTION OF FINISHED WORK

A. Protect finished work under provisions Division 1 - General Requirements.

B. Do not permit traffic over unprotected floor surface.

3.05 FINAL ACCEPTANCE OF COMPLETE WORK

A. The work shall be complete in every detail and the finished work approved by the Architect / Engineer and Owner before final acceptance.

END OF SECTION 03390

DIVISION 10 – SPECIALTIES
Section 104416 – Fire Extinguishers

PART 1 GENERAL

1.01 SUMMARY

A. Section includes portable, hand-carried fire extinguishers and mounting brackets for fire extinguishers.

1.02 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Operation and maintenance data.

C. Warranty: Sample of special warranty.

1.03 QUALITY ASSURANCE

A. NFPA Compliance: Fabricate and label fire extinguishers to comply with NFPA 10, "Portable Fire Extinguishers."

B. Fire Extinguishers: Listed and labeled for type, rating, and classification by an independent testing agency acceptable to authorities having jurisdiction.

C. Coordinate type and capacity of fire extinguishers with fire protection cabinets to ensure fit and function.

1.04 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace fire extinguishers that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Failure of hydrostatic test according to NFPA 10.
b. Faulty operation of valves or release levers.

2. Warranty Period: Six years from date of Substantial Completion.

PART 2 PRODUCTS

2.01 PORTABLE, HAND-CARRIED FIRE EXTINGUISHERS

A. Fire Extinguishers: Type, size, and capacity for each fire protection cabinet and mounting bracket indicated.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

    a. Amerex Corporation.
    b. Ansul Incorporated; Tyco International Ltd.
    c. Badger Fire Protection; a Kidde company.
    d. Buckeye Fire Equipment Company.
    e. Fire End & Croker Corporation.
    f. J.L. Industries, Inc.; a division of Activar Construction Products Group.
    g. Kidde Residential and Commercial Division; Subsidiary of Kidde plc.
    h. Larsen's Manufacturing Company.
    i. Moon-American.
    j. Pem All Fire Extinguisher Corp.; a division of PEM Systems, Inc.
    k. Potter Roemer LLC.
    l. Pyro-Chem; Tyco Safety Products.

2. Instruction Labels: Include pictorial marking system complying with NFPA 10, Appendix B.

B. Multipurpose Dry-Chemical Type: UL-rated 4-A:60-B:C, 10 lb nominal capacity, with monoammonium phosphate-based dry chemical in manufacturer's standard enameled container.

2.02 MOUNTING BRACKETS

A. Mounting Brackets: Manufacturer's standard galvanized steel, designed to secure fire extinguisher to wall or structure, of sizes required for types and capacities of fire extinguishers indicated, with plated or red baked-enamel finish.

B. Identification: Lettering complying with authorities having jurisdiction for letter style, size, spacing, and location. Locate as indicated by Architect.

1. Identify bracket-mounted fire extinguishers with the words "FIRE EXTINGUISHER" in red letter decals applied to mounting surface.

    a. Orientation: Vertical.

PART 3 EXECUTION

3.01 INSTALLATION

A. Examine fire extinguishers for proper charging and tagging.

1. Remove and replace damaged, defective, or undercharged fire extinguishers.

B. Install fire extinguishers and mounting brackets in locations indicated and in compliance with requirements of authorities having jurisdiction.

1. Mounting Brackets: 54 inches (1372 mm) above finished floor to top of fire extinguisher.

C. Mounting Brackets: Fasten mounting brackets to surfaces, square and plumb, at locations indicated.

END OF SECTION 104416

DIVISION 13 – SPECIAL CONSTRUCTION

Section 133420 – Airplane Hangar Metal Building Systems

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes:

1. Structural-steel framing.
2. Metal roof panels.
3. Metal wall panels.
4. Thermal insulation
5. Doors, frames and hardware
6. Accessories.

1.02 SUBMITTALS

A. Product Data: For each type of metal building system component provide a minimum of four (4) copies for review.

B. Shop Drawings: For metal building system components. Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required.

D. Delegated-Design Submittal: For metal building systems indicated to comply with performance requirements and design criteria, including analysis data and calculations signed and sealed by the qualified Structural Engineer licensed in the State of Illinois responsible for their preparation.

E. Delegated-Design Submittal: For the metal building foundation system to comply with performance requirements and design criteria, including analysis data signed and sealed by a Structural Engineer licensed in the State of Illinois.

F. Welding certificates.

G. Metal Building System Certificates: For each type of metal building system, from manufacturer.

1. Letter of Design Certification: Signed and sealed by a licensed Structural Engineer licensed in the State of Illinois. Include the following:

a. Name and location of Project.
b. Order number.
c. Name of manufacturer.
d. Name of Contractor.
e. Building dimensions including width, length, height, and roof slope.

f. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
g. Governing building code and year of edition.
h. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
i. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
j. Building-Use Category: Indicate category of building use and its effect on load importance factors.

H. Material test reports.

I. Source quality-control reports.

J. Field quality-control reports.

K. Maintenance data.

L. Warranties: Sample of special warranties.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer of hangar doors with a minimum of 10 years experience of manufacturing hangars similar in size and scope.

1. Engineering Responsibility: Preparation of Shop Drawings and comprehensive engineering analysis by a qualified professional engineer.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code – Steel."
2. AWS D1.3, "Structural Welding Code – Sheet Steel."

D. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings," for design requirements and allowable stresses.

E. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.

1.04 WARRANTY

A. Special Warranty on Metal Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide **Erect-A-Tube** nested t-hangars or comparable product by one of the following:

1. ASI.
2. Fulfab.

2.02 METAL BUILDING SYSTEM PERFORMANCE

A. Delegated Design: Design metal building system, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Metal building systems shall be designed according to procedures in MBMA's "Metal Building Systems Manual."

1. Design Loads: As required by ASCE/SEI 7.

2. Deflection Limits: Design metal building system assemblies to withstand design loads with deflections no greater than the following:

a. Purlins and Rafters: Vertical deflection of 1/240 of the span.
b. Girts: Horizontal deflection of 1/240 of the span.
c. Metal Roof Panels: Vertical deflection of 1/240 of the span.
d. Metal Wall Panels: Horizontal deflection of 1/240 of the span.
e. Design secondary-framing system to accommodate deflection of primary framing and construction tolerances, and to maintain clearances at openings.

3. Drift Limits: Engineer building structure to withstand design loads with drift limits no greater than the following:

a. Lateral Drift: Maximum of 1/240 of the building height.

4. Metal panel assemblies shall withstand the effects of gravity loads and loads and stresses within limits and under conditions indicated according to ASTM E 1592.

C. Seismic Performance: Metal building systems shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

D. Thermal Movements: Allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base engineering calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

E. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for Class 90.

2.03 STRUCTURAL-STEEL FRAMING

A. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafter, rake and canopy beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.

1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly.
2. Frame Configuration: Single gable.
3. Exterior Column Type: Uniform depth or tapered.
4. Rafter Type: Uniform depth or tapered.

B. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly.

C. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, prepainted with coil coating.

D. Bolts: Provide plain-finish bolts for structural-framing components that are primed or finish painted. Provide zinc-plated or hot-dip galvanized bolts for structural-framing components that are galvanized.

E. Finish: Factory primed. Apply specified primer immediately after cleaning and pretreating.

2.04 METAL ROOF PANELS

A. Manufacturer's standard exposed fastener panels.

1. Material: Aluminum-zinc-coated (Galvalume) steel sheet, 26 gauge thickness.

2.05 METAL EXTERIOR WALL PANELS

A. Exposed-Fastener Metal Wall Panels: Formed with raised, trapezoidal major ribs and intermediate stiffening ribs symmetrically spaced between major ribs; designed to be installed by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners in side laps.

1. Material: Zinc-coated (galvanized) steel sheet, 26 gauge nominal thickness.

a. Exterior Finish: 1 mil baked silicone on polyester color coating with 20 year warranty.
b. Color: As selected by Architect from manufacturer's full range.

2.06 METAL INTERIOR WALL PANELS

A. Exposed-Fastener Interior Partition Metal Wall Panels at T-Hangars. Manufacturer’s standard profile with bird proof top trim.

1. Material: Zinc-coated (galvalume) steel sheet, 29 gauge nominal thickness.

2.06 THERMAL INSULATION

A. Faced Metal Building Insulation: ASTM C 991, Type II, glass-fiber-blanket insulation; 0.5-lb/cu. ft. (8-kg/cu. m) density; 2-inch-(51-mm-) wide, continuous, vapor-tight edge tabs; with a flame-spread index of 25 or less;

1. Vapor-Retarder Facing: ASTM C 1136, with permeance not greater than 0.02 perm (1.15 ng/Pa x s x sq. m) when tested according to ASTM E 96/E 96M, Desiccant Method.

a. Composition: White polypropylene or vinyl film facing, fiberglass scrim reinforcement, and metallized-polyester film backing.

2.07 DOORS AND FRAMES

A. Swinging Insulated Personnel Doors and Frames: Doors shall be 3’-0” x 7’-0” with insulated core, minimum R-13 value. Door frame shall be 14 gauge galvanized steel. Door shall be 16 gauge galvanized steel. Doors and frames shall be painted with color chosen by the owner. Doors shall be prepared and reinforced at strike and at hinges to receive factory-and field-applied hardware according to BHMA A156 Series.

1. Hardware:

a. Provide hardware for each door leaf, excluding man doors in bi-fold doors, as follows:

1) Hinges: BHMA A156.1. Three plain bearing, standard-weight, full-mortise, stainless-steel or bronze, template-type hinges; 4-1/2 by 4-1/2 inches (114 by 114 mm), with nonremovable pin.
2) Lockset: BHMA A156.2. Yale 5400 Series, or equal, cylindrical lockset with removable core.
3) Threshold: BHMA A156.21. Extruded aluminum. ADA compliant. (exterior doors only)
4) Silencers: Pneumatic rubber; three silencers on strike jambs of single door frames and two silencers on heads of double door frames.
5) Closer: BHMA A156.4. Surface-applied, standard-duty hydraulic type.
6) Weather Stripping: Vinyl applied to head and jambs, with vinyl sweep at sill. (exterior doors only)
7) Door Stop: Roller Bumper style door stop at inward swinging doors within the bi-fold hangar door. Hagar Model 271W or approved equal.
8) Two keys for each door lock and 2 master keys shall be provided.

2. Finishes for Personnel Doors and Frames:

a. Prime Finish: Factory-apply manufacturer's standard primer immediately after cleaning and pre-treating.
b. Factory-Applied Paint Finish: Manufacturer's standard, complying with SDI A250.3 for performance and acceptance criteria.

1) Color and Gloss: As indicated by manufacturer's designations.

B. Overhead Bi-Fold Hangar Doors and Frames: Metal building manufacturer's standard doors and frames that meet the following requirements.

1. Bi-fold type, electrically operated overhead door. Each door is to be controlled by a single operating switch which will in turn control a single-phase electric motor, necessary worm gear and speed reducer. The size of the electric motor shall be as specified by the overhead door manufacturer.

2. Each door shall be equipped with manual locks.

3. Each door shall be an "Up/Down/Stop" style with momentary contact switches for the up and down buttons.

4. Each door shall be equipped with automatic Limit Switches to turn off the motor when the door reaches the full open or closed position.

5. Door frames shall be made of steel tubing with one shop coat of red oxide and covered with ribbed or pressed sheeting not less than 26 gauge

50,000 psf tensile strength baked enamel galvanized steel. Tubing shall be no less than .083 and 2 x 2.

6. Door frames shall be fabricated for field bolting and welding assembly. Door sheeting shall be pre-punched for accurate assembly using hardware as specified for walls and roof.

7. Each door shall have a weather seal flap consisting of neoprene rubber weather strip at the bottom, top and center to make contact with the foundation. Bi-fold door shall be operated by cables to be raised and lowered by sprockets or drums.

8. Each bi-fold door at hangar shall contain manufacturer's standard swinging personnel door with manufacturer's standard hardware. Each personnel door shall be fitted with a Yale 5400 Series, or equal, cylindrical lockset with removable cylinder. Two keys for each door lock and 2 master keys shall be provided.

2.08 ACCESSORIES

A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.

C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.

D. Flashing and Trim: Formed from 0.022-inch (0.56-mm) nominal-thickness, metallic-coated steel sheet or aluminum-zinc alloy-coated steel sheet prepainted with coil coating; finished to match adjacent metal panels.

2.09 FABRICATION

A. General: Design components and field connections required for erection to permit easy assembly.

1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.

2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.

B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.

C. Primary Framing: Shop fabricate framing components to size and section, with base plates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

D. Secondary Framing: Shop fabricate framing components to size and section by roll-forming or break-forming, with base plates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

PART 3 - EXECUTION

3.01 ERECTION OF STRUCTURAL FRAMING

A. Erect metal building system according to manufacturer's written erection instructions and erection drawings.

B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.

C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.

3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.

F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level base plates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.

1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for bolt type and joint type specified.

a. Joint Type: Snug tightened or pretensioned.

G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.

1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
2. Locate and space wall girts to suit openings such as doors and windows.
3. Locate canopy framing as indicated.
4. Provide supplemental framing at entire perimeter of openings, including doors, windows, louvers, ventilators, and other penetrations of roof and walls.

H. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.

1. Tighten rod and cable bracing to avoid sag.
2. Locate interior end-bay bracing only where indicated.

I. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.

J. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.02 METAL PANEL INSTALLATION, GENERAL

A. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.

    a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.

2. Install metal panels perpendicular to structural supports unless otherwise indicated.
3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Locate metal panel splices over, but not attached to, structural supports with end laps in alignment.
6. Lap metal flashing over metal panels to allow moisture to run over and off the material.

B. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.

1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weather tight enclosure. Avoid "panel creep" or application not true to line.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants recommended by metal panel manufacturer.

1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

3.03 METAL ROOF PANEL INSTALLATION

A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

1. Install ridge caps as metal roof panel work proceeds.
2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.

B. Lap-Seam Metal Roof Panels: fasten metal roof panels to supports with exposed fasteners at each lapped joint, at location and spacing recommended by manufacturer.

1. Provide metal-backed sealing washers under heads of exposed fasteners bearing on weather side of metal roof panels.
2. Provide sealant tape at lapped joints of metal roof panels and between panels and protruding equipment, vents, and accessories.
3. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps and on side laps of nesting-type metal panels, on side laps of ribbed or fluted metal panels, and elsewhere as needed to make metal panels weatherproof to driving rains.
4. At metal panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.
5. Roof penetrations due to electrical conduit shall occur at ridge of roof panel.

C. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

3.04 METAL WALL PANEL INSTALLATION

A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Unless otherwise indicated, begin metal panel installation at corners with center or rib lined up with line of framing.
2. Shim or otherwise plumb substrates receiving metal wall panels.
3. When two rows of metal panels are required, lap panels 4 inches (102 mm) minimum.
4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
5. Rigidly fasten base end of metal wall panels and allow eave end free movement due to thermal expansion and contraction. Predrill panels.
6. Flash and seal metal wall panels with weather closures at eaves, rakes, and at perimeter of all openings. Fasten with self-tapping screws.
7. Install screw fasteners in predrilled holes.
8. Install flashing and trim as metal wall panel work proceeds.
9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated; or, if not indicated, as necessary for waterproofing.
10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.

B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.

3.05 THERMAL INSULATION INSTALLATION

A. General: Install insulation concurrently with metal panel installation, in thickness indicated to cover entire surface, according to manufacturer's written instructions.

1. Set vapor-retarder-faced units with vapor retarder toward warm side of construction unless otherwise indicated. Do not obstruct ventilation spaces except for firestopping.
2. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to the surrounding construction to ensure airtight installation.
3. Install factory-laminated, vapor-retarder-faced blankets straight and true in one-piece lengths, with both sets of facing tabs sealed, to provide a complete vapor retarder.
4. Provide metal panel manufacturer gaskets for air-tight and bird-proof seal.

B. Blanket Roof Insulation: Comply with the following installation method:

1. Over-Framing Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing.

3.06 DOOR AND FRAME INSTALLATION

A. General: Install doors and frames plumb, rigid, properly aligned, and securely fastened in place according to manufacturer's written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each door frame with elastomeric sealant used for metal wall panels.

B. Personnel Doors and Frames: Install doors and frames according to SDI A250.8.

C. Field Glazing: Comply with installation requirements in Division 08 Section "Glazing."

D. Door Hardware: Mount units at heights indicated in DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

1. Install surface-mounted items after finishes have been completed on substrates involved.
2. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
3. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
4. Set thresholds for exterior doors in full bed of butyl-rubber sealant complying with requirements specified in Division 07 Section "Joint Sealants."

3.07 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.
4. Signage – mylar or vinyl letters/numbers fully adhered to flat metal surface at each man door. Submit material sample with standard color palette to Engineer or Architect. Numbered or lettered sign shall be assigned by owner. Contractor to provide signage for each man door. Sign size, color, style, location to be coordinated on site.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

END OF SECTION 133420

DIVISION 16 - ELECTRICAL
Section 16010 - General Electrical Requirements

PART 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 drawings and as described herein in these specifications, or as may be necessary for a complete and operational electrical system.

C. Unless otherwise noted, all electrical equipment shown on project drawings shall be furnished under Division 16.

D. Drawings pertaining to this installation indicate general location of conduits, wiring, distribution and motor control centers, lighting and outlets, and other details necessary for installation of system.

E. Electrical installation as shown on drawings and as specified herein is based upon best available information, with regard to characteristics of mechanical 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.

F. Any minor changes in location of equipment, to include conduits, outlets, etc., from those shown on drawings, 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.

G. All electrical equipment shall be installed in conformance with applicable sections of NPFA 70 - National Electrical Code, respective equipment manufacturer's directions, as detailed on drawings and as specified herein. Any installations which void U.L. listing (or other third party listing) and/or manufacturer's warranty of a device or equipment shall NOT be permitted

H. RELATED CONTRACT WORK DESCRIBED ELSEWHERE IN THESE SPECIFICATIONS:

Electrical Contractor shall note that it is **not** the intent of these Division 16 specifications herein to be all-inclusive of electrically related work to be performed as part of this contract.

Contractor shall also comply with electrical requirements in these sections of the specifications, including, but not limited to, wiring of motors, control panels furnished by others, HVAC equipment and all other electrically powered

equipment furnished by others under this project.

1.02 LAWS AND ORDINANCES

A. In installation of this work, Contractor shall comply in every respect with requirements of National Electrical Code (NEC), National Board of Fire Underwriters, and any state and local requirements, laws and ordinances as may be applicable.

B. If, in opinion of the Contractor, there is anything in drawings 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 drawings or in specifications shall be made without the full consent of Owner's representative.

C. 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 drawings.

1.03 DRAWINGS

A. Drawings for electrical work will be a part of electrical drawings 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. Drawings and specifications are intended to be descriptive only, and any error or omissions of detail in either **shall not** relieve Contractor from obligations thereunder to install in correct detail any and all materials necessary for complete and operating electrical systems to extent shown on drawings and described in this specification.

C. Contractor shall, during progress of job, record any and all changes or deviations from original drawings, and, at completion of project, shall deliver to Owner's representative a **single** marked-up set of "as-built" drawings.

1.04 SHOP AND ERECTION DRAWINGS

A. This Contractor shall prepare shop drawings for all parts of his work. Before commencing any work or providing any material, Contractor shall submit for approval of Owner's representative all drawings relating to construction, arrangement or disposition of equipment entering into contract, and show complete equipment with manufacturer's specifications of same.

B. Shop drawings of all distribution and motor control centers, 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 drawings.

C. SHOP DRAWINGS SHALL BE FULLY DESCRIPTIVE OF ALL MATERIALS AND EQUIPMENT TO BE INCORPORATED INTO THIS PROJECT. CONTRACTOR SHALL CAREFULLY CHECK ALL SUBMITTED SHOP DRAWINGS, MAKING SURE THEY ARE COMPLETE IN ALL DETAILS AND COVER SPECIFIC ITEMS AS HEREINAFTER SPECIFIED.

D. Shop drawings shall be submitted in sufficient quantity as required by the General Conditions. Three (3) copies will be retained by the Engineer for his use and records.

E. No material or equipment shall be allowed at the site until shop drawings approved by the Engineer are received by the Resident Engineer at the site.

F. The following information shall be clearly marked on each shop drawing, catalog cut, pamphlet, specifications sheet, etc. submitted:

PROJECT TITLE:
BRANCH OF WORK: ELECTRICAL
NAME OF BUILDING OR LOCATION:
PAGE OF DRAWINGS OR SPECS WITH WHICH EQUIPMENT COMPLIES:
DATE:
SUBMITTED BY:

PART 2 PRODUCTS

2.01 PRODUCTS SHALL BE AS SPECIFIED IN OTHER SECTIONS AND AS DETAILED ON THE DRAWINGS.

PART 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, motor control centers (MCC), 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 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 ½" 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.

D. Unless otherwise noted, top of safety-switches, control panels, and similar equipment shall be 5’-0” above finish floor or finish grade.

E. Enclosures for panelboards, switches or overcurrent devices shall not be used as junction boxes, auxiliary gutters or raceways for conductors feeding through or tapping-off to other switches or overcurrent devices, unless adequate space for this purpose is provided and the equipment is listed for this use.

F. In order to maintain NEC ratings and classifications of cables, do not combine conduit contents or modify conduit materials of construction unless specifically directed or shown otherwise on project documents.

END OF SECTION 16010

DIVISION 16 - ELECTRICAL
Section 16111 - Conduit and Raceway

PART 1 GENERAL

1.01 WORK INCLUDES

A. Work included in this section is conduits, raceways and fittings required for operation and maintenance of facility.

1.02 RELATED SECTIONS

A. Division 15 - Mechanical
B. Section 16010 - General Electrical Requirements
C Section 16123 - Building Wire and Cable
D. Section 16190 - Supporting Devices

1.03 REFERENCE TO STANDARDS

A. Federal Specifications WW-C-581d
B. Federal Specifications WW-C-540c
C. Federal Specifications WC-1094-A
D. ANSI C80.1
E. ANSI C80.3
F. ANSI C80.5
G. UL Standard UL-1
H. UL Standard UL-6
I. UL Standard UL-651
J. UL Standard UL-797
K. UL Standard UL-1479
L. NEMA RN1
M. NEMA RN2
N. NFPA 70 (NEC)
O. NEMA TC-2
P. NEMA TC-3
Q. NEMA TC-7
R. A.A.S.H.T.O.
S. ASTM A615

1.04 DELIVERY, STORAGE AND HANDLING

A. Conduits shall not be shipped loose, but shall be bundled by sizes. 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 (submit only on types applicable for project)

A. Submit under provisions of Division 1.
B. Schedule 40 Galvanized Rigid Steel Conduit
C. Schedule 40 Aluminum Rigid Conduit

D. Electrical Metallic Tubing (EMT)
E. Fittings and Conduit Bodies
F. Conduit Seals
    1. Conduit Fire Stopping
    3. Conduit Water Seals

1.06 QUALIFICATIONS

A. All material shall be purchased new from suppliers/manufacturers regularly engaged in the business of electrical conduit, ducts and fittings.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by Owner.

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION
Note that all types specified below may not be used on every project. Refer to project drawings for individual project requirements.

A. Schedule 40 Galvanized Rigid Steel Conduit:

Conduit shall be of heavy wall type fabricated from mild steel tubing and shall have a hot-dipped galvanized inner and outer coating, with a final coating of zinc chromate. Conduit and installation shall comply with all requirements in NEC Article 344.

B. Schedule 40 Rigid Aluminum Conduit

Conduit shall be of 6063 aluminum alloy, T-1 temper (Former designation T-42). Rigid aluminum conduit shall be third-party listed for use in classified (hazardous) locations. Conduit and installation shall comply with all requirements in NEC Article 344. Do not utilize steel or iron conduit fittings with aluminum conduit.

C. Electrical Metallic Tubing (EMT)

EMT shall be hot dip galvanized steel with an organic corrosion resistant coating and shall be produced in accordance with U.L. Standard 797, ANSI C80.3 and NEMA RN2. Fittings for EMT conduit shall be compression type only, set-screw type fittings shall not be utilized. Conduit and installation shall comply with all requirements in NEC Article 358.

E. Rigid PVC Conduit:

Conduit shall be Schedule 40 or Schedule 80, as noted on the drawings, PVC, 90°C, UL rated or approved equivalent. Material shall comply to NEMA Specification TC-2 (Conduit), TC-3 (Fittings-UL-514), and UL-651 (Standard for rigid nonmetallic conduit). Conduit and fittings shall carry a UL label (on each 10

foot 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. Markings shall be legible and permanent. Conduit shall be made from polyvinyl chloride C-300 compound which includes inert modifiers to improve weatherability, heat distortion. Clean rework material, generated by manufacturer's own conduit production, may be used by same manufacturer, provided end products meet requirements of this specification. Conduit and fittings shall be homogeneous plastic material free from visible cracks, holes, or foreign inclusions. 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 same manufacturer to assure system integrity and shall be Carlon Plus 40 (Schedule 40) or Plus 80 (Schedule 80) as shown on project drawings, or equal. Conduit and installation shall comply with all requirements in NEC Article 352.

F. Fittings and Conduit Bodies:

Unless otherwise specified, all fittings and conduit bodies shall be manufactured from the same type of material as the conduit system (aluminum, galvanized steel, PVC, etc.). Mounting hardware shall be corrosion resistant, stainless steel, or equivalent.

2.02 SEALING

A. Fire Seal (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, ceiling or floor opening that penetration is made. Comply with NEC 300-21.

3. All fire-stopping materials shall be third-party classified.

4. Use heavy wall steel pipe sleeves, anchored to building construction and finished plumb with wall, ceiling, or floor lines.

5. Manufacturers:

a. Chase Technology - CTC, PR-855.
b. Dow Corning - Silicone RTV Foam 3-6548.
c. Nelson - Flameseal.
d. Thomas & Betts - Flame Safe.
e. 3M - Fire Barrier.

6. Where applicable for the respective wall and its fire rating, smoke and fire stop fittings may be used in lieu of sealant as manufactured by OZ/Gedney, Series CFS.

B. Moisture Seal:

1. Seal conduit penetrations of perimeter walls or below grade to prevent entry of water. Use pre-manufactured fittings.

2. Seal penetrations of roof with flashings compatible with roof design and approved by Roofing System Manufacturer and Engineer.

3. Seal annular space between conductors and conduit wall of all conduit terminations where conduit exits from below grade in order to block moisture migration into electrical equipment. Install product only after conductors have been installed, terminated and commissioned for service. Conduit moisture barrier material shall not harden and be compatible with both wire insulation and conduit materials. Installed product shall be easily removed for maintenance or modifications, regardless of the length of time material has been installed. Install moisture seal products per all manufacturers instructions and requirements. Conduit moisture seal material shall be:

   a. "Hydroblock" by WaterGuard Technology Products
      16023 East Freeway
      Channelview, Texas 77530-4365
      Phone: (281) 862-0300
      Fax: (281) 862-0314

   b. American Polywater Corporation
      Polywater Duct Sealant FST-180 Series
      P.O. Box 53
      Stillwater, MN 55082
      Phone: (651) 430-2270
      Fax: (651) 430-3634

   c. O-Z/Gedney
      Type DUX Water Sealing Compound

PART 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 INSTALLATION

A. Unless otherwise shown on the project drawings, minimum conduit trade-size shall be 3/4". Larger sizes shall be installed where noted or where required by NEC.

B. Sealing and Fireproofing

1. Seal openings in fire rated walls:
    a. Pack void with backing material and ends of the sleeve sealed with a minimum of one (1”) inch of a listed fire-resistive silicone compound to a depth required to meet the fire rating of the structure penetrated.
    b. Install firestopping to meet the requirements of ASTM E-814
    c. Install product in accordance with the manufacturer’s instructions.

C. Conduit size and fill requirements shall comply with appropriate conduit fill tables in Annex C of 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 drawings.

D. Ream conduits only after threads are cut. Cut joints square to butt solidly into couplings. Where necessary to join two pieces of conduit and it is impossible to use standard coupling, use three piece conduit coupling. Use of running thread is prohibited. This applies to all rigid conduit installations, underground or otherwise. In order to comply with NEC Article 300.6(A), all rigid steel conduit shall have field-cut threads re-coated using an electrically conductive, corrosion-resistant compound, Thomas & Betts/Shamrock “Kopr-Shield” (a product of Jet Lube, Inc.), or equivalent.

E. Make all joints in 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.

F. Hickey hand-bends will not be acceptable for conduits one inch (1") and larger. Use pre-manufactured factory elbows or bends fabricated with hydraulic bending machine. Field bending of all PVC conduit shall be accomplished with use of equipment approved by conduit manufacturer. Open flame bending equipment will not be acceptable.

G. 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 quarter turn bends (360°), including bends immediately at an outlet or fitting.

H. Do not run conduit below or adjacent to water piping, except where permitted by Owner’s representative.

I. Run exposed conduits parallel with walls and at right angles to building lines, not diagonally. Make bends and turns with pull boxes or conduit bodies.

J. Support exposed rigid metal conduit runs on walls or ceiling every five feet (5') with stainless steel or PVC coated galvanized cast one hole straps, clamp backs and anchors. Where steel members occur, drill and tap and use stainless steel round head machine screws.

K. Perforated metal strapping of any kind is prohibited.

L. All box support hardware shall be constructed of rust-resistant materials such as stainless-steel.

M. Grounding Electrode Conductors shall be installed in non-metallic PVC conduit or bonded to both ends of metallic conduit to comply with NEC 250.64.

END OF SECTION 16111

DIVISION 16 – ELECTRICAL
Section 16118 –Exterior Underground Duct Bank

PART 1 GENERAL

1.01 WORK INCLUDES

A. Work included in this section is duct bank, concrete encasement, reinforcing, pre-cast or cast in place handholes, trenching and backfilling required for operation and maintenance of facility.

B. This Specifications Section includes all exterior direct-buried conduit and concrete-encased ductbank.

1.02 RELATED SECTIONS

A. Section 03200 - Concrete Reinforcement.
B. Section 03300 - Cast-In-Place Concrete.
C. Section 16010 - General Electrical Requirements.
D. Section 16111 - Conduit and Raceway.
E. Section 16123 - Building Wire and Cable.

1.03 REFERENCE TO STANDARDS

A. Federal Specifications WW-C-581d
B. ANSI C80.1
C. ANSI/SCTE 77
D. UL Standard #6
E. NEMA RN1-1980
F. NEC (Chapter 9 Tables 4, 5, 5A, 8 and Appendix C)
G. NEMA TC-2
H. NEMA TC-3
I. UL-651
J. A.A.S.H.T.O.
K. ASTM A615

1.04 DELIVERY, STORAGE AND HANDLING

A. Reinforcing steel and conduit supports shall be stored on pallets, covered to protect them from weather.

1.05 SUBMITTALS

A. Submit under provisions of Division 1.
B. Conduit Spacers / Supports.

1.06 MAINTENANCE SERVICE (WARRANTY)

A. Material and workmanship shall be warranted to be free from defects in materials and workmanship for a period of one year from date of substantial completion established by Owner.

PART 2 PRODUCTS

2.01 DUCT SPACERS / SUPPORTS

A. Duct line spacers / supports shall provide stability and consistent separation and relieve direct stress for duct materials to be encased in concrete. Units shall incorporate a dovetail or other interlocking means to allow side-by-side interchangeablilty of conduit spacer sizes while maintaining horizontal stability. Units shall be of non-metallic construction and include integral base flanges and re-bar slots. Duct Spacers / Supports shall be Underground Devices "Wunpeece", Carlon/Lamson & Sessions Snap-Loc series or equivalent.

2.02 MISCELLANEOUS FITTINGS

A. Fittings and conduit supports shall be suitable for use with conduits and ducts supplied.

PART 3 EXECUTION

3.01 DUCT BANK

A. Security

Contractor is responsible for providing all safety barricades, safety materials, man-lift devices, and posting safety watches at all manholes and raceway vaults as required to construct this project in a safe manner.

B. Concrete Encased Schedule 40 PVC

Where required or otherwise specified on drawings, underground conduit and duct-bank shall be Schedule 40 PVC concrete-encased. Reinforced concrete-encased duct-bank shall be provided where duct-bank is installed under vehicular-traveled surfaces or whenever ductbank crosses underground piping. Reinforcing shall extend minimum of 5'-0" beyond the edge of all pavement surfaces. Transitions from below-grade Schedule 40 PVC conduit to galvanized rigid steel conduit shall be as detailed on project drawings. All field threaded galvanized rigid steel conduit shall have field threads re-coated using an electrically conductive, corrosion-resistant compound as specified in Section 16111.

C. Excavation for Duct Bank

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 drawings.

Any necessary sheathing to prevent cave-ins, etc. shall be provided by this Contractor.

Where muck or unstable ground is encountered in bottom of trench, it shall be excavated to a depth of at least 12 inches below line of duct or slab. Where bottom of trench is excavated below necessary elevation, it shall be brought to proper grade by use of torpedo sand or three-eighth inch (3/8") gravel, well compacted.

Where excavation for its entire depth is in water or wet sand, Contractor shall furnish a temporary pumping system connected with well points so as to drain same effectively during construction.

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 directed by site conditions or Owner's representative.

Should conduits, ducts, etc. pass under sidewalks, roads, or curbs, Contractor shall take up same in order to install conduit or ducts. All sidewalks, roads or curbs shall be replaced with material equal to that removed and shall be as approved by Owner's representative.

CONTRACTOR SHALL PROCEED WITH CAUTION IN EXCAVATION AND PREPARATION OF TRENCH SO THAT EXACT LOCATION OF UNDERGROUND STRUCTURES, UTILITIES AND PIPING, BOTH KNOWN AND UNKNOWN, MAY BE DETERMINED, AND CONTRACTOR SHALL BE HELD RESPONSIBLE FOR REPAIR OF SUCH STRUCTURES, UTILITIES AND PIPING WHEN BROKEN OR OTHERWISE DAMAGED BY CONTRACTOR.

D. Installation of Duct Bank

Unless otherwise noted on project drawings, all underground duct bank shall be a minimum of 1'-6" and a maximum of 2'-6" below finished grade to top of top duct in bank.

Extend concrete encasement for ductbank to all manholes and handholes. Unless otherwise indicated on the drawings, enter and exit all manholes and handholes utilizing PVC conduit with end bells or non-metallic bushings to prevent cable damage during installation.

Where possible, install conduit with typical pitch of 4 inches per 100 ft length.

Where duct comprised of plastic (PVC) conduit must transition from underground to above ground, conduits shall transition from PVC conduit to rigid steel conduit by means of factory manufactured couplings. All transitions from plastic (PVC) conduit to galvanized rigid steel conduit shall be made within concrete encasement as detailed on drawings.

Any rigid metal conduit ends extending into manholes or handholes shall be electrically bonded to the largest ground conductor passing thru the structure by use of threaded lay-in type insulated grounding bushings such as O/Z Gedney IBC-L-AC.

All duct runs shall be separated and supported before backfilling or pouring

concrete. Conduit spacing shall be minimum of 7-1/2” center-to-center.

All angle bends in conduit of 45° or greater shall be made with PVC-coated rigid galvanized steel conduit. Provide factory manufactured couplings between conduit types.

Materials for concreting shall be thoroughly mixed and immediately placed in trench around rigid conduits and ducts. No concrete that has been allowed to partially set shall be used. After duct runs are completed and concrete is set, Contractor shall backfill trenches and tamp thoroughly so as to settle the fill.

Before Contractor pulls any cables into ducts he shall have a mandrel one-fourth inch (1/4") smaller than duct inside diameter and approximately twenty inches (20") long pulled through each duct, and if any concrete or obstructions are found, Contractor shall remove them and clear ducts.

E. Duct Bank Under Vehicular-Traveled Surfaces and Pipe Intersections

Unless otherwise detailed on project drawings, all duct runs passing under roadways, traveled surfaces, or where ductbank intersects or crosses underground piping utilities shall be Schedule 40 PVC conduit encased on all sides with a two inch (2") concrete envelope and reinforced as specified herein.

Reinforcing shall consist of one-half inch (1/2") round bars spaced six inches (6") on center, paralleling ducts on top, bottom and sides, with one-half inch (1/2") formed tie bars spaced twelve inches (12") on centers. Bars shall overlap forty (40) diameters and shall extend five feet (5') beyond roads or drives on each side.

F. Concreting and Forms

All concreting and form work necessary in connection with construction and concreting around plastic and metal duct runs underground shall be provided by this Contractor.

G. Ready-Mixed Concrete

Ready-mixed concrete shall be used for all electrical duct runs to be encased. Ready-mixed concrete shall comply with requirements set forth in "Standard Specifications for Ready-Mixed Concrete," (ASTM Designation C-94).

The top of all concrete-encased duct runs shall be dyed “red” in color. At the Contractor’s option, this requirement may be met by either providing concrete that has been dyed red by the supplier, or by field applying red dye to the top of the duct-bank while still wet.

H. Removal of Water

New construction:
Contractor shall at all times during construction provide and maintain ample means and devices with which to promptly remove and properly dispose of all

water entering excavations or other parts of work and shall keep said excavations dry until all work to be performed therein has been completed.

Existing facilities:
Where project requirements involve existing ductbank, manholes and handholes, Contractor should assume same are full of water and field pumping will be necessary. Contractor shall furnish all temporary pumping equipment and labor in order to work on the existing duct-system and this equipment and effort shall be considered incidental to the project cost.

I. Backfill in Open Areas

Backfill for conduit and duct runs in continuous open areas away from roadways, paved areas and structures shall be backfilled as described below.

Unless otherwise noted, clean material obtained from the excavation which, in opinion of Owner's representative, does not contain excessive moisture, shall be suitable in constructing backfill. Excavated material which is considered unsuitable by Owner's representative due to excessive moisture may be allowed to dry before being used as backfill. Approved backfill material shall be placed in 6 to 8 inch lifts (layers) and then compacted as necessary to prevent settlement.

J. Backfill Under Roadways and Paved Areas

Unless otherwise ordered by Owner's representative, CA-6 granular backfill shall be used in locations where conduit and duct runs cross roadways and paved surfaces. Granular backfill shall be used from top of concrete encasement to bottom of roadway base and shall be compacted to 95% Standard Proctor of material to be used, as tested.

K. Pavement Restoration

If duct bank installation requires pavement removal, pavement shall be saw cut prior to removal. As directed by the Owner's authorized representative, pavement removed shall be replaced with concrete pavement or bituminous concrete surface material (Class I, minimum of 1700 pound Marshall stability) and compacted to satisfaction of Owner's representative.

END OF SECTION 16118

THIS PAGE INTENTIONALLY LEFT BLANK FOR PRINTER FORMATTING PURPOSES

DIVISION16 – ELECTRICAL
Section 16123 - Building Wire and Cable

PART 1 GENERAL

1.01 WORK INCLUDES

A. Work included in this section is supply of wire and cable to provide a complete and operational electrical system.

B. Any bid submitted to the Owner which contains cost adjustments for the current price of metals (copper and/or aluminum) will be rejected. Qualified bids in any form will not be considered.

C. Unless otherwise specified or detailed on drawings, all wire and cable on this project shall be copper construction only.

1.02 RELATED SECTIONS

A. Division 15 - Mechanical
B. Section 16010 - General Electrical Requirements
C. Section 16111 - Conduit and Raceway
D. Section 16170 - Grounding and Bonding

1.03 REFERENCE TO STANDARDS

A. ANSI/NFPA 70 - National Electrical Code
B. U.L Standard No. 44 - Thermoset-Insulated Wires and Cables.
C. IPCEA Publication No. S-66-524.
D. Federal Specification J-C-30B
E. ASTM Specification B-8.

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 SUBMITTAL REQUIREMENTS

A. Submit under provisions of Division 1.

B. Contractor shall submit for all cable types and sizes used on this project.

1.06 QUALIFICATIONS

A. Wire and cable shall be manufactured and supplied by a company regularly engaged in business of furnishing wire and cable. If required by Owner's representative, manufacturer shall submit a certification to a minimum experience of five years in manufacture of wire and cable.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for period of one year from date of substantial completion established by the Owner.

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. THHN/THWN

Cable shall be 600 Volt rated, sized as indicated on the drawings. Cable shall comply with Underwriters Laboratories Standard U.L. 83. Cables shall be rated 90°C in dry locations 75°C in wet locations.

2.02 COLOR CODING

A. Color code conductor insulation for #10 AWG or smaller conductors. Color code conductors #8 AWG or larger with colored tape or colored insulation. Standard colors:

	120/240V 1 Phase 3W	240 V or 208/120V 3 Phase 3 or 4W	480V 3 Phase 3 or 4W	240/120V 3 Phase 4W,)
Phase A	Black	Black	Brown	Black
Phase B	Red	Red	Orange	Orange (high leg)
Phase C	N/A	Blue	Yellow	Blue
Neutral	White	White	Gray	White
Ground	Green	Green	Green	Green

2.03 WIRE PULLING LUBRICANT

A. Pulling lubricant shall be UL listed, water based, polymer solution. Lubricants containing waxes, soaps or combustible materials are not acceptable. Contractor shall verify the compatibility of the selected cable pulling lubricant and cable jacket materials proposed. Manufacturers/Lubricants shall be as follows, or equivalent:

1. American Polywater - Polywater J
2. Ideal Industries - ClearGlide
3. American Colloid - Poly-X
4. Buchanan - Quick Slip
5. ARNCO – HydraLube

2.04 SPLICES AND JOINTS

A. Splices and joints shall be as described below, or approved equivalent.

B. Interior applications:

1. #8 and smaller conductors:
   a. Ideal “wing nut” type insulated connectors.
   b. Scotchlok R, B, and Y type insulated connectors.

2. #6 and larger conductors:

   a. New construction: For straight line connections, use compression connector with rubber insulating cover or boot.
   b. New construction: For “Tee” cable taps, use compression connector with rubber insulating cover or boot.

PART 3 EXECUTION

3.01 INSTALLATION (Wire Conductors)

A. Wire and cable shall be installed using accepted industry methods to prevent damage to conductors and insulation. Installation shall comply with all applicable sections of NEC regarding conduit fill.

B. No splices shall be permitted in conduit bodies. All splices shall be made in junction boxes, control panels and cabinets provided for that purpose as detailed or required by need.

C. Neatly train and lace wiring inside boxes, equipment and panelboards.

D. Drawings are diagrammatic in showing circuitry routing between devices and equipment. Provide all phase conductors, neutrals, switched and unswitched legs, grounds, etc., as required for a complete and operational electrical system.

E. All 120V circuits shall have individual neutral conductors. 120V circuits with “shared” neutral conductor shall not be permitted.

F. Minimum wire size shall be #12 unless otherwise noted. Where protected by 15A fuses, control wiring may be #14 AWG.

G. All conductors shall be continuous without splices except at locations approved for the purposes of splicing.

H. All wire sizes shall be stranded except where specifically approved otherwise.

I. All circuits shall be labeled in compliance with Section 16195 - Electrical Identification.

J. Cable shall not be bent to a radius of less than 4 times the overall diameter, including installation apparatus.

K. All damaged or rejected cable shall be removed from the project site and replaced at no additional expense to the project.

3.02 CONNECTIONS AND TERMINATIONS (Wire Conductors)

A. Identify each conductor in panelboards, junction or pull boxes, or troughs with a permanent pressure sensitive label with suitable numbers or letters for easy recognition. Identify control wiring at each end and in junction boxes with numeric wire number corresponding to control wiring diagram.

B. Thoroughly clean wire before installing lugs and connectors.

C. Make splices, taps and terminations to carry full ampacity of conductors without perceptible temperature rise.

D. Terminate spare conductors with electrical tape, identify as “spares” and roll up in box.

3.03 TESTING (Wire Conductors)

A. Inspect wiring for physical damage and proper connection.

B. All wire and cable shall be tested for continuity and short circuits prior to energizing circuits. Verify proper phasing, adjust as required.

C. Comply with all applicable items in Section 16010 and 16950.

END OF SECTION 16123

DIVISION 16 - ELECTRICAL
Section 16130 - Boxes

PART 1 GENERAL

1.01 WORK INCLUDES

A. Work included in this section is supply and installation of all junction and pull boxes to provide a complete and operational electrical system.

1.02 RELATED SECTIONS

A. Section 16010 - General Electrical Requirements
B. Section 16111 - Conduit and Raceways
C. Section 16123 - Building Wire and Cable
D. Section 16170 - Grounding and Bonding
E. Section 16190 - Supporting Devices

1.03 REFERENCE TO STANDARDS

A. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
B. U.L. 50 - Enclosures for Electrical Equipment
C. ANSI/NEMA OS-1 - Sheet Steel Outlet boxes, Device Boxes, Covers and Box Supports
D. NEMA 250 - Enclosures for Electrical Equipment

1.04 DELIVERY, STORAGE AND HANDLING

A. Junction and pull boxes shall not be shipped loose, but shall be in boxes with labels indicating size and type. These boxes shall be stored away from contact with earth and protected from weather and abuse.

1.05 SUBMITTAL REQUIREMENTS

A. Submit under provisions of Division 1.
B. Junction and pull boxes.

1.06 QUALIFICATIONS

A. Junction and pull boxes shall be manufactured and supplied by a company regularly engaged in business of furnishing junction and pull boxes. If required by Owner's representative, manufacturer shall submit a certification to a minimum experience of five years in manufacture of junction and pull boxes. Junction and pull boxes shall be U.L. listed.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. Dimensions of all boxes shall meet or exceed NEC Article 370 requirements. Boxes larger than 12 inches in any dimension shall be hinged type.

B. Surface mounted interior junction and pull boxes used with Schedule 40 PVC conduit shall be nonmetallic and shall be as manufactured by Carlon, or equal.

C. Surface mounted interior junction and pull boxes used with GRS or EMT conduit shall be NEMA OS-1, stamped galvanized steel.

D. Boxes used to support light fixtures shall be of metallic construction and capable of supporting installed fixtures.

PART 3 EXECUTION

3.01 INSTALLATION

A. Junction or pull boxes required by code or need which are not detailed on drawings shall be considered incidental to proposal price and will not be paid for separately.

B. Any damage to equipment enclosures, pull or junction boxes shall be immediately repaired or replaced to satisfaction of Owner’s representative.

C. Provide knockout closures to cap unused knockout holes where blanks have been removed (for non-hazardous location boxes).

D. All mounting hardware shall be corrosion resistant.

E. All metal junction boxes shall be bonded to ground with a ground wire connection.

END OF SECTION 16130

DIVISION 16 – ELECTRICAL

Section 16141 - Wiring Devices

PART 1 GENERAL

1.01 WORK INCLUDES

A. Work in this section is supply and installation of receptacles and toggle switches.

B. Work shall also include supply and installation of device boxes for receptacles and toggle switches.

1.02 RELATED SECTIONS

A. Section 16010 - General Electrical Requirements
B. Section 16111 - Conduit and Raceway
C. Section 16123 - Building Wire and Cable
D. Section 16195 - Electrical Identification

1.03 REFERENCE TO STANDARDS

A. UL Standard 943 Class A
B. Federal Specification W-C-596F
C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
D. NEC Article 410-57
E. NEMA WD-1
F. NEMA WD-6
G. ANSI/NEMA OS-1 - Sheet Steel Outlet boxes, Device Boxes, Covers and Box Supports
H. U.L. 514A - Metallic Outlet Boxes

1.04 DELIVERY, STORAGE AND HANDLING

A. Supplied 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 SUBMITTAL REQUIREMENTS

A. Submit under provisions of Division 1
   1. Receptacles.
   2. Toggle switches.

B. Where applicable, color of wiring devices to be identified during submittal review.

1.06 QUALIFICATIONS

A. Wiring devices shall be manufactured and supplied by companies regularly engaged in business of furnishing wiring devices. If required by Owner's

representative, manufacturers shall submit certification to a minimum experience of five years in manufacture of respective wiring devices.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. Receptacles:

Receptacles shall be installed under this item where shown on drawings.

1. General Purpose Receptacles

General purpose receptacles for all wall type convenience outlets in non-hazardous areas shall be of 20 amp, 125 volt, 3 wire grounding type, NEMA 5-20R, back and side wire compatible, heavy duty industrial specification grade.

a. Leviton 5362A
b. Pass & Seymour 5362-A
c. Hubbell HBL5362
d. Equivalent

2. Ground Fault Circuit Interrupting (GFCI) Duplex Receptacles

Duplex receptacles with ground fault circuit interrupters (GFCI) shall be provided and installed where noted on drawings. All units shall be rendered permanently inoperative at its “end of useful life” (EOL) as defined in UL 943. All receptacles shall be rated 20 amp with NEMA 5-20R receptacle configuration. To simplify locating the proper “reset” button after tripping, unless specifically noted on project drawings, DO NOT utilize “feed-thru” feature to protect downstream GFCI outlets. Provide self-protected GFCI receptacles at each required location. Receptacles shall be back and side wire compatible, feed-thru type (whether or not feed-thru feature is utilized on project):

a. Leviton “SmartLock” 8899
b. Pass & Seymour 2094
c. Hubbell GF-5362A
d. Equivalent, meeting requirements noted.

B. Toggles Switches:

Toggle switches shall be installed under this item.

1. General Purpose Toggle Switches

Units for use in non-hazardous, toggle-type applications shall be 20A, 120/277 VAC rated, back and side wired type, industrial specification grade. Switches shall be duty rated for 1 HP at 120 VAC.

a. Single Pole

Leviton 1221-2
Pass & Seymour CSB20AC1
Hubbell HBL1221
Equivalent

b. Two Pole

Leviton 1222-2
Pass & Seymour 20AC2
Hubbell HBL1222
Equivalent

c. Three-Way

Leviton 1223-2
Pass & Seymour 20AC3
Hubbell HBL1223
Equivalent

d. Four-Way

Leviton 1224-2
Pass & Seymour 20AC4
Hubbell HBL1224
Equivalent

e. Single-Pole; Double Throw; Center-Off

Leviton 1257
Pass & Seymour 1251
Hubbell HBL1557
Equivalent

2. Occupancy Sensor Switches

Occupancy sensors shall be used to control selected 120V interior lighting circuits and selected 120V exhaust fans in as detailed on the plans and specified herein. Wall mounted occupancy sensor shall be WattStopper WS-200 Automatic Wall Switch, either single- or dual-relay, or equivalent.

C. Unless noted otherwise on the drawings, wallplates shall be of nylon construction for resistance to impact, abrasion and mechanical stress fracture. Wallplate color shall match receptacle or switch at each location.

PART 3 EXECUTION

3.01 INSTALLATION

A. All receptacles and toggles switches shall be grounded with a ground conductor connected to their respective grounding terminal or screw.

B. Grounded conductors (neutrals) shall be continuous between outlets, boxes, devices, and so forth per NEC Article 300.13. Wiring device neutral connections shall not be utilized as splice points. Neutral path shall not be broken with wiring devices removed from boxes.

C. Test all receptacles, toggle switches and control stations for proper operation, including GFCI operation where applicable.

D. Ground device enclosure or box with a ground conductor connected to the respective grounding lug or screw.

E. Unless otherwise specified, install wall switches with “OFF” position down.

F. Unless otherwise specified, install duplex outlets with ground blade on the bottom if mounted vertically or to the right if mounted horizontally. Install GFCI receptacles in such that “Test” and “Reset” wording are oriented correctly.

END OF SECTION 16141

DIVISION 16 - ELECTRICAL
Section 16170 - Grounding and Bonding

PART 1 GENERAL

1.01 Work under this item includes the electrical grounding and bonding of the Service Entrance Gear, Electrical Distribution Equipment, metallic raceways, metallic enclosures, utilization equipment and other appurtenances for the work or equipment to be furnished under this project. In general, all work shall meet or exceed that defined in Article 250 of the National Electrical Code NEC/NFPA 70.

1.02 This Specifications section neither replaces any NEC requirements, nor are any NEC requirements not specifically identified considered deleted from the scope of work. Items listed in this Section are furnished to either augment, or exceed those established by NEC.

1.03 WORK INCLUDES

A. Equipment grounding conductors
B. Grounding Electrodes
C. Grounding Electrode Conductors
D. Bonding.

1.04 RELATED SECTIONS

A. Section 16010 - General Electrical Requirements

1.05 REFERENCE TO STANDARDS

A. Article 250; ANSI/NFPA 70 - National Electrical Code (NEC)
B. NFPA 780 – Standard for the Installation of Lightning Protection Systems

1.06 DELIVERY, STORAGE, AND HANDLING

A. Ground rods shall be tie-wrapped together and stored away from contact with the earth.

B. 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.

1.07 SUBMITTALS

A. Submit under provisions of Division 1

1. Ground rods.
2. Exothermic welding components

1.08 QUALIFICATIONS (RESERVED)

1.09 QUALITY ASSURANCE (RESERVED)

1.10 REGULATORY REQUIREMENTS (RESERVED)

1.11 COORDINATION

A. Installation of all Grounding and Bonding shall be coordinated with other trades and Sub-Contractors. Special attention is required for installation of Concrete-Encased Electrodes within structural footings.

1.12 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

1.13 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 MANUFACTURERS (RESERVED)

2.02 EQUIPMENT SPECIFICATION

A. Ground rods shall be UL listed, single-piece, 3/4" diameter by 10' long copper-clad steel with minimum 10 mil copper cladding.

All buried connections of grounding and bonding components shall be via exothermic weld only. Clamp or compression grounding connections below grade will be rejected and replaced at Contractor's expense.

B. Exothermal Welding Equipment Manufacturers:

1. Erico - Cadweld
2. Continental Industries – Therm-O-Weld
3. Hagar – Ultraweld

C. Grounding conductors shall be 600 volt, same insulation type as used for phase conductors, green in color unless otherwise noted.

D. Grounding electrode conductors in contact to earth shall be bare, stranded, annealed copper. Grounding Electrode Conductors shall be the larger of that detailed on the project drawings, specified herein or as required by NEC.

PART 3 EXECUTION

3.01 EXAMINATION (RESERVED)

3.02 PREPARATION (RESERVED)

3.03 INSTALLATION

A. A continuous grounding system shall be provided throughout the facility. The Contractor shall furnish and install all grounding and bonding as required per NEC and all Local Codes, whether or not specifically shown on the project drawings.

B. Except for separately derived systems, a single-point ground system is intended throughout the facility. So-called “Multi-point”, “independent”, “clean” or “separate” grounding systems that are not inter-bonded to the single-point facility system do not comply with NEC, are unsafe, and will be rejected.

1. On occasion, supplemental driven ground rods may be required on the project drawings. All such supplemental ground rods are to be bonded to the equipment grounding conductor and are NOT intended to indicate any separation of, or isolation from, the facility grounding system.

C. Equipment ground conductors (green insulated) shall be used solely for grounding and bonding purposes and be kept entirely separate from grounded neutral conductors (white insulation), except where bonded at the Service Entrance equipment.

1. The system Neutral and Ground conductors shall be bonded together through the Main Bonding Jumper in the Service Entrance Equipment only.

2. Unless otherwise directed on the project drawings, Grounding Electrode Conductors shall terminate on the Neutral Bus within the Service Entrance equipment.

3. The Main Bonding Jumper within the Service Entrance equipment shall be accessible for visual inspection.

D. Bond the system Neutral and Ground within Utility-owned KWH metering or Current-Transformer (C.T.) Cabinets ONLY if specifically required by the serving Utility. Otherwise, bond the system neutral and the ground in Service Entrance Equipment as described below.

E. Service Entrance Equipment Grounding and Bonding

1. Furnish grounding bushings on all metallic service conduits entering Service Entrance Equipment. Bond each bushing to Neutral bus in the Service Entrance Equipment as required by NEC Article 250.92 and 250.102C.

2. The System (Main) Bonding Jumper shall be installed within the Service Entrance Equipment and shall connect the Neutral Bus to the Ground Bus.

a. The Main Bonding Jumper shall consist of either a U.L. Listed bonding link furnished by the Service Equipment manufacturer or a copper bonding conductor sized to requirements in NEC Article 250.28D.

b. Do not re-bond Neutral and Ground downstream unless required by special conditions, such as those described in NEC Article 250.32.

F. Grounding Electrode System

1. As a minimum, the Grounding Electrodes shall comply with NEC Articles 250.52 and 250.53. Where present at each new building or structure, all available Grounding Electrodes defined in NEC Article 250.52A1 thru A4 shall be interconnected to form the Grounding Electrode System.

2. Per NEC Article 250.68A, the Grounding Electrode System shall be installed in such a manner that each connection point may be visually inspected, unless encased by concrete or earth.

3. Per NEC Article 250.64, Grounding Electrode Conductors shall be installed without splice between Service Entrance Equipment Neutral bar and Grounding Electrodes. Where required due to distance or construction, splicing shall be permitted by means of exothermic welding only. Irreversible “H” and “C” type compression connectors shall NOT be utilized for Grounding Electrode Conductors.

a. Where exposed or visible, all Grounding Electrode Conductors (regardless of size) shall be protected from physical damage using non-metallic conduit, such as Schedule 40 PVC. Extend protective conduit as close as practical to the Grounding Electrode. Any metallic conduits installed by the Contractor for grounding electrodes must be bonded at both ends per NEC Article 250.64E and 250.92A3.

b. Where a copper Grounding Electrode System Bus-Bar is indicated on the project drawings, it shall sized as noted but no less than ¼”T x 2”W x 24”L.. Size of the single copper Grounding Electrode Conductor between the Service Entrance Neutral Bus and the Grounding Electrode System Bus-Bar shall be the larger of that shown in NEC Table T250.66 or as noted on the project drawings. Connection of Grounding Electrode Conductors to a Grounding Electrode System Bus-Bar shall be through the use of listed compression-type lugs bolted to the Bus-Bar.

4. Grounding Electrode Conductors shall be individually installed from the Service Entrance Neutral Bus (or Grounding Electrode System Bus-Bar) to the respective Grounding Electrode. “Looping” of Grounding Electrode conductors (extending a suitably-sized single grounding electrode

conductor from electrode-to-electrode) shall NOT be utilized without written approval from the Engineer.

5. Connection of Grounding Electrode Conductors to individual Grounding Electrodes shall comply with NEC Article 250.70.

    a. Connection at all Grounding Electrodes shall be by use of exothermic welding, Listed clamp or compression connection connections shall NOT be utilized without written approval from the Engineer.

    b. Below-grade ground rod and associated ground wire shall be clean and dry before performing the exothermic weld. Verify that the proper size and type of exothermic weld kit is used before beginning work

    c. Exothermic welds shall be left exposed for inspection and approval before backfilling or otherwise concealing. Any unacceptable exothermic welds shall be redone, including any necessary replacement material (ground rods, ground wires, etc.) as needed to provide an accepted exothermic weld.

6. Non-Metallic conduits containing grounding electrode conductors shall not be supported with metal clamps that completely encircle the conduit. Use nylon nuts, bolts, straps and/or reinforced fiberglass or premium grade plastic resin strut support with non-metallic hardware as manufactured by Aickinstrut, or equivalent.

7. All of the following shall be interconnected, where available:

    a. Bond metallic underground water piping in direct contact with earth for no less than 10 feet per NEC Article 250.52A1. Size of the copper bonding jumper shall be the larger of that shown in NEC Table T250.66, or as noted on the project drawings. Installation shall comply with NEC Article 250.53. Connection shall be made at a point less than 5 feet from where the metallic water piping enters the facility. Furnish bonding around removable equipment (water meters, etc.) per NEC Article 250.68B.

        (1). Note that NEC Article 250.53D2 requires a Supplemental Grounding Electrode when a metallic underground water pipe is the sole Grounding Electrode. The Supplemental Grounding Electrode shall be one of those described in NEC Articles 250.52A2 through 250.52A7. See also paragraph 16170-3.03F8 below.

    b. Metal frames of building or structure shall be bonded per NEC Article 250.52A2. Size of the copper bonding jumper shall be the larger of that shown in NEC Table T250.66, or as noted on the

project drawings. Installation shall comply with NEC Article 250.53.

c. Furnish concrete-encased electrodes (commonly called “Ufer” ground) per NEC Article 250.52A3 and install per NEC Article 250.53.

(1). The size of the copper conductor which is the sole connection to the concrete-encased electrode shall be the larger of that shown on the project drawings or #4 AWG.

(2). The Concrete-Encased Electrode (CEE) shall be no less than #4 rebar (½” diameter) with a minimum length of 20 feet long placed in bottom of concrete footing encased by no less than 2” of concrete in direct contact with earth.

(3). Within the concrete encasement, connect the grounding electrode conductor to the re-bar by means of exothermic weld, Cadweld, or equivalent. Compression connections will not be accepted as an alternate termination method of connection within the concrete envelope.

(4). **The Contractor shall provide all necessary coordination between the Sub-Contractors and trades for the implementation of this item before concrete is placed.**

(5). Do not use Insulated (plastic or epoxy coated) re-bar for concrete-encased electrodes. If the structural construction requires insulated or plastic-coated re-bar, add a minimum of 20 feet bare, non-coated re-bar to create the Grounding Electrode.

(6). For installations that may structurally utilize re-bar smaller than #4, tie-wrap a minimum of 20’ length of no smaller than #4 AWG bare copper Grounding Electrode to the re-bar in the bottom of the footing prior to installation of concrete.

d. Furnish a Grounding Electrode Ground-Ring only where specifically noted on the project drawings. Ground-Ring shall comply with NEC Article 250.52A4 requirements and be installed per NEC Article 250.53. Where utilized, all Ground-Rings must encircle the entire facility (form a closed-loop). Size of the copper Grounding Electrode Conductor which is the sole connection to the ground-loop shall be the larger of that shown on the project drawings or #2 AWG.

8. On projects where the only Grounding Electrode listed in NEC Article 250.52A through 250.52D is a metallic underground water pipe, it must be

supplemented by another grounding electrode per NEC Article 250.53D2. Unless directed otherwise, the supplemental grounding electrode shall be a driven ground field.

a. Ground field shall consist of a triangle 10 feet on each side, with a driven ground rod at each vertex of the triangle. Size of the copper Grounding Electrode Conductor, and the bonding jumpers between all ground rods, shall be the larger of that shown on the project drawings or #6 AWG.

. b. If required due to space constraints, furnish two (2) ground rods a minimum of 10 feet apart. Deviations from the triangular-shaped ground field shall require written approval by the Engineer prior to installation.

G. All metallic raceways, boxes, enclosures, etc. shall include an insulated equipment ground conductor. Due to corrosion, metallic raceway and conduit connectors alone WILL NOT be considered as meeting this requirement. The Equipment Grounding Conductor shall positively bond all electrical components and utilization equipment to the facility ground system.

H. All metallic boxes used for electrical equipment shall include listed grounding screws or lugs. No more than one grounding conductor shall be installed per lug location unless lug is listed for multiple conductors.

I. The largest factory-scored concentric conduit knockouts shall be used to provide conduit bonding to NEMA 1 & 3R enclosures.

1. If required, provide a conduit reducing hub for the for the specific conduit size terminated.

J. Equipment Grounding Conductors shall be sizes as shown in NEC T250.122, but no less than #12 AWG.

3.04 MANUFACTURER'S FIELD SERVICES (RESERVED)

3.06 TESTING

A. As described in Specifications Section 16950.

B. All grounded metal cases and parts associated with electrical equipment shall be tested for continuity with ground system.

C. If requested, testing shall be performed in the presence of the Owner’s representative.

D. Provide a copy of all testing reports to Engineer for record purposes.

END OF SECTION 16170

THIS PAGE INTENTIONALLY LEFT BLANK FOR PRINTER FORMATTING PURPOSES

DIVISION 16 - ELECTRICAL
Section 16190 - Supporting Devices

PART 1 GENERAL

1.01 WORK INCLUDES

A. Strut-type framing for conduit and equipment supports.
B. Anchors and Fasteners.

1.02 RELATED SECTIONS

A. Section 16010 - General Electrical Requirements

1.03 REFERENCE TO STANDARDS

A. ANSI/NFPA 70 - National Electrical Code.
B. NECA - National Electrical Contractors Association.
C. ASTM No. A570 G33
D. ASTM No. A-123
E. ASTM No. A-525

1.04 DELIVERY, STORAGE, AND HANDLING

A. Stored conduit and equipment supports shall not be in contact with earth, but shall be on pallets or other above-grade supports. Conduit and equipment supports shall be covered to minimize exposure to 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. Submit under provisions of Division 1

B. Product Data: Provide manufacturer's catalog data for fastening systems and supports.

C. 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 QUALIFICATIONS (RESERVED)

1.07 QUALITY ASSURANCE (RESERVED)

1.08 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

1.09 COORDINATION (RESERVED)

1.10 MAINTENANCE SERVICE (WARRANTY) (RESERVED)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

1.11 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 MOUNTING STRUT

A. Where utilized, strut-type metal framing shall be provided to mount and support electrical equipment and enclosures as indicated on the drawings.

B. Strut-type supports shall be either aluminum or stainless steel construction. Unless specifically identified for use on the drawings, painted or factory coated steel, galvanized steel or non-metallic strut are not acceptable alternates to this requirement. Use stainless steel on all project locations where strut is in direct physical contact with earth.

C. Wall mounted strut supports for electrical enclosures shall extend to floor and terminate in strut-type floor flange in order to transfer enclosure weight to the floor rather than wall. Vertical mounted strut sections shall be attached to masonry, where available, with expanding anchors. Vertical strut sections for wall construction using studs shall be solidly anchored at stud locations only.

D. All mounting hardware shall be stainless steel.

E. Manufacturers:

a. Unistrut
b. B-Line
c. GS-Metals
d. Equivalent meeting specifications

PART 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 instructions and as detailed on drawings.

B. Provide anchors, fasteners and supports in accordance with NECA Standard of Installation. Do not use spring steel clips or clamps except as noted in Section 16190-3.03H.

C. Provide materials, sizes and types of anchors, fasteners, and supports necessary to carry loads of equipment and conduits. Consider weights of equipment and conduit when selecting products.

D. Provide all necessary hardware, such as floor flanges, in order to install equipment as specified or as shown on the drawings.

E. Use spring-lock washers under all nuts.

3.04 INTERFACE WITH OTHER PRODUCTS (RESERVED)

3.05 MANUFACTURER'S FIELD SERVICES (RESERVED)

END OF SECTION 16190

THIS PAGE INTENTIONALLY LEFT BLANK FOR PRINTER FORMATTING PURPOSES

DIVISION 16 - ELECTRICAL
Section 16195 - Electrical Identification

PART 1 GENERAL

1.01 WORK INCLUDES

A. This section includes field-installed nameplates, labeling and identification methods for electrical equipment, components and wiring.

1.02 RELATED SECTIONS

A. Section 16010 - General Electrical Requirements

1.03 REFERENCE TO STANDARDS

A. ANSI/NFPA 70 - National Electrical Code

1.04 DELIVERY, STORAGE, AND HANDLING (RESERVED)

1.05 SUBMITTALS

A. Submit under provisions of Division 1.

B. Product Data: Provide catalog data for nameplates, labels and markers.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation and installation of Product.

D. During course of construction, Contractor shall submit Wiring Identification Tables, listing wire marker identification schedules of all proposed wiring and terminations.

1.06 QUALIFICATIONS (RESERVED)

1.07 QUALITY ASSURANCE (RESERVED)

1.08 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

1.09 COORDINATION (RESERVED)

1.10 MAINTENANCE SERVICE (WARRANTY)(RESERVED)

1.11 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 MANUFACTURERS (RESERVED)

2.02 EQUIPMENT SPECIFICATION

A. Nameplates and legend plates shall be engraved three-layer laminated plastic, black letters on white background. Legends (wording) shall be as detailed on drawings or as directed by Owner's representative .

B. All wire markers installed on electrical equipment above grade shall be weatherproof and water resistant. Wire identification labeling, whether factory applied or written in the field, shall utilize an adhesive that does not soften or weaken over time. Sleeve or tubing type labels may be utilized as an alternate. Paper adhesive-backed wire markers will be rejected and replaced at the Contractor's expense. Wire marker labels shall be as manufactured by Brady, or equivalent.

C. Provide and install Safety Stripe Tapes on finished floors around electrical gear noting clearances required per NEC Article 110.26. Tape shall be minimum 2" in width with alternating black/yellow striping. Tape shall be Scotch/3M #5702 or equivalent.

PART 3 EXECUTION

3.01 EXAMINATION (RESERVED)

3.02 PREPARATION

A. Degrease and clean surfaces to receive nameplates, legend plates and markers.

3.03 INSTALLATION

A. Secure nameplates and legend plates to equipment using screws or adhesive.

B. Nameplates or legend plates shall be provided for all disconnects, enclosed starters, control panels, transformers, levelmeters, flowmeters and recorders.

C. Wiring Device identification labels shall be furnished and installed on all wiring device cover plates per Specifications Sections 16141-3.01O and 16141-3.01P.

D. Contractor shall develop the Wiring Identification Tables to be used for **ALL** wiring terminations on this project, and shall submit Tables for review and comment by Owner's Representative prior to installation of any conductors or cables.

Provide wire markers for **ALL** wires and terminations. By "all", this is intended to include, but not be limited to, all terminations at distribution panelboards, motors, valves, heaters, fan coils, heat pumps, fans, dampers, all MCC terminations, instrumentation & controls, terminal blocks and strips, etc. Wire identification shall be unique to wire that is marked or to terminal that wire lands upon.

Identification of a run of wire from termination to termination shall be same throughout run.

E. Provide wire markers in all manholes, handholes and vaults.

F. Include markers labeled “SP” on all spare conductors.

3.04 INTERFACE WITH OTHER PRODUCTS (RESERVED)

3.05 MANUFACTURER'S FIELD SERVICES (RESERVED)

3.06 AS-BUILT WIRING IDENTIFICATION TABLE

A. Upon completion of project, Contractor shall provide five copies of as-built Wiring Identification Table. This table shall list **ALL** circuits installed as part of this work and shall give identification of ALL wires and terminations as installed and marked.

Table shall include routing of **ALL** conductors installed in the project from end-to-end including each conduit, manhole, handhole and vault through which each conductor passes. Include and identify all spare conductors.

END OF SECTION 16195

THIS PAGE INTENTIONALLY LEFT BLANK FOR PRINTER FORMATTING PURPOSES

DIVISION 16 - ELECTRICAL
Section 16421 - Service Entrance

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Work included in this section is labor, equipment and materials necessary to provide a complete and operational service entrance as detailed on drawings and specified herein. All work shall be as shown on project drawings and coordinated with serving utility requirements.

B. The work described in this Specification Section is for information only. The Contractor shall comply with all requirements of the Serving Utility effective at the time of the installation of the Service Entrance. This may result in different installation methods and different equipment supply and installation by the Contractor than shown on the plans or specified herein. All material, equipment and labor required to furnish and install a complete and operational Service Entrance in compliance with Serving Utility requirements shall be considered incidental to the contract work.

C. NOTE: The Service transformer for the new T-Hangar is an existing 50KVA transformer.

D. Serving Utility shall furnish and install:

1. Medium-Voltage primary cable from existing 50KVA transformer to new 75KVA transformer, installation and terminations.
2. 75KVA Service Transformer for new Corporate Hangar, 120/240V, single-phase secondary.
3. Termination of secondary conductors on secondary lugs of pad-mount transformer. Conductors to be provided and pulled by Contractor.
4. KWH Meter instruments. NOTE: Contractor shall furnish and install kWH Meter Centers.

E. Contractor shall furnish and install:

1. Concrete transformer pad for new Utility 75KVA transformer meeting utility requirements and as detailed on project drawings.
2. Secondary service conductors and ductbank between existing 50KVA pad-mount transformer and new 75KVA pad-mount transformer and Service Disconnects.
3. Termination of service conductors at Service Disonnects and meter centers as detailed on the plans. Service conductors will be terminated at utility pad-mount transformer by serving utility.
4. KWH Meter Centers meeting electric utility requirements
5. Any additional work as required by serving utility but not specifically noted herein shall be considered incidental to this section.
6. Grounding and Bonding for Service Entrance is covered under Section 16170.

1.02 Utility Name: City Water Light and Power
Contact Individual:
Street Address:
City, State, Zip: Springfield, IL
Phone No.:
Faximile No.

1.03 Costs from serving utility that may be charged for providing new permanent electrical service to the Water Treatment Plant will be paid by the Owner. Contractor should not include these in his base-bid cost.

1.04 RELATED SECTIONS

A. Section 16010 - General Electrical Requirements
B. Section 16111 - Conduit and Raceway
C. Section 16118 - Ductbank
D. Section 16170 - Grounding and Bonding
E. Section 16950 - Testing Electrical Systems

1.05 REFERENCE TO STANDARDS

A. ANSI/NFPA 70 - National Electrical Code

1.06 DELIVERY, STORAGE, AND HANDLING

A. Equipment shall be stored in original cartons, where applicable, and away from contact with earth and protected from weather and abuse.

1.07 SUBMITTALS (RESERVED)

1.08 QUALIFICATIONS (RESERVED)

1.09 QUALITY ASSURANCE (RESERVED)

1.10 REGULATORY REQUIREMENTS

A. Contractor shall comply with all requirements of serving utility.

1.11 COORDINATION

A. Contractor shall coordinate service installation with serving utility.

1.12 MAINTENANCE SERVICE (WARRANTY)

A. Cable and appurtenances shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion.

1.13 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Contractor shall comply with all requirements of serving utility.

PART 3 EXECUTION

3.01 INSTALLATION

A. Pad-mounted transformer shall be installed on concrete pad as detailed in drawings and as required by serving utility. Concrete pad shall be level. Surrounding earth shall be thoroughly tamped, graded, fertilized and seeded. If erosion appears to be a problem, Contractor shall install rock to control erosion.

B. Install service entrance conductors between the utility transformer and Service Disconnects. Conductors shall conform to the requirements as noted in Section 16123 - Building Wire and Cable.

B. Conduit shall be installed as specified in Section 16111 - Conduit and Raceway and Section 16118 - Duct Bank.

C. Contractor shall furnish and install Service Disconnects and Meter Centers.

3.06 TESTING

A. Entire service entrance system shall be tested. Perform testing in accordance with serving utility's recommendations.

B. Comply with all applicable items in Section 16950 - Testing Electrical Systems

END OF SECTION 16421.

THIS PAGE INTENTIONALLY LEFT BLANK FOR PRINTER FORMATTING PURPOSES

DIVISION 16 - ELECTRICAL
Section 16422 - Temporary Power

PART 1 GENERAL

1.01 WORK INCLUDES

A. Work included in this section is supply of temporary electrical power as required to complete work as indicated on drawings and specified herein.

B. All energy costs, demand costs and applicable one-time charges billed by serving utility for Temporary Power shall be paid for by the Contractor and included in base-bid price. They will not be paid for separately.

C. It shall remain solely the Contractor's responsibility to ensure proper system voltage and adequate electrical construction power capacity are available for his work. If construction site is at an operational facility, the Contractor's temporary construction power shall not impact Owner's operations in any manner.

1.02 RELATED SECTIONS

A. Section 16010 - General Electrical Requirements.
B. Section 16111 - Conduit and Raceway.
C. Section 16123 - Building Wire and Cable.
D. Section 16170 - Grounding and Bonding.
E. Section 16190 - Supporting Devices.
F. Section 16441 - Enclosed Switches.

1.03 REFERENCE TO STANDARDS

A. NFPA 70 - National Electric Code (most current issue).

B. Requirements and standards as noted by serving utility.

PART 2 PRODUCTS

2.01 MATERIALS

A. May be new or used, but shall be adequate for purposes used, shall not create unsafe conditions, nor violate specified codes. Comply with Federal, State and local regulations.

B. Any and all additional work as required by serving electrical utility shall be considered incidental to this specification.

PART 3 EXECUTION

3.01 TEMPORARY ELECTRICITY DURING CONSTRUCTION

A. Contractor shall be solely responsible to make necessary arrangements and provide temporary electric service for construction equipment and lighting

required during the entire construction period including all utility fees, service charges, and permits.

B. Electric services shall be of sufficient capacity and characteristics to supply proper current for various types of construction tools, motors, welding machines, lights, heating plant, air conditioning system, pumps and other work required. All necessary temporary wiring, panelboards, outlets, switches, lamps, fuses, controls and accessories shall be provided by Contractor. A sufficient number of electric outlets shall be provided along with adequate lighting. Materials used for temporary service shall not be used in permanent system unless specific approval is given by Owner's representative. Temporary service shall be so constructed and arranged as not to interfere with progress of other trades. This system shall be erected and maintained strictly in accordance with all ordinances and requirements for temporary service pertaining thereto inclusive of OSHA and NEC.

C. All 15A and 20A receptacles used for temporary power shall be ground fault

3.03 TEMPORARY POWER REMOVAL

A. Any Contractor who has installed a temporary utility connection as herein specified, shall, prior to final acceptance, remove temporary connections and installations and leave premises restored to condition in which it was found.

END OF SECTION 16422

DIVISION 16 - ELECTRICAL
Section 16441 - Enclosed Switches

PART 1 GENERAL

1.01 WORK INCLUDES

A. This section includes enclosed safety switches for use as service disconnects, feeder and branch circuit switching and disconnect switches for motors and equipment.

1.02 RELATED SECTIONS

A. Section 16010 - General Electrical Requirements.
B. Section 16170 - Grounding and Bonding.
C. Section 16190 - Supporting Devices.
D. Section 16195 - Electrical Identification.

1.03 REFERENCE TO STANDARDS

A. ANSI/NFPA 70 - National Electrical Code.
B. NEMA KS 1 - Enclosed Switches.
C. NECA - National Electrical Contractors Association.
D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

1.04 DELIVERY, STORAGE AND HANDLING

A. Safety Switches (disconnects) shall be stored in original containers as delivered to jobsite. Safety switches shall be stored on pallets or other supports to prevent contact with earth. Safety switches shall be covered to protect them from weather.

1.05 SUBMITTALS

A. Submit under provisions of Division 1.

B. Product Data: Provide catalog data for switch ratings and enclosure dimensions.

C. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by Product testing agency specified under Regulatory Requirements. Include instructions for storage, handling, protection, examination, preparation and installation of Product.

1.06 QUALIFICATIONS (RESERVED)

1.07 QUALITY ASSURANCE

A. Perform work in accordance with NECA Standard of Installation.

1.08 REGULATORY REQUIREMENTS

A. Conform to requirements of ANSI/NFPA 70.

B. Furnish products listed and classified by Underwriters Laboratories, Inc., as suitable for purpose specified and shown.

1.09 COORDINATION (RESERVED)

1.10 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

1.11 EXTRA MATERIALS (SPARE PARTS) (RESERVED)

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Cutler-Hammer
B. Square D
C. Siemens
D. General Electric

2.02 EQUIPMENT SPECIFICATION

A. Safety switches (disconnects) shall be rated for use at 480 Volts, 3 phase and shall be Heavy Duty, NEMA KS 1 load interrupter enclosed knife switch with externally operated handle interlocked to prevent opening front cover with switch in ON position. Disconnect handle shall be lockable in OFF position.

B. Safety switch enclosures shall be NEMA 3R, unless otherwise indicated on drawings.

C. Where noted on project drawings, disconnects shall be fusible-type and shall include high-interrupting capacity, U.L. Class “R” time-delay (slow-blow) fuses, Buss, or equivalent. Fuse ampacities shall be as noted on the project drawings. Three spare fuses of each ampacity used on the project drawings shall be provided with each fusible disconnect.

PART 3 EXECUTION

3.01 EXAMINATION

A. Inspect safety switches for proper operation. Disconnect switch movement shall not bind at any point in its travel. Inspect enclosures for corrosion and water tightness.

3.02 PREPARATION (RESERVED)

3.03 INSTALLATION

A. Install safety switches (disconnects) where detailed on drawings. All switches shall be mounted to strut-type framing.

B. All safety switches shall be bonded to equipment grounding system.

C. Provide nameplate for each safety switch as detailed on drawings or as directed by Owner’s representative.

D. Inspect all disconnects for proper operation, tight and secure connections, and correctness. Adjust as necessary to assure proper operation.

3.04 INTERFACE WITH OTHER PRODUCTS (RESERVED)

3.05 MANUFACTURER'S FIELD SERVICES (RESERVED)

3.06 TESTING

A. Test all disconnects for proper operation and continuity on all poles when in the closed (ON) position.

END OF SECTION 16441

THIS PAGE INTENTIONALLY LEFT BLANK FOR PRINTER FORMATTING PURPOSES

DIVISION 16 - ELECTRICAL
Section 16470 - Panelboards

PART 1 GENERAL

1.01 WORK INCLUDES

A. Work included in this section is supply and installation of power and lighting panelboards to provide a complete and operational electrical system.

1.02 RELATED SECTIONS

A. Section 16010 - General Electrical Requirements
B. Section 16111 - Conduit and Raceway
C. Section 16120 - Building Wire and Cable
D. Section 16170 - Grounding and Bonding
E. Section 16190 - Supporting Devices
F. Section 16195 - Electrical Identification
G. Section 16671 - Surge Protective Devices

1.03 QUALITY ASSURANCE

A. Panelboards shall be manufactured and supplied by a company regularly engaged in business of furnishing panelboards. If required by Owner's representative, manufacturer shall submit a certification to a minimum experience of five years in manufacture of panelboards.

1.04 REFERENCE TO STANDARDS

A. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).
B. U.L. Standard 489 - Molded Case Circuit Breakers, Molded-Case Switches, and Circuit Breaker Enclosures
C. U.L. Standard 67 - Panelboards
D. NEMA PB 1.1 - Instructions for Safe Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less.
E. NFPA 70 - National Electrical Code.
F. NECA (National Electrical Contractors Association) "Standard of Installation".
G. NEMA AB 1 - Molded Case Circuit Breakers.
H. NEMA ICS 2 - Industrial Control Devices, Controllers, and Assemblies.
I. NEMA KS 1 - Enclosed Switches.
J. NEMA PB 1 - Panelboards.

1.05 SUBMITTALS

A. Submit under provisions of Division 1.

B. Submittals shall include outline and support point dimensions, voltage, main bus ampacity, integrated short circuit ampere rating, circuit breaker arrangement and sizes. 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 DELIVERY STORAGE AND HANDLING

A. Panelboards shall be stored indoors from time of delivery to jobsite, protected from weather and damage.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Cutler-Hammer/Westinghouse.
B. Square D.
C. General Electric.
D. Siemens
E. Equivalent

2.02 EQUIPMENT

A. Panelboard shall be provided with circuit breakers of size and rating as detailed in panel schedule on plans. Breakers shall be 1, 2 or 3-pole with an integral crossbar to assure simultaneous opening of all poles in multipole circuit breakers. Breakers shall have an overcenter, 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.

B. Panelboards bus structure and main lugs or main circuit breakers shall have current ratings as shown on panelboard schedule. Bus material shall be copper with either silver or tin plating. Bus ratings shall be in accordance with UL Standard 67. Bus bar connections to branch circuit breakers shall be the "distributed phase" or phase sequence type.

C. Panelboard bus assembly shall be enclosed in a steel cabinet rated NEMA 1 (unless otherwise noted on the drawings). Box front shall include a door and have a flush, cylinder tumbler-type lock and catch and spring-loaded stainless steel door pull. Door shall have completely concealed hinges when closed and shall not be removable when locked. A circuit directory frame and card with a clear plastic cover shall be provided on door interior.

D. Panelboards shall be nominal 20” in width unless otherwise noted.

E. Panelboards rated 240 VAC or less shall have short-circuit ratings as shown on the drawings, or as herein scheduled, but not less than an integrated equipment rating of 22,000 amps RMS symmetrical. All units shall bear UL label.

F. Except where noted otherwise on the drawings, all panelboards shall **not** have neutral bar and ground bar bonded together. Where neutral bar and ground bar are noted to be isolated, the contractor shall verify during wiring installation that

neutral and ground conductors are terminated on the correct bar.

G. Where schedule on drawings indicates “SPARE”, a complete circuit breaker of the ampacity and number of poles indicated is to be provided. Where schedule on drawings does not indicate a specific size circuit breaker provide a 20 AMP single pole circuit breaker for each of the remaining unused poles. Therefore, panelboard shall be filled with feeder circuit breakers.

H. All circuit beakers feeding HVAC equipment shall be HACR rated.

I. Multi-pole circuit breakers with removable tie-links are not acceptable.

J. Tandem circuit breakers (two circuit breakers on single pole frame) are not acceptable.

PART 3 EXECUTION

3.01 INSPECTION

A. Panelboards shall be thoroughly inspected for physical damage, proper alignment, anchorage, and grounding. Exterior finish shall be inspected for blemishes, nicks, and bare spots and touched up as required using touch-up paint provided. Inspection shall be made for proper installation and tightness of connections for circuit breakers, fusible switches, and fuses.

3.02 INSTALLATION

A. Install panelboards where shown on the plans, in accordance with manufacturer’s directions and in accordance with NEMA PB1.1. Install panelboards plumb. Provide filler plates for unused spaces in panelboards. Provide typed circuit directory for each branch circuit panelboard. Revise directory to reflect circuiting changes as required.

B. Provide legend plates for all panelboards to identify panelboard as well as voltage, phase and number of wires (example”LP-1, 208Y/120 VAC, 3 PHASE, 4 WIRE”). Legend plates shall comply with Section 16195 - Electrical Identification.

3.03 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 branch circuits.

B. Test for shorts and high resistance grounds. Check for faulty operation of circuit breakers and correct as needed.

END OF SECTION 16470

THIS PAGE INTENTIONALLY LEFT BLANK FOR PRINTER FORMATTING PURPOSES

DIVISION 16 - ELECTRICAL
Section 16510 - Luminaires

PART 1 GENERAL

1.01 WORK INCLUDES

A. Work included in this section is interior lighting fixtures, lamps, accessories and installation and connection to wiring and ducts required for a complete and operational interior lighting system at facility.

B. This work shall also include lighting fixtures mounted to building exterior walls and structures, including lamps, accessories and installation and connection to wiring and ducts required for a complete and operational lighting system at facility.

1.02 RELATED SECTIONS

A. Section 16010 - General Electrical Requirements.
B. Section 16111 - Conduit and Raceway
C. Section 16123 - Building Wire and Cable
D. Section 16130 - Boxes
E. Section 16170 - Grounding and Bonding

1.03 REFERENCE TO STANDARDS

A. NEC Article 410 - Light Fixtures, Lampholders, Lamps and Receptacles.
B. Illuminating Engineering Society (IES) of North America.

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. Submit under provisions of Division 1

B. Submittals will be required on all lighting fixtures and accessories to be used at this facility.

1.06 QUALIFICATIONS

A. Manufacturer, catalog number, type, wattage, and lamp data for each fixture as listed in Light Fixture Schedule on drawings establish acceptable minimum standard of quality, type of construction, and size of respective item.

1.07 MAINTENANCE SERVICE (WARRANTY)

A. All equipment shall be warranted to be free from defects in material and workmanship for a period of one year from date of substantial completion established by the Owner..

PART 2 PRODUCTS

2.01 EQUIPMENT SPECIFICATION

A. Fluorescent Fixtures:

Fluorescent fixtures shall be as shown in Light Fixture Schedule on drawings, or equal. Light fixtures and lamps shall conform to latest Federal Agency Policy requirements for efficiency. Ballasts shall be NEC Class P with automatic resetting thermal protection adjacent to coil and non-resetting protection for capacitor. Ballasts shall be UL labeled, CBM certified by ETL, HPF, and shall have an "A" sound rating. Ballasts shall be Advance, General Electric, Jefferson, Universal, or equal. All fixtures shall be listed as suitable for use in wet areas, except for lay-in style for installation in drop ceiling grids.

All fluorescent fixtures installed after January 1, 2008 shall be furnished with an integral power disconnecting means which complies with NEC Article 410.73(G). Disconnecting means shall be Thomas & Betts LD2 or LD3, or equivalent.

B. Fluorescent Lamps:

All fluorescent lamps shall be furnished and installed by electrical contractor. Fluorescent lamps shall be as shown in Light Fixture Schedule on drawings.

C. H.I.D. Fixtures:

H.I.D. fixtures shall be as shown in Light Fixture Schedule on drawings, or equal. Ballasts shall have Class H insulation and shall be high power factor with minimum of 90% power factor for high pressure sodium or metal halide units. Capacitors shall be of non-PCB type. H.I.D. lamp socket shall be of mogul base type. Internal wiring shall be suitable for 150˚C. minimum. All fixtures shall be listed as suitable for use in wet areas.

D. H.I.D Lamps:

All H.I.D. lamps shall be furnished and installed by electrical contractor.

E. Light fixtures shall include all mounting hardware and appurtenant materials and equipment as required to provide a complete and operational lighting system.

PART 3 EXECUTION

3.01 INSPECTION

A. All light fixtures and hardware 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 lamps, poles and hardware shall be replaced at no cost to contract.

3.02 INSTALLATION

A. Light fixtures shall be installed at locations shown on drawings or as directed by Owner's representative. All fixtures shall be cleaned inside and out just prior to installation. All fixtures shall be located such that they may be easily maintained.

3.03 TESTING

A. All luminaries shall be tested for proper operation after installation and defective equipment shall be replaced at no cost to contract.

END OF SECTION 16510

THIS PAGE INTENTIONALLY LEFT BLANK FOR PRINTER FORMATTING PURPOSES

DIVISION 16 – ELECTRICAL
Section 16950 - Testing Electrical Systems

PART 1 GENERAL

1.01 RELATED DOCUMENTS

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

B. Contractor shall note that this section shall be considered a Supplement to testing requirements outlined or described in other sections of these specifications.

1.02 WORK INCLUDES

A. Extent of Work as required by the Drawings and these Specifications.

1.03 RELATED WORK

A. Specified elsewhere:

1. Section 16010 - General Electrical Requirements.
2. Section 16123 - Building Wire and Cable.
3. Section 16141 - Wiring Devices.
4. Section 16170 - Grounding and Bonding.
5. Section 16421 - Service Entrance
6. Section 16422 - Temporary Power
7. Section 16441 - Enclosed Switches.
8. Section 16470 - Panelboards.
9. Section 16510 – Luminaires

1.04 QUALITY ASSURANCE

A. Regulatory requirements:

1. Governing codes:

a. NFPA 70 - National Electrical Code (most current issue).

1.05 SUBMITTALS

A. Submit under provisions of Section 01300.

1. Test Reports:

a. Test of entire electrical system as noted herein. Submit to the

Engineer in triplicate.

PART 2 PRODUCTS

2.01 MATERIALS

A. Furnish all equipment, tools, manpower, and labor to perform specified testing.

PART 3 EXECUTION

3.01 TESTING

A. After wires and cables are in place and connected to devices and equipment, the system shall be tested for short circuits, improper grounds, and other faults. When fault condition is present, the trouble shall be rectified, then re-tested. Where cable is found defective or damaged, it shall be removed and replaced in entirety, do not field repair. Cost for correction shall be considered incidental to the project.

B. Voltage test shall be made at each lighting and distribution panel. When potential is not within 2 percent of rated voltage, the conditions shall be corrected by tap changes or power company correction of line voltage.

C. Voltage test shall be made between Neutral (White) and Ground (Green) conductors and/or busbar at each lighting and distribution panel. Measured volts shall not exceed 0.2 mV. Locations exceeding this value shall be corrected and re-tested.

D. A voltage test shall be made on the last outlet of each circuit and the potential drop shall not exceed 3 percent of rated voltage.

E. All wiring devices and electrical apparatus furnished under this contract, when ground or shorted on any integral "live" part, shall be removed and the trouble rectified by replacing all defective parts and materials. Cost of correction is considered incidental to the project.

F. All feeder cables, Panelboards and other power distribution apparatus shall have a Megger resistance test conducted to determine that insulation resistance is not less than that recommended by the manufacturer, or as noted below.

Unless otherwise recommended by the manufacturer, insulation resistance testing shall meet or exceed the following on 600 Volt equipment utilizing 500 Volt resistance test instrument:

Conductors .....50 Meg-Ohms
Motors.....5 Meg-Ohms
Switchboards, MCC’s and Panelboards.....25 Meg-Ohms

G. Contractor shall furnish all tests and shall provide all test equipment, meters, instruments, cable connections or apparatus necessary for performing tests as specified herein. All costs for testing shall be considered incidental to this item and will not be paid for separately.

H. Testing of Ground System

1. Each and all grounded cases and metal parts associated with electrical equipment shall be tested for continuity of connection with the ground bus system by the Contractor in the presence of the Engineer or his representative.

2. All grounding electrode conductors brought in from the ground field shall be tested for satisfactory continuity and by resistance measurement between the electrical equipment ground bus and the ground field. The grounding path shall not exceed 0.010 ohms.

3. Each Ground Field shall be tested for resistance to earth a “three-terminal” or “fall-of-potential” test as described in IEEE Standard #81. As an alternate, a specially designed clamp-on instrument such as AEMC Model 3710 or 3730 may be used if found acceptable to the engineer. Based upon measured field data, the Contractor shall calculate the ground field resistance and furnish record copies to the Engineer and Owner for record. In no case shall the ground field resistance exceed 25 ohms. If the resistance is found to be higher than 25 ohms, one additional rod shall be driven with a minimum separation equal to the length of the ground rod used and connected in parallel with the rod under test.

4. Exterior ground field resistance testing shall not be measured during unusually wet weather and should be performed during normal weather and soil conditions. Any tests incorrectly performed or not performed to the satisfaction of the engineer will be repeated. Costs for all such re-testing shall be considered incidental to the project.

5. All specified maximums and minimums of this specifications must be met. Complete test records of all tests shall be made and shall show resistance values obtained and calculations of same, showing method of test and calculation.

3.03 CORRECTION OF DEFECTS

A. When tests disclose any unsatisfactory workmanship or equipment furnished under this contract, correct defects and retest. Repeat tests until satisfactory results are obtained.

B. When any wiring or equipment is damaged by tests, repair or replace such wiring or equipment. Test repaired items to ensure satisfactory operation.

END OF SECTION 16950

APPENDIX 2– Policy Memorandum 2003-1

Requirements for Laboratory, Testing, Quality Control,
And paving of Superpave Bituminous Concrete Mixtures for Airports

State of Illinois
Department of Transportation
Division of Aeronautics

POLICY MEMORANDUM

June 12, 2014	Springfield, Illinois	Number 2003-1

TO: CONTRACTORS

SUBJECT: REQUIREMENTS FOR LABORATORY, TESTING, QUALITY CONTROL, AND PAVING OF SUPERPAVE HMA CONCRETE MIXTURES FOR AIRPORTS

I. SCOPE

The purpose of this policy memorandum is to define to the Contractor the requirements concerning the laboratory, testing, Quality Control, and paving of HMA mixtures utilizing Superpave technology. References are made to the most recent issue of the Standard Specifications for Construction of Airports (Standard Specifications) and to American Society for Testing and Materials (ASTM) testing methods. The Quality Assurance and acceptance responsibilities of the Resident Engineer are described in Policy Memorandum 96-3.

II. LABORATORY

The Contractor shall provide a laboratory located at the plant and approved by the Illinois Division of Aeronautics (IDA). The laboratory shall be of sufficient size and be furnished with the necessary equipment and supplies for adequately and safely performing the Contractor's Quality Control testing as well as the Resident Engineer's acceptance testing as described in Policy Memorandum 87-2.

The effective working area of the laboratory shall be a minimum of 600 square feet with a ceiling height of not less than 7.5 feet. Lighting shall be adequate to illuminate all working areas. It shall be equipped with heating and air conditioning units to maintain a temperature of 70º F ±5ºF.

The laboratory shall have equipment that is in good working order and that meets the requirements set forth in the following ASTM test standards:

ASTM D 70	Test Method for Specific Gravity and Density of Semi-Solid Materials
ASTM C 117	Test Method for Materials Finer than 75 µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C 136	Sieve or Screen Analysis of Fine and Coarse Aggregate
ASTM C 566	Total Moisture Content of Aggregate by Drying
ASTM D 75	Sampling Aggregates
ASTM D 2041	Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures

ASTM D 2172	Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
AASHTO T 308-09	Ignition Method for Determining Asphalt Content (Illinois Modified)
ASTM D 2726	Bulk Specific Gravity of Compacted Bituminous Mixtures using Saturated Surface Dry Specimens
ASTM D 3203	Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
ASTM D 2950	Density of Bituminous Concrete in Place by Nuclear Method
ASTM D 4125	Asphalt Content of Bituminous Mixtures by Nuclear Method
ASTM C 127	Standard Test Method for Specific Gravity and Absorption of Coarse Aggregate
ASTM C 128	Standard Test Method for Specific Gravity and Absorption of Fine Aggregate

The laboratory and equipment furnished by the Contractor shall be properly calibrated and maintained. The Contractor shall maintain a record of calibration results at the laboratory. The Engineer may inspect measuring and testing devices at any time to confirm both calibration and condition. If the Engineer determines that the equipment is not within the limits of dimensions or calibration described in the appropriate test method, he may stop production until corrective action is taken. If laboratory equipment becomes inoperable or insufficient to keep up with mix production testing, the Contractor shall cease mix production until adequate and/or sufficient equipment is provided.

III. MIX DESIGN SUBMITTAL

Based upon data and test results submitted by the Contractor, the Illinois Division of Aeronautics Engineer of Construction & Materials shall issue the final Job Mix Formula (JMF) approval letter that concurs or rejects the Contractor's proposed JMF. The Contractor will be required to perform the sampling and laboratory testing and develop a complete mix design, according to the following guidelines: Mix design submittals should be sent to IDA, Construction/Material Section, Attn: Certification and Mixtures Engineer. Note: Quality Control (QC) Managers shall be Level III QC/QA qualified and will be responsible for all mix designs. All Technicians obtaining samples and performing gradations shall have successfully completed the IDOT Mixture Aggregate Technician Course and Technicians performing mix design testing and plant sampling/testing shall have successfully completed the IDOT Bituminous Concrete Level 1 Technician Course under the Illinois Department of Transportation, Bureau of Materials & Physical Research QC/QA Training Program.

A. Preliminary Mix Design Submittal

Top half of the IDOT Mix Design Software Cover Sheet (QC/QA Package) should be completed for the aggregate mix design parameters and should include the following:

1. Producer name, Producer # and Producer location of each aggregate (Producers are assigned Producer numbers by IDOT Central Bureau of Materials)

2. Material code for each aggregate

3. Aggregate Gradations per ASTM C-136 (The Contractor shall obtain representative samples of each aggregate)

4. Material code for each aggregate (i.e. 022CM11, etc.)

5. Proposed Aggregate Blend (% for each aggregate) Note: Based on the gradation results, the Contractor shall select the blend percentages that comply with the Standard Specifications, Section 401/403 – 3.2 JOB MIX FORMULA, Table 2. (Appendix A)

6. Producer name, Producer #, and specific gravity of the proposed asphalt cement

7. IDOT approved PG Binder 64-22 shall be used unless otherwise specified by the IDA Engineer of Construction & Materials.

B. Mixture Design & Testing

Design Parameters

Gyrations (N_{des}) – per Standard Specifications, Section 401/403 – 3.2 (JMF), Table 1
Asphalt Content – AC% per Standard Specifications, Section 401/403 – 3.2 (JMF), Table 2
Maximum Specific Gravity – G_{mm} (ASTM D 2041)
Bulk Specific Gravity – G_{mb} (ASTM D 2726)
% air voids – V_a (ASTM D3203) per Standard Specifications, Section 401/403 – 3.2 (JMF), Table 2
VFA % – per Standard Specifications, Section 401/403 – 3.2 (JMF), Table 1

Mixture Tests

After verification and approval by IDA of the proposed design information from step A., the Contractor shall perform mixture tests on 4 gyratory brix (4 point mix design) to determine the optimum AC content for the target Air Voids.

C. Mix Design Submittal

The Preliminary JMF including all test results shall be reported to IDA, Construction/Material Section, Attn: Certification and Mixtures with the following data:

a) Aggregate & asphalt cement material codes
b) Aggregate & asphalt cement producer numbers, names, and locations
c) Percentage of each individual aggregate
d) Aggregate blend % for each sieve
e) AC Specific Gravity
f) Bulk Specific Gravity and Absorption for each aggregate
g) Summary of Superpave Design Data: AC % Mix, G_{mb}, G_{mm}, VMA, Voids (Total Mix), Voids Filled, V_{be}, P_{be}, P_{ba}, G_{se}
h) Optimum design data listing: AC % Mix, G_{mb}, G_{mm}, VMA, Voids (Total Mix), Voids Filled, G_{se}, G_{sb}

i) Percent of asphalt that any RAP will add to the mix
j) Graphs for the following: gradation on 0.45 Power Curve, AC vs. Voids (Total Mix), AC vs. Specific Gravities, AC vs. Voids Filled, AC vs. VMA

D. Mix Approval

Once the proposed JMF is reviewed and approved by IDA, a JMF approval letter will be issued to the contractor. Production of HMA is not authorized until a JMF letter has been issued. When a Test Section is specified as part of the contract, the proposed JMF shall be considered preliminary until it passes all Test Section requirements.

E. Change in Material Sources

The above procedure, III. MIX DESIGN SUBMITTAL shall be repeated for each change in source or gradation of materials.

IV. MIX PRODUCTION TESTING

The Quality Control of the manufacture and placement of HMA mixtures is the responsibility of the Contractor. The Contractor shall perform or have performed the inspection and tests required to assure conformance to contract requirements. Quality Control includes the recognition of defects and their immediate correction. This may require increased testing, communication of test results to the plant or the job site, modification of operations, suspension of HMA production, rejection of material, or other actions as appropriate. The Resident Engineer shall be immediately notified of any failing tests and subsequent remedial action. Form AER M-14 shall be reported to IDA, Construction/Material Section, Attn: Certification and Mixtures Engineer and the Resident Engineer no later than the start of the next work day. The Contractor shall provide a Quality Control (QC) Manager who will have overall responsibility and authority for Quality Control. This individual shall have successfully completed the IDOT Division of Highways HMA Concrete Level II Technician Course “HMA Proportioning and Mixture Evaluation.” In addition to the QC Manager, the Contractor shall provide sufficient and qualified personnel to perform the required visual inspections, sampling, testing, and documentation in a timely manner.

A. Gradations for Mixture Proportioning: Aggregate gradations for proportioning (ASTM C-136) are required at a minimum of one per week when mix is produced. Aggregate gradations can be either hot bin gradations for batch plants or stockpile gradations for drier drum plants. Hot bin gradations may be reported on either form AER 9 or on the Division of Highways QC/QA package "Grad 1" Tab in the Daily HMA Plant Reporting Module. Stockpile gradations shall be shown on form MI504QC from the "Print Out" Tab in the Aggregate Stockpile Module of The Division of Highways QC/QA Package.

B. Production Mixture Testing: 1 per 1000 tons of the following (if total daily quantity is < /= 200 tons (small quantity) then a mix sample is not required and this quantity may be added on to next day's total for testing. Two consecutive days without testing is not allowed.): Reflux extraction (ASTM D2172) or Ignition oven test showing gradation and AC Content, Maximum Specific Gravity (ASTM D 2041), Bulk Specific Gravity (ASTM D 2726) and % Air Voids (ASTM D 3203). Calculations of the results (including weight data) shall be shown on the "Voids 1" and "IGN & NUC AC 1" tab printouts from the Division of Highways QC/QA Package Daily HMA Plant Reporting module.

C. A certification from the quarry for the total quantity of aggregate listing the source, gradation type, and quality designation of aggregate shipped. The Aggregate Certification of Compliance (AER18) may be used by the contractor for this purpose.

D. Original asphalt shipping tickets listing the source and type of asphalt shipped.

E. Check sample tests at a rate of 1/5000 tons randomly selected by the R.E. shall be sent with an identification sheet to an independent laboratory designated by the Division of Aeronautics. If the project is < 5000 tons, 1 sample selected randomly shall be sent.

F. Bituminous Test Summary (AER 14) Note: The R.E. should make certain that the Contractor fills this form out daily (for mix production days) and distributes it daily to the Division of Aeronautics and R.E. The Contractor (QC Manager) is required to note any adjustments to the mix or to the plant (proportioning) in the "Remarks/Corrective Measures" section of the AER 14.

V. QUALITY CONTROL

A. Control Limits (Control Charts used for projects > 4000 tons per bituminous concrete pay item)

Target values shall be determined from the approved JMF. The target values shall be plotted on the control charts within the following control limits:

Control Limits

Parameter	Individual Test	Moving Avg. of 4
% Passing		
1/2 in.	± 7 %	±4 %
No. 4	±7 %	±4 %
No. 8	±5 %	±3 %
No. 30	±4 %	±2.5 %
No. 200 *	±2.0 % *	±1.0 % *
Asphalt Content	±0.45 %	±0.2 %

* No. 200 material percent's shall be based on washed samples. Dry sieve gradations (-200) shall be adjusted based on anticipated degradation in the mixing process.

B. Control Charts (Control Charts used for projects > 4000 tons per bituminous concrete pay item)

Standardized control charts shall be maintained by the Contractor at the field laboratory. The control charts shall be displayed and be accessible at the field laboratory at all times for review by the Engineer. The individual required test results obtained by the Contractor shall be recorded on the control chart immediately upon completion of a test, but no later than 24 hours after sampling. Only the required plant tests and resamples shall be recorded on the control chart. Any additional testing of check samples may be used for controlling the Contractor's processes, but shall be documented in the plant diary.

The results of assurance tests performed by the Resident Engineer will be posted as soon as available.

The following parameters shall be recorded on control charts:

1. Combined Gradation of Hot-Bin (Batch Plant) or Combined Belt Aggregate Samples (Drier Drum Plant) (% Passing 1/2 in., No. 4., No. 8, No. 30, and No. 200 Sieves)

2. Asphalt Content

3. Bulk Specific Gravity (G_{mb})

4. Maximum Specific Gravity of Mixture (G_{mm}) C.

Corrective Action for Required Plant Tests

Control Limits for each required parameter, both individual tests and the average of four tests, shall be exhibited on control charts. Test results shall be posted within the time limits previously outlined.

1. Individual Test Result. When an individual test result exceeds its control limit, the Contractor shall immediately resample and retest. If at the end of the day no material remains from which to resample, the first sample taken the following day shall serve as the resample as well as the first sample of the day. This result shall be recorded as a retest. If the retest passes, the Contractor may continue the required plant test frequency. Additional check samples should be taken to verify mix compliance.

2. Asphalt Content. If the retest for asphalt content exceeds control limits, mix production shall cease and immediate corrective action shall be instituted by the Contractor. After corrective action, mix production shall be restarted, the mix production shall be stabilized, and the Contractor shall immediately resample and retest. Mix production may continue when approved by the Engineer. The corrective action shall be documented.

   Inability to control mix production is cause for the Engineer to stop the operation until the Contractor completes the investigation identifying the problems causing failing test results.

3. Combined Aggregate/Hot-Bin. For combined aggregate/hot-bin retest failures, immediate corrective action shall be instituted by the Contractor. After corrective action, the Contractor shall immediately resample and retest. The corrective action shall be documented.

   a. Moving Average. When the moving average values trend toward the moving average control limits, the Contractor shall take corrective action and increase the sampling and testing frequency. The corrective action shall be documented.

      The Contractor shall notify the Engineer whenever the moving average values exceed the moving average control limits. If two consecutive moving average values fall outside the moving average control limits, the

Contractor shall cease operations. Corrective action shall be immediately instituted by the Contractor. Operations shall not be reinstated without the approval of the Engineer. Failure to cease operations shall subject all subsequently produced material to be considered unacceptable.

b. Mix Production Control. If the Contractor is not controlling the production process and is making no effort to take corrective action, the operation shall stop.

VI. TEST SECTION AND DENSITY ACCEPTANCE **(Note: Applies only when specified.)**

A. The purpose of the test section is to determine if the mix is acceptable and can be compacted to a consistent passing density.

A quick way to determine the compaction of the mix is by the use of a nuclear density gauge in the construction of a growth curve. An easy way to construct a growth curve is to use a good vibratory roller. To construct the curve, an area the width of the roller in the middle of the mat is chosen and the roller is allowed to make one compaction pass. With the roller stopped some 30 feet away, a nuclear reading is taken and the outline of the gauge is marked on the pavement. The roller then makes a compaction pass in the opposite direction and another reading is taken. This scenario is continued until at least two (2) passes are made past the maximum peak density obtained.

The maximum laboratory density potential of a given mix is a direct function of the mix design air voids. Whereas, the actual maximum field density is a function of the type of coarse aggregates, natural or manufactured sands, lift thickness, roller type (static or vibratory), roller and paver speed, base condition, mix variation, etc. All of these items are taken into consideration with the growth curve.

1. <u>High Density in the Growth Curve</u>. If the growth curve indicates a maximum achievable field density of between 95 to 98 percent of the Theoretical Maximum Density (D), you can proceed with the Rolling Pattern. On the other hand, if the maximum achievable density is greater than 98 percent, a quick evaluation (by use of an extractor, hot bin gradations, nuclear asphalt determination, etc.) must be made of the mix. When adjustments are made in the mix, a new growth curve shall be constructed.

2. <u>Low Density in the Growth Curve</u>. If the growth curve indicates the maximum achievable density is below 94 percent, a thorough evaluation of the mix, rollers, and laydown operations should be made. After a thorough evaluation of all factors (mix, rollers, etc.), asphalt or gradation changes may be in order as directed by the Engineer. Again, any changes in the mix will require a new growth curve. Note that the nuclear density test is a quality control tool and not an acceptance test. All acceptance testing is to be conducted by the use of cores, unless otherwise specified.

3. Acceptance of Test Section. The Contractor may proceed with paving the day after the test section provided the following criteria have been met:

   a. Four random locations (2 cores per location cut longitudinally and cored by the Contractor) will be selected by the Engineer within the test strip. All the cores must show a minimum of 94% density.

   b. All Superpave and extraction test results from mix produced for the test section must be within the tolerances required by specification.

   c. The Contractor shall correlate his nuclear gauge to the cores taken in the test section. Additional cores may be taken at the Contractor's expense for this purpose within the test section area, when approved by the Engineer.

4. Density Acceptance under Production Paving. The responsibility for obtaining the specified density lies with the Contractor. Therefore, it is important that the nuclear density gauge operator communicate with the roller operators to maintain the specified density requirements. The Contractor shall provide a qualified HMA Density Tester who has successfully completed the Department's "HMA Nuclear Density Testing Course" to run all required density tests on the job site. Density acceptance testing, unless otherwise specified, is described as follows:

   a. The Contractor shall cut cores at random locations within 500 ton sublots as directed by the Resident Engineer.

   b. The cores should be extracted so as not to damage them, since they are used to calculate the Contractor's pay.

   c. The Engineer will run preliminary G_{mb} tests on the cores to give the Contractor an indication of how compaction is running for the next day's paving.

   d. A running average of four (4) Maximum Theoretical Gravities (G_{mm}) will be used for calculating percent compaction.

   e. Final core density tests and pay calculations will be performed by the Resident Engineer and delivered to the Contractor.

   f. Should the contractor wish to resample the pavement as a result of pay calculations resulting in less than 100% payment the request must be made within 48 hours of receipt of the original payment calculation.

Steven J. Long, P.E. Acting Chief Engineer

Supersedes Policy Memorandum 2003-1 dated May 1, 2014

APPENDIX A

AGGREGATE BITUMINOUS BASE COURSE

Percentage by Weight Passing Sieves Job Mix Formula (JMF)		
Sieve Size	Gradation B Range 1” Maximum	Ideal Target
1-1/4 in.	---	---
1 in.	100	100
3/4 in.	93 – 97	95
1/2 in.	75 – 79	77
3/8 in.	64 – 68	66
No. 4	45 – 51	48
No. 8	34 – 40	37
No. 16	27 – 33	30
No. 30	19 – 23	21
No. 100	6 – 10	8
No. 200	4 – 6	5
Bitumen %: Stone	4.5 – 7.0	5.5

AGGREGATE BITUMINOUS SURFACE COURSE

Percentage by Weight Passing Sieves Job Mix Formula (JMF)		
Sieve Size	Gradation B Range ¾" Maximum	Ideal Target
1 in.	100	---
3/4 in.	100	100
1/2 in.	99 - 100	100
3/8 in.	91 - 97	94
No. 4	56 – 62	59
No. 8	36 - 42	39
No. 16	27 - 32	30
No. 30	19 - 25	22
No. 100	7 – 9	8
No. 200	5 – 7	6
Bitumen %: Stone	5.0 – 7.0	6.0

APPENDIX 3– Policy Memorandum 96-1

Structural Portland Cement Concrete: Job Mix Formula
Approval & Production Testing

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

APPENDIX 4– Policy Memorandum 97-2

Pavement Marking Paint Acceptance

State of Illinois
Department of Transportation
Division of Aeronautics

POLICY MEMORANDUM

January 1, 2004	Springfield, Illinois	Number 97-2

TO: CONSULTING ENGINEERS

SUBJECT: PAVEMENT MARKING PAINT ACCEPTANCE

I. SCOPE

The purpose of this policy memorandum is to define the procedure for acceptance of pavement marking paint.

II. RESIDENT ENGINEER'S DUTIES

The Resident Engineer shall follow the acceptance procedure outlined as follows:

A. Require the painting contractor to furnish the name of the paint manufacturer and the batch number proposed for use prior to beginning work. Notify the I.D.A. Materials Certification Engineer when this information is available.

B. Require the manufacturer's certification before painting begins. Check the certification for compliance to the contract specifications.

1. The certification shall be issued from the manufacturer and shall include the specification and the batch number.

2. The paint containers shall have the manufacturer's name, the specification and the batch number matching the certification.

C. If no batch number is indicated on the certification or containers, sample the paint according to the procedure for the corresponding paint type.

D. If the I.D.A. Engineer of Materials indicates that batch number has not been previously sampled and tested, sample the paint according to the procedure for the corresponding paint type. The Division of Aeronautics will provide paint cans upon request by the Resident Engineer. Samples will only be taken in new epoxy lined cans so that the paint will not be contaminated. It is important to seal the sample container immediately with a tight cover to prevent the loss of volatile solvents.

Mark the sample cans with the paint color, manufacturer's name, and batch number. The paint samples and manufacturer's certification shall be placed in the mail within 24 hours after sampling. Address the samples to the Materials Certification Engineer at:

Illinois Department of Transportation
Division of Aeronautics
One Langhorne Bond Drive
Springfield, Illinois 62707

Sampling Procedures for Each Paint Type:

1. Waterborne or Solvent Base Paints
   a. Take the paint sample from the spray nozzle when the contractor begins marking. A sample consists of two one-pint cans taken per batch number.
   b. Be sure to indicate to the contractor that acceptance of material is based upon a passing test of the paint material.

2. Epoxy Paint
   a. Take separate one-pint samples of each paint component prior to marking. Before drawing samples, the contents of each component's container must be thoroughly mixed to make certain that any settled portion is fully dispersed. **Do not combine the two components or sample from the spray nozzle.**
   b. Be sure to indicate to the contractor that acceptance of material is based upon a passing test of the paint material.

III. TESTING

The paint will be tested for acceptance by the IDOT Bureau of Materials and Physical Research for conformance to the contract specifications.

Steven J. Long, P.E.
Acting Chief Engineer

Supersedes policy memorandum 97-2 dated February 27, 2002

APPENDIX 5 – SWPPP

Storm Water Pollution Prevention Plan

IDOT BDE - 2342

Storm Water Pollution Prevention Plan

Route N/A Marked N/A

Section SPARTA – SPARTA COMMUNITY AIRPORT Project No. SAR-4583

County RANDOLPH

This plan has been prepared to comply with the provisions of the NPDES Permit Number ILR10, issued by the Illinois Environmental Protection Agency for storm water discharges from Construction Site Activities.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature Date

SAR Airport Manager
Title

1. Site Description

a. The following is a description of the construction activity which is the subject of this plan (use additional pages, as necessary):

Mill & overlay existing t-hangar taxilanes; construct new t-hangar building and new taxiway approaches; rehabilitate hangar 1: repaint hangar roof, exterior walls, & upgrade building wiring, drainage improvements, pavement marking, and other incidental work as shown in the plans.

b. The following is a description of the intended sequence of major activities which will disturb soils for major portions of the construction site, such as grubbing, excavation and grading (use additional pages, as

The improvements will consist of the following: Removing existing soil from borrow area to the east of the project, constructing new drainage swales and concrete storm drainage system, backfilling and constructing the new t-hangar building pad, and utility installations / relocations.

c. The total area of the construction site is estimated to be **4±** acres.

The total area of the site that it is estimated will be disturbed by excavation, grading or other activities **3±** acres.

d. ~~The estimated runoff coefficients of the various areas of the site after construction activities are completed are contained in the project drainage study which is hereby incorporated by reference in this plan. Information describing the soils at the site is contained either in the Soils Report for the project, which is hereby incorporated by reference, or in an attachment to this plan~~.

e. The ~~design/project report, hydraulic report, or~~ plan documents, hereby incorporated by reference, contain site map(s) indicating drainage patterns and approximate slopes anticipated after major grading activities, areas of major soil disturbance, the location of major structural and nonstructural controls identified in the plan, the location of areas where stabilization practices are expected to occur, surface waters (including wetlands), and locations where storm water is discharged to a surface water.

f. ~~The names of receiving water(s) and areal extent of wetland acreage at the site are in the design/project report or plan documents which are incorporated by reference as a part of this plan.~~

2. Controls

This section of the plan addresses the various controls that will be implemented for each of the major construction activities described in 1.b. above. For each measure discussed, the contractor that will be responsible for its implementation is indicated. Each such contractor has signed the required certification on forms which are attached to, and a part of, this plan:

a. Erosion and Sediment Controls

(i) Stabilization Practices. Provided below is a description of interim and permanent stabilization practices, including site-specific scheduling of the implementation of the practices. Site plans will ensure that existing vegetation is preserved where attainable and disturbed portions of the site will be stabilized. Stabilization practices may include: temporary seeding, permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other appropriate measures. Except as provided in 2.a.(i).(A) and 2.b., stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after the construction activity in that portion of the site has temporarily or permanently ceased on all disturbed portions of the site where construction activity will not occur for a period of 21 or more calendar days.

(A) Where the initiation of stabilization measures by the 14th day after construction activity temporarily or permanently ceases is precluded by snow cover, stabilization measures shall be initiated as soon as practicable thereafter.

Description of Stabilization Practices (use additional pages, as necessary):

1. **Temporary Stabilization - In areas of new soil embankments, existing vegetation and inlet protection will serve to intercept the waterborne silts and prevent it from entering the storm drain system or leaving the site such as the proposed knitted straw mat placed in locations as needed. See plan sheets.**
2. **Permanent Stabilization - All areas disturbed by construction operations will be stabilized with permanent seeding and mulching following final grading. Erosion control blanket will be placed in problem locations as needed. See plan sheets.**

(ii) Structural Practices. Provided below is a description of structural practices that will be implemented, to the degree attainable, to divert flows from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from exposed areas of the site. Such practices may include silt fences, earth dikes, drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, rock outlet protection, reinforced soil retaining systems, gabions and temporary or permanent sediment basins. The installation of these devices may be subject to Section 404 of the Clean Water Act.

Description of Structural Practices (use additional pages, as necessary):

- ***Inlet Protection*** **- In-place before all earthmoving activities to prevent waterborne silts from entering the existing storm drain system. The purpose of this practice is to help prevent sediment from entering storm drains until the contributing watershed is stabilized and allows early use of the storm drainage system.**
- ***Silt Fence*** - **In-place before all earthmoving activities to prevent waterborne silts from entering the existing storm drain systems and existing / new swales. The purpose of this practice is to help prevent unwanted sediment from traveling across the project area until the contributing watershed is stabilized and allows early use of the storm drainage system.**

b. Storm Water Management

Provided below is a description of measures that will be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. The installation of these devices may be subject to Section 404 of the Clean Water Act.

(I) Such practices may include: storm water detention structures (including wet ponds); storm water retention structures; flow attenuation by use of open vegetated swales and natural depressions; infiltration of runoff on site; and sequential systems (which combine several practices).

The practices selected for implementation were determined on the basis of the technical guidance in Section 10-300 (Design Considerations) in Chapter 10 (Erosion and Sedimentation Control) of the Illinois Department of Transportation Drainage Manual. If practices other than those discussed in Section 10-300 are selected for implementation or if practices are applied to situations different from those covered in Section 10-300, the technical basis for such decisions will be explained below.

(ii) Velocity dissipation devices will be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., maintenance of hydrologic conditions, such as the hydroperiod and hydrodynamics present prior to the initiation of construction activities).

Description of Storm Water Management Controls (use additional pages, as necessary):

The existing storm water management system will continue to be utilized after construction.

c. Other Controls

(i) Waste Disposal. No solid materials, including building materials, shall be discharged into Waters of the State, except as authorized by a Section 404 permit.

(ii) The provisions of this plan shall ensure and demonstrate compliance with applicable State and/or local waste disposal, sanitary sewer or septic system regulations.

(iii) Prevent offsite tracking of sediments and generation of dust. Stabilized construction entrances or vehicle washing racks should be installed at locations where vehicles leave the site. Where dust may be a problem, implement dust control measures such as irrigation.

d. Approved State or Local Plans

The management practices, controls and provisions contained in this plan will be in accordance with IDOT specifications, which are at least as protective as the requirements contained in the Illinois Environmental Protection Agency's Illinois Urban Manual, 1995. Procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials shall be described or incorporated by reference in the space provided below. Requirements specified in sediment and erosion site plans or site permits or storm water management site plans or site permits approved by local officials that are applicable to protecting surface water resources are, upon submittal of an NOI to be authorized to discharge under permit ILR10 incorporated by reference and are enforceable under this permit even if they are not specifically included in the plan.

Description of procedures and requirements specified in applicable sediment and erosion site plans or storm water management plans approved by local officials:

Not applicable.

3. Maintenance

The following is a description of procedures that will be used to maintain, in good and effective operating conditions, vegetation, erosion and sediment control measures and other protective measures identified in this plan (use additional pages, as necessary):

During construction, the contractor shall:

- **Clean up, stabilize and grade work area to eliminate concentration of runoff.**
- **Maintain or replace erosion control items as directed by the Resident Engineer.**

All maintenance of erosion control systems will be the responsibility of the contractor. All locations where vehicles enter and exit the construction site and all other areas subject to erosion should also be inspected periodically. Inspection of these areas shall be made at least once every seven days and within 24 hours of the end of each 0.5 inches or greater rainfall, or an equivalent snowfall.

Contractor shall follow inspection procedures as described in the Inspections section below. The contractor's responsibility shall end *after* final acceptance of the project.

4. Inspections

Qualified personnel shall inspect disturbed areas of the construction site which have not been finally stabilized, structural control measures, and locations where vehicles enter or exit the site. Such inspections shall be conducted at least once every seven (7) calendar days and within 24 hours of the end of a storm that is 0.5 inches or greater or equivalent snowfall.

a. Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures identified in the plan shall be observed to ensure that they are operating correctly. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles enter or exit the site shall be inspected for evidence of off site sediment tracking.

b. Based on the results of the inspection, the description of potential pollutant sources identified in section 1 above and pollution prevention measures identified in section 2 above shall be revised as appropriate as soon as practicable after such inspection. Any changes to this plan resulting from the required inspections shall be implemented within 7 calendar days following the inspection.

c. A report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of this storm water pollution prevention plan, and actions taken in accordance with section 4.b. shall be made and retained as part of the plan for at least three (3) years after the date of the inspection. The report shall be signed in accordance with Part VI. G of the general permit.

d. If any violation of the provisions of this plan is identified during the conduct of the construction work covered by this plan, the Resident Engineer or Resident Technician shall complete and file an "Incidence of Noncompliance" (ION) report for the identified violation. The Resident Engineer or Resident Technician shall use forms provided by the Illinois Environmental Protection Agency and shall include specific information on the cause of noncompliance, actions which were taken to prevent any further causes of noncompliance, and a statement detailing any environmental impact which may have resulted from the noncompliance. All reports of noncompliance shall be signed by a responsible authority in accordance with Part VI. G of the general permit.

The report of noncompliance shall be mailed to the following address:

Illinois Environmental Protection Agency
Division of Water Pollution Control
Attn: Compliance Assurance Section
1021 North Grand East
Post Office Box 19276
Springfield, Illinois 62794-9276

5. Non-Storm Water Discharges

Except for flows from fire fighting activities, sources of non-storm water that is combined with storm water discharges associated with the industrial activity addressed in this plan must be described below. Appropriate pollution prevention measures, as described below, will be implemented for the non-storm water component(s) of the discharge. (Use additional pages as necessary to describe non-storm water discharges and applicable pollution control measures).

Not applicable.

Contractor Certification Statement

This certification statement is a part of the Storm Water Pollution Prevention Plan for the project described below, in accordance with NPDES Permit No. ILR10, issued by the Illinois Environmental Protection Agency on May 14, 1998.

Project Information: Realign and Widen Taxiway C

Route N/A Marked N/A

Section SPARTA – SPARTA COMMUNITY AIRPORT Project No. SAR-4583

County RANDOLPH

I certify under penalty of law that I understand the terms of the general National Pollutant Discharge Elimination System (NPDES) permit (ILR 10) that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification.

Signature

Date

Title

Name of Firm

Street Address

City

IL
State

Zip Code

Telephone Number

APPENDIX 6 – Buy American Requirements

Chapter 501
Buy American Preference
Section 50101

49 U.S.C.

United States Code, 2009 Edition
Title 49 - TRANSPORTATION
SUBTITLE VII - AVIATION PROGRAMS
PART E - MISCELLANEOUS
CHAPTER 501 - BUY-AMERICAN PREFERENCES
Sec. 50101 - Buying goods produced in the United States
From the U.S. Government Printing Office, www.gpo.gov

§50101. Buying goods produced in the United States

(a) Preference.—The Secretary of Transportation may obligate an amount that may be appropriated to carry out section 106(k), 44502(a)(2), or 44509, subchapter I of chapter 471 (except section 47127), or chapter 481 (except sections 48102(e), 48106, 48107, and 48110) of this title for a project only if steel and manufactured goods used in the project are produced in the United States.

(b) Waiver.—The Secretary may waive subsection (a) of this section if the Secretary finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) the steel and goods produced in the United States are not produced in a sufficient and reasonably available amount or are not of a satisfactory quality;

(3) when procuring a facility or equipment under section 44502(a)(2) or 44509, subchapter I of chapter 471 (except section 47127), or chapter 481 (except sections 48102(e), 48106, 48107, and 48110) of this title—

(A) 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

(B) final assembly of the facility or equipment has occurred in the United States; or

(4) including domestic material will increase the cost of the overall project by more than 25 percent.

(c) Labor Costs.—In this section, labor costs involved in final assembly are not included in calculating the cost of components.

(Pub. L. 103–272, §1(e), July 5, 1994, 108 Stat. 1298, §49101; renumbered §50101 and amended Pub. L. 104–287, §5(88)(D), (89), Oct. 11, 1996, 110 Stat. 3398.)

Historical and Revision Notes
Pub. L. 103–272

Revised Section	*Source (U.S. Code)*	*Source (Statutes at Large)*
49101(a)	49 App.:2226a(a).	Nov. 5, 1990, Pub. L. 101–508, §9129, 104 Stat. 1388–371.
49101(b)	49 App.:2226a(b).	
49101(c)	49 App.:2226a(c).	

In this chapter, the word “goods” is substituted for “product” and “products” for consistency.

In subsection (a), the words "Notwithstanding any other provision of law" are omitted as surplus. The words "after November 5, 1990" are omitted as obsolete.

In subsection (b), before clause (1), the words "The Secretary may waive" are substituted for "shall not apply" for consistency. In clause (2), the words "steel and goods" are substituted for "materials and products" for consistency. In clause (4), the word "contract" is omitted as surplus.

PUB. L. 104–287, §5(89)

This makes a clarifying amendment to 49:50101(a) and (b)(3), 50102, 50104(b)(1), and 50105, as redesignated by clause (88)(D) of this section, because 49:47106(d) was struck by section 108(1) of the Federal Aviation Administration Authorization Act of 1994 (Public Law 103–305, 108 Stat. 1573).

AMENDMENTS

1996—Pub. L. 104–287, §5(88)(D), renumbered section 49101 of this title as this section.

Subsecs. (a), (b)(3). Pub. L. 104–287, §5(89), substituted "section 47127" for "sections 47106(d) and 47127".

USE OF DOMESTIC PRODUCTS

Pub. L. 103–305, title III, §305, Aug. 23, 1994, 108 Stat. 1592, provided that:

"(a) Prohibition Against Fraudulent Use of 'Made in America' Labels.—(1) A person shall not intentionally affix a label bearing the inscription of 'Made in America', or any inscription with that meaning, to any product sold in or shipped to the United States, if that product is not a domestic product.

"(2) A person who violates paragraph (1) shall not be eligible for any contract for a procurement carried out with amounts authorized under this title [enacting section 47509 of this title, amending sections 44505 and 48102 of this title, and enacting provisions set out as notes under this section and section 40101 of this title], including any subcontract under such a contract pursuant to the debarment, suspension, and ineligibility procedures in subpart 9.4 of chapter 1 of title 48, Code of Federal Regulations, or any successor procedures thereto.

"(b) Compliance With Buy American Act.—(1) Except as provided in paragraph (2), the head of each office within the Federal Aviation Administration that conducts procurements shall ensure that such procurements are conducted in compliance with sections 2 through 4 of the Act of March 3, 1933 (41 U.S.C. 10a through 10c [41 U.S.C. 10a—10b–1], popularly known as the 'Buy American Act').

"(2) This subsection shall apply only to procurements made for which—

"(A) amounts are authorized by this title to be made available; and

"(B) solicitations for bids are issued after the date of the enactment of this Act [Aug. 23, 1994].

"(3) The Secretary, before January 1, 1995, shall report to the Congress on procurements covered under this subsection of products that are not domestic products.

"(c) Definitions.—For the purposes of this section, the term 'domestic product' means a product—

"(1) that is manufactured or produced in the United States; and

"(2) at least 50 percent of the cost of the articles, materials, or supplies of which are mined, produced, or manufactured in the United States."

Similar provisions were contained in the following prior authorization act: Pub. L. 102–581, title III, §305, Oct. 31, 1992, 106 Stat. 4896.

PURCHASE OF AMERICAN MADE EQUIPMENT AND PRODUCTS

Pub. L. 103–305, title III, §306, Aug. 23, 1994, 108 Stat. 1593, provided that:

"(a) Sense of Congress.—It is the sense of Congress that any recipient of a grant under this title [enacting section 47509 of this title, amending sections 44505 and 48102 of this title, and enacting provisions set out as notes under this section and section 40101 of this title], or under any amendment made by this title, should purchase, when available and cost-effective, American made equipment and products when expending grant monies.

"(b) Notice to Recipients of Assistance.—In allocating grants under this title, or under any amendment made by this title, the Secretary shall provide to each recipient a notice describing the statement made in subsection (a) by the Congress."