12A

Letting January 18, 2019

Notice to Bidders, Specifications and Proposal

Illinois Department of Transportation

Springfield, Illinois 62764

Contract No. DU085
DuPage Airport
West Chicago, Illinois
DuPage County
Illinois Project No. DPA-4651
SBG Project No. 3-17-SBGP-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 January 18, 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. DU085
   DuPage Airport
   West Chicago, Illinois
   DuPage County
   Illinois Project No. DPA-4651
   SBG Project No. 3-17-SBGP-144

   Phase 2: Echo T-Hangar Asphalt Pavement Rehabilitation

   For engineering information, please contact Michael Fox of CH2M at 937.367.3052.

3. **INSTRUCTIONS TO BIDDERS**.

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

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

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

5. **PRE-BID CONFERENCE.** A mandatory pre-bid meeting will be held on Thursday, January 03, 2019 at 10:00 AM in the DuPage Airport Authority at 2700 International Drive, Suite 200, West Chicago, IL 60185. Location Notes - 2nd Floor Conference Room. Meeting Description - No electronic video conferencing will be available. Potential bidders arriving after 10:00 AM will NOT be counted in attendance and will NOT be authorized to bid. For engineering information, contact Michael Fox of CH2M at (937-367-3052). The pre-bid meeting is mandatory for all potential prime contractors interested in bidding. Registered subcontractors and certified disadvantaged business enterprise subcontractors are encouraged to attend. The meeting will begin at 10:00 AM at which time, after a final call for everyone to sign in, the sign-in sheets will be copied. Attendees who show up after the presentation is underway will not be allowed to sign-in thereby not being considered in attendance. Failure on the prime contractor's part to attend will cause the contractor's request for authorization to bid to be denied.

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

7. **SPECIFICATIONS AND DRAWINGS.** The work shall be done in accordance with the Illinois Standard Specifications for Construction of Airports, the Special Provisions dated November 16, 2018, and the Construction Plans dated November 16, 2018 as approved by the Illinois Department of Transportation, Division of Aeronautics.

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

   a. Additive Alternates

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

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

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

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

   b. Optional Alternates

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

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

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

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

   The contract time for this contract is 10 calendar days.

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

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

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

By Order of the
Illinois Department of Transportation

Randall S. Blankenhorn,
Secretary

Illinois Department of Transportation

Division of Aeronautics
Proposal Bid Bond

Sponsor _____ Item No. _____

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

KNOW ALL MEN BY THESE PRESENTS, That We _____

_____

as PRINCIPAL, and _____

_____ as SURETY, are

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

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

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

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

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

PRINCIPAL **SURETY**

_____ _____
(Company Name) (Company Name)

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

Notary Certification for Principal and Surety

STATE OF ILLINOIS,
County of _____

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

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

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

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

My commission expires _____ _____
Notary Public

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

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

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

ILLINOIS DEPARTMENT OF TRANSPORTATION
DIVISION OF AERONAUTICS

REQUIRED CONTRACT PROVISIONS FOR STATE FUNDED AIRPORT CONSTRUCTION PROJECTS

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

DISADVANTAGED BUSINESS POLICY

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

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

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

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

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

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

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

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

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

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

The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of contracts funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

(a) Withholding progress payments;

(b) Assessing sanctions;

(c) Liquidated damages; and/or

(d) Disqualifying the Contractor from future bidding as non-responsible.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(e) DBE as a material supplier:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SPECIAL PROVISION FOR SUBCONTRACTOR MOBILIZATION PAYMENTS
Effective: November 2, 2017

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

This mobilization payment shall be made at least 14 days prior to the subcontractor starting work. The amount paid shall be 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 Article 90-07 of the Standard Specifications, the Contractor shall make a corresponding payment to each subcontractor and material supplier in proportion to the work satisfactorily completed by each subcontractor and for the material supplied to perform any work of the contract. The proportionate amount of partial payment due to each subcontractor and material supplier throughout the contracting chain shall be determined by the quantities measured or otherwise determined as eligible for payment by the Department and included in the progress payment to the Contractor. Subcontractors and material suppliers shall be paid by the Contractor within 15 calendar days after the receipt of payment from the Department. The Contractor shall not hold retainage from the subcontractors. These obligations shall also apply to any payments made by subcontractors and material suppliers to their subcontractors and material suppliers; and to all payments made to lower tier subcontractors and material suppliers throughout the contracting chain. Any payment or portion of a payment subject to this provision may only be withheld from the subcontractor or material supplier to whom it is due for reasonable cause. 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 10 calendar days, unless additional time is granted by the Engineer in accordance with the provisions of the specifications. In case of failure to complete the work on or before the time named herein, or within such extra time as may have been allowed by extensions, the bidder agrees that the Department of Transportation shall withhold from such sum as may be due him/her under the terms of this contract, the costs, as set forth in Section 80-09 Failure to Complete on Time of the Standard Specifications, which costs shall be considered and treated not as a penalty but as damages due to the State from the bidder by reason of the failure of the bidder to complete the work within the time specified in the contract.

State of Illinois
Department of Transportation

SPECIAL PROVISION
FOR
SECTION 80 PROSECUTION AND PROGRESS

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

80-09 FAILURE TO COMPLETE ON TIME.

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

ADD:

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

State of Illinois
Department of Transportation

SPECIAL PROVISION
FOR
SECTION 90 MEASUREMENT AND PAYMENT

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

90-07 PARTIAL PAYMENTS.

DELETE: The entire section.

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

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

No partial payment shall bind the Department to the acceptance of any materials or work in place as to quality or quantity. All partial payments are subject to correction at the time of final payment as provided in Section 90-09 ACCEPTANCE AND FINAL PAYMENT.

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

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

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

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

90-10 TRUST AGREEMENT OPTION.

DELETE: The entire section.

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

A1 ACCESS TO RECORDS AND REPORTS

A1.1 CONTRACT CLAUSE

ACCESS TO RECORDS AND REPORTS

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

A2 AFFIRMATIVE ACTION REQUIREMENTS

A2.1 SOLICITATION CLAUSE

NOTICE OF REQUIREMENT FOR AFFIRMATIVE ACTION TO ENSURE EQUAL EMPLOYMENT OPPORTUNITY

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

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

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

AREA COVERED (STATEWIDE)

Goals for Women apply nationwide.

GOAL

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

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

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

3740 Kankakee, IL - 9.1
IL - Kankakee

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

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

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

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

7880 Springfield, IL - 4.5
IL - Menard, Sangamon

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

086 Quincy, IL:
Non-SMSA Counties 3.1

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

4. As used in this notice and in the contract resulting from this solicitation, the "covered area" is West Chicago, Illinois; DuPage 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 DuPage 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 DuPage 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.

CONTRACT SPECIFICATIONS

PHASE 2: ECHO T-HANGAR ASPHALT PAVEMENT REHABILITATION

DuPage Airport
West Chicago, IL

Illinois Department of Transportation – Division of Aeronautics

IL Project DPA-4651 A.I.P Project 3-17-SBGP-144

CH2M HILL
MICHAEL VONIC, P.E.
DATE SIGNED: 11/16/2018

THIS SEAL APPLIES TO ALL SHEETS

EXPIRATION DATE: 11/30/2019

LICENSED PROFESSIONAL ENGINEER
MICHAEL VONIC
062062420
OF ILLINOIS

Prepared by:

ch2m.
8735 West Higgins
Suite 400
Chicago, IL 60631

DUPAGE AIRPORT AUTHORITY
PHASE 2: ECHO T-HANGAR ASPHALT PAVEMENT REHABILITATION
IL PROJECT NUMBER DPA-4651
A.I.P. PROJECT 3-17-SBGP-144

SPECIAL PROVISIONS

GENERAL

These Special Provisions, together with applicable Standard Specifications, Rules and Regulations, Contract Requirements for Airport Improvement Projects, Payroll Requirements and Minimum Wage Rates which are hereto attached or which by reference are herein incorporated, cover the requirements of the DuPage Airport Authority for the construction of the subject project at the DuPage Airport, West Chicago, Illinois.

Wherever the word "Engineer" or "Resident Engineer" is used, it shall mean the "Owner's Representative" designated by the DuPage Airport Authority and as defined in Section 10 of the Standard Specifications for Construction of Airports", dated April 1, 2012, State of Illinois Department of Transportation, Division of Aeronautics.

GOVERNING SPECIFICATIONS AND RULES AND REGULATIONS

The specifications contained herein are based on the "Standard Specifications for Construction of Airports", dated April 1, 2012, State of Illinois Department of Transportation, Division of Aeronautics. Should there be a conflict between the Plans and Special Provisions, the Specifications shall take precedence and shall govern. As noted within the Special Provisions, portions of the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction dated April 1, 2016 shall apply as referenced.

DUPAGE AIRPORT AUTHORITY
PHASE 2: ECHO T-HANGAR ASPHALT PAVEMENT REHABILITATION
CONTRACT NO. DU085

SPECIAL PROVISIONS

TECHNICAL SPECIFICATIONS

The following section contains technical specifications to be utilized on this project. Within these specifications are State of Illinois, Department of Transportation, Division of Aeronautics "Standard Specifications for Construction of Airports (marked with "*")", dated April 1, 2012. The Contractor is to note the modifications made to the State of Illinois Standard Specifications. These modifications appear in two forms:

~~**strikeouts**~~: Language shown in this manner is to be ignored applicable to the work.

Italics: Language shown in this manner is additional language, which is relevant to, and is part of the contract documents, for this specific project.

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ITEM 150520 MOBILIZATION

DESCRIPTION

150-1.1 This item shall include all activities and associated costs related to transportation of contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the contractor's operations at the site; premiums paid for performance and payment bonds including coinsurance and reinsurance agreements as applicable.

This item includes mobilization required by the contract at the time of notice to proceed. If additional mobilization activities and costs are required during the performance of the contract as a result of added items of work, such costs shall be included in the unit price for the item or items of work added. This does not apply to any approved "time and materials work."

This item also includes all efforts related to restoration of the project site, staging area and haul road as directed in the bidding documents at the conclusion of the job. This activity includes, but is not limited to, incidental grading, seeding and clean-up, as required to restore the project site to original condition.

METHOD OF MEASUREMENT

150-2.1 This item shall consist of the mobilization of the contractor's forces and equipment necessary for performing the work required under the contract. It does not include mobilization for specific items of work for which payment is provided elsewhere in the contract.

Transportation of any materials incorporated into the permanent works shall not be considered a mobilization item.

All roads, parking lots, fences, structures, etc., shall be protected from damage by equipment during the contract period.

Access shall be as shown on the drawings. Alternate access routes must be approved by the Engineer prior to use. All access routes shall be restored by the contractor to a condition equal to or better than the condition prior to the commencement of work under this contract.

BASIS OF PAYMENT

150-3.1 This work shall be paid for at the lump sum price for Mobilization. The amount which a Contractor will receive payment for, according to the following schedule, will be limited to six percent of the original contract amount. Should the bid for mobilization exceed six percent, the amount over six percent will not be paid until 90 percent of the adjusted contract value is earned.

A. Upon issuance of the Notice to Proceed, 50 percent of the pay item will be paid.

B. When ten percent of the original contract amount is earned, an additional 10 percent of the pay item will be paid.

C. The remaining 40 percent of the pay item will be paid along with any amount bid in excess of six

percent of the original contract amount upon final acceptance of the project by the engineer. Final acceptance includes satisfactory completion of all punch list items in accordance with written instruction from the engineer as well as acceptance of all final documentation.

Nothing herein shall be construed to limit or preclude partial payment for other items as provided for by the contract.

Payment will be made under:

Item AR150520	*Mobilization– per Lump Sum (LS)*

END OF ITEM 150520

ITEM 150530 TRAFFIC MAINTENANCE

DESCRIPTION

150-1.1 The work under this Section consists of furnishing all measures required to maintain the safe and orderly movement of traffic in and around the construction areas as shown on the Plans and as described in these Technical Specifications.

GENERAL

150-2.1 This Article covers the Contractor's responsibilities for maintaining the optimum level of safety and the operating efficiency of the project site during construction. The Contractor shall be responsible for all activities under his control. The Contractor shall maintain safe operations on the project site as the site will be utilized by the public during construction.

MARKING AND LIGHTING OF CONSTRUCTION AREAS.

150-3.1 The Contractor shall install lighting, marking, barrel and/or Illinois Department of Transpiration (IDOT) Type II barricades, lighted commercial barricades, lighted concrete/plastic barricades, signs and other measures to delineate closed and hazardous areas during construction.

LOOSE MATERIALS AND DEBRIS.

150-4.1 Loose materials shall be removed and placed in protected areas or otherwise secured to prevent dispersal. Debris shall be promptly removed whether generated from the Contractor's operations or not. The Contractor shall exercise care in the transportation of materials. Materials tracked or spilled shall be removed immediately. When hauling, loading, grading, or when any of the Contractor's activities are likely to cause the deposit of loose materials, it shall be immediately removed using powered vacuum, powered sweeps, by hand sweepers, loaders, trucks, etc., as necessary.

VEHICLES AND MOBILE EQUIPMENT.

150-5.1 All Contractor vehicles and mobile equipment shall be identified by three foot (3') square checkered orange and white flags whenever such vehicle and equipment is operating on the site as detailed in the plans. In addition, such vehicles and equipment-shall have the Contractor's name clearly affixed on each side of such vehicles and equipment, all in accordance with current DuPage Airport Authority (DAA) requirements. ~~During the hours between 30 minutes before sunset and 30 minutes after sunrise and at all times when visibility is impaired,~~ Vehicles and mobile equipment shall also be equipped with a revolving yellow beacon light mounted on the top of the vehicle or equipment. Beacon lights shall provide:

- Three hundred and sixty degree azimuth coverage.
- Effective intensity in the horizontal plane not less than 40 or more than 400 candelas.

- Beam spread measured to 1/10 peak intensity extending from 10 degrees to 15 degrees above the horizontal.

- Sixty to ninety flashes per minute.

No crane shall be allowed on the work site until the equipment and its intended operation is approved by Airport Operations. The Contractor shall provide the Resident Engineer and Airport Operations with not less than 48-hour advance written notice requesting crane access.

When access is approved by DAA, the tip of the crane boom shall be identified by the checkered orange and white flag mentioned above and, if requested or required by AC 150/5370-2, by red obstruction lights. Flagged cranes shall not be left unattended while erect and shall be lowered when not in operation.

CLOSURES.

150-6.1 Prior to the commencement of any demolition or other work, which will cause an interruption, or modification to existing traffic pattern, the Contractor shall confer with, and obtain written authorization from the Resident Engineer and Airport Operations.

OPERATIONS SAFETY INSPECTION.

150-7.1 The entire work site shall be inspected daily and more frequently if construction activities are of a nature that debris may be expected to accumulate on pavements, near buildings or may leave construction zone. Special inspections shall be conducted for each work area prior to return to service. The purpose of these inspections is to ascertain that areas returned to service are in satisfactory condition and that the overall work site and its activities are within the safety criteria set forth in these Contract Documents. Inspections shall be conducted jointly by representatives of the Contractor, the Airport Operations Division and the Resident Engineer. These inspections shall cover the several items noted in and referred by this Article. The report of such inspections shall be filed utilizing the Preparation and Preconstruction checklist forms provided by the DAA.

Any violations of the Safety Criteria found during these inspections shall be rectified immediately by the Contractor. If a violation cannot be corrected on an immediate basis by the Contractor he shall immediately notify the Resident Engineer and Airport Operations.

OPERATIONAL EMERGENCIES.

150-8.1 During periods of severe weather conditions or other operational emergencies, the DAA may direct the Contractor to relinquish areas under construction and to prepare the areas for operations. In this event the Resident Engineer will so direct the Contractor to evacuate the area and the Resident Engineer will specify the limits of the area to be evacuated, the term of evacuation and the conditions governing the restoration work necessary to prepare the area for operation. The Contractor shall promptly and fully comply with the Resident Engineer 's directive. Should the directive entail extra work under the Contract, as determined by the Resident Engineer , the Contractor will be reimbursed for such extra work. Should the directive entail a delay in the completion of the Contract or any defined subdivision of the contract, as determined by the Resident Engineer , the Contractor may be granted an extension of time.

FINAL CLEANUP.

150-9.1 After work in any work area has been completed and before opening it to traffic, the Contractor shall remove all temporary traffic control devices, complete installation of temporary pavements, and other temporary work and devices installed for traffic control. The Contractor shall restore the site to its original condition or to the revised condition shown on the Plans or otherwise directed by the Resident Engineer and Airport Operations.

MATERIALS AND CONSTRUCTION METHODS

BARREL AND/OR IDOT TYPE II BARRICADES.

150-10.1 The Contractor shall install and maintain barrel and/or IDOT Type II barricades in the locations shown on the Plans, in accordance with the approved layout for each construction area, and as directed by the Resident Engineer . Barrel and/or IDOT Type II barricades shall be in accordance with the details shown on the Plans including barrels, lights, ropes, flags, sand bags and all incidentals necessary for a complete working system. Barricades shall be weighted immediately upon installation, as necessary to prevent displacement by ambient wind. Barricade lines shall be inspected each day and repaired or replaced as necessary to meet the requirements of the approved Safety and TRAFFIC MAINTENANCE Plans.

CONCRETE BARRIERS.

150-11.1 Temporary concrete barriers for traffic control and protection shall be New Jersey type precast concrete barriers conforming to the requirements of ASTM C 825.

The temporary concrete barrier sections shall be capable of being interlocked and shall be provided with warning flags, steady burning lights and/or flashing lights as required and shall be provided with grooves to allow flow of surface drainage.

The temporary concrete barriers need not be new, but shall be structurally sound, of a quality and type meeting the requirements of these specifications and shall be subject to the Resident Engineer 's approval.

Temporary concrete barriers shall, at the conclusion or when no longer needed, be relocated or removed and disposed in accordance with local, state, and federal laws.

PLASTIC BARRICADES.

150-12.1 Plastic barricades shall consist of an I-beam section manufactured of molded plastic barricade panel suspended by means of toggle system, from a molded plastic cone.

The plastic barricade (I-beam section and cones) shall be manufactured from Polyethylene high density, compounded with Ultra Violet Stabilizer to protect it against ultra violet exposure and outdoor weathering.

The assembly shall be designed to remain usable following vehicular impact.

The cone shall consist of a stem and a base. The base shall be hollow and so manufactured as to allow for external and internal ballasting (using water, sand or other suitable material), to provide a ballast weight of approximately 20 lbs.

The I-beam section shall be capable of being mounted (using a flexible toggle system) on the plastic cones. The cones shall be designed to support the I-beam sections and also to support traffic lights.

The plastic barricade assembly shall be impregnated with traffic orange color. White reflective sheeting shall be applied to the I-beam section to form a series of alternating 6 -inch wide stripes, traffic orange and reflective white, at 45° angle.

The dimensions of the various elements of the plastic barricade system shall be as follows:

Cones	
Overall Height	45"
Base Dimension	18" x 18" x 4"
Weight (Unballasted)	7 3/4 lbs.
Outside diameter stem	
Top	3 1/4"
Bottom	6"
Wall Thickness	1/8" ±1/32"
I-Beam Section	
Depth (reflective areas)	8"
Lengths (as approved by the Resident Engineer)	36" or 48"
Wall Thickness	1.2 lbs. per foot

Plastic barricades shall only be used when specifically shown on the Plans or approved by the Resident Engineer.

MEASUREMENT AND PAYMENT.

150-13.1 ~~There shall be no measurement or payment for Maintenance of Air Operations Area Traffic. This work shall be incidental to the contract and shall include all preparation, delivering and installation of these materials, and for all labor, equipment, tools and incidentals necessary to complete the item; including removal/repositioning for individual phases.~~ Measurement and payment will be based on the contract lump sum price for TRAFFIC MAINTENANCE. This price shall be full compensation for furnishing all labor, equipment, materials, barricades, equipment, tools and incidentals necessary to complete the item.

Partial payments for TRAFFIC MAINTENANCE shall be made in accordance with the following schedule:

Percent of Original Contract Amount Earned	Cumulative Percent of Lump Sum Price Payable*
5	25
25	50
50	75
75	90
100	100

* Partial payments in accordance with the schedule will be limited to 10% of the original Contract amount for the project. The 10% limit and payment schedule noted above apply individually to the base bid and each bid alternate. Any remaining amount(s) will be paid upon completion of all work under the project.

Payment shall be made under:

Item AR150530 *TRAFFIC MAINTENANCE – per Lump Sum (LS)*

END OF ITEM 150530

ITEM 152511 SUBGRADE REPAIR

DESCRIPTION

152-1.1 This item shall consist of all construction to meet the dimensions and typical section shown on the plans, including any saw cutting, excavating, removing, and satisfactorily disposing of all materials; backfilling required excavation associated with this item with a section as detailed in the plans and typical sections consisting of crushed aggregate base course, bituminous base course and bituminous surface course within the limits of the work as directed by the Resident Engineer or as required to construct the areas of denoted in the plans. All construction associated with this item, including but not limited to the removal of the existing pavement section and replacement with proposed pavement section; shall be in accordance with these specifications and in conformity with the dimensions and typical section shown on the plans and with the lines and grades established by the Resident Engineer.

All suitable material taken from excavation shall be hauled offsite at the expense of the contractor or hauled to an area within the airfield as directed by the Resident Engineer.

CONSTRUCTION METHODS

GENERAL

152-2.1. Following the work associated with Item 401650 Bituminous Milling, in areas determined by the Resident Engineer, this item, Subgrade Repair, shall consist of all work to remove the additional bituminous existing pavement section and a portions of existing aggregate base course. Only in areas directed by the Resident Engineer, the subgrade repair shall be carried to the necessary depth to obtain the specified material depth as shown on the plans. Should the Contractor, through negligence or other fault, excavate below or beyond the designated lines, he/she shall replace the pavement section with approved materials, in an approved manner and condition, at his/her own expense. The Resident Engineer shall have complete control over the excavation, moving, placing, and disposition of all material.

Within the determined limits of the Subgrade Repair, once the required excavations have taken place to the necessary depth to obtain the specified material depth as shown on the plans, crushed aggregate base course, bituminous base course and bituminous surface course to the lines and grades depicted on the plans shall replace the excavated material. Payment for these backfilled layers are to be included in the unit cost for this item.

No payment will be made for any excavated material which is used for purposes other than those designated.

If it is necessary to interrupt existing surface drainage, sewers or underdrainage, conduits, utilities, or similar underground structures, or parts thereof, the Contractor shall be responsible for and shall take all necessary precautions to protect and preserve or provide temporary services. When such facilities are encountered, the Contractor shall notify the Resident Engineer, who shall arrange for their removal, if necessary. The Contractor shall, at his/her own expense, satisfactorily repair all damage to such facilities or structures which may result from any of his/her operations during the period of the contract.

PREPARATION AND PROTECTION OF THE TOP OF THE SUBGRADE

152-2.2 On Subgrade Repair areas to be paved, the specified depth in cut areas shall be compacted to the density as noted in the Standard Specifications. Subgrade areas of SUBGRADE REPAIR, as denoted and outlined by the Resident Engineer, shall be proof rolled to the acceptance of the Resident Engineer before subgrade material will be deemed acceptable. When subgrade material is accepted and completed, the surface shall be true to the lines, grades, and cross section shown on the plans or as directed by the Resident Engineer. After all drains, structures, ducts, and other underground appurtenances under the pavement have been completed, the backfilled bituminous pavement, true to the lines, grades, and cross section shown on the plans or as directed by the Resident Engineer, shall be compacted to the density specified in the Standard Specifications or as directed by the Resident Engineer. Any irregularities or depressions that develop under proof rolling shall be corrected by loosening the material at these places and adding, removing, or replacing material until the surface is smooth and uniform.

HAUL

152-2.3 No payment will be made separately or directly for haul on any part of the work. All hauling will be considered a necessary and incidental part of the work and its cost shall be considered by the Contractor and included in the contract unit price for the pay items of work involved.

The Contractor shall take special precautions when hauling excavated material so as not to create deep ruts in the hauling areas designated by the Resident Engineer. All existing graded, turfed, sodded and/or farmed areas which are disturbed or rutted by the Contractor, during all his/her hauling operations, shall be regraded, returfed and refinished at his/her own expense and to the satisfaction of the Engineer. No claim for haul will be allowed the Contractor.

TOLERANCES

152-2.4 In those areas upon which a subbase or base course is to be placed, the top of the subgrade shall be of such smoothness that, when tested with a 16-foot straightedge applied parallel and at right angles to the centerline, it shall not show any deviation in excess of 1/2 inch, or shall not be more than 0.05 foot from the true grade as established by grade hubs or pins. Any deviation in excess of these amounts shall be corrected by loosening, adding, or removing materials, reshaping, and recompacting by sprinkling and rolling.

EQUIPMENT

152-2.5 The Contractor may use any type of equipment he/she may desire or has at his/her disposal, provided the equipment is in a satisfactory condition and is of such capacity that the construction schedule can be maintained as planned by the Contractor and as approved by the Project Engineer in accordance with the total calendar days or working days bid for the construction. The Contractor shall furnish, operate, and maintain such equipment as is necessary to control uniform density, layers, section, and smoothness of grade.

METHOD OF MEASUREMENT

152-3.1 The yardage paid shall be the number of square yards measured in its original position in areas as designated by the Resident Engineer. Measurement shall not include the yardage of material excavated without authorization or beyond limits detailed by the Resident Engineer.

When the Plans have been altered or when disagreement exists between the Contractor and the Resident Engineer as to the accuracy of the plan quantities, either party shall, before any work is started which would affect the measurement, have the right to request in writing and thereby cause the quantities involved to be measured as herein specified.

BASIS OF PAYMENT

152-4.1 Payment shall be made at the contract unit price per square yard for SUBGRADE REPAIR. This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

Payment for SUBGRADE REPAIR shall also include removal of materials and replacement with bituminous materials as shown in the plans at the discretion of the Resident Engineer.

Payment will be made under:

Item AR152511	*Subgrade Repair – per Square Yard (SY)*

END OF ITEM 152

ITEM 156500 TEMPORARY EROSION CONTROL

DESCRIPTION

156-1.1. This work shall consist of constructing temporary and permanent erosion control systems as shown on the plans or as ordered by the Resident Engineer 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, erosion control silt filter fence and temporary seeding.

~~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~~

MATERIALS

156-2.1 SILT FENCE *AND SEDIMENT LOGS*. Silt fence shall ~~either~~ be a prefabricated silt fence meeting the dimensional requirements and details shown in the plans ~~or shall be a silt fence fabricated on site conforming to the requirements contained in Item 161 for 7-bar, 26 inch woven wire fence with metal "T" posts except that no special corner posts, bracing or P.C.C. will be required and a 36" width of filter fabric shall be secured to the bottom of the fence on its upstream side as shown in the plans.~~

Geotextile fabric for silt fence shall consist of woven or nonwoven filaments of polypropylene, polyester or polyethylene. Nonwoven fabric may be needle punched heat-bonded, resin-bonded or combination thereof. The filaments in the Silt Filter Fence Fabric must be dimensionally stable (i.e., to each other), resistant to delamination, and must be free from any chemical treatment or coating that might significantly reduce porosity and permeability. Both fabrics shall be resistant to ultraviolet radiation. If stored on the jobsite prior to its use, it shall be protected from exposure to direct sunlight. The fabrics shall comply with the physical properties.

Physical Properties (English)	**Requirements**
Grab Tensile Strength (lbs), ASTM D 4632 1/	200 (min.)
Grab Elongation @ Break (%), ASTM D 4632 1/	12 (min.)
Burst Strength (psi) – ASTM D 3786 2/	250 (min.)
Trapezoidal Tear Strength (lbs) , ASTM D 4533 2/	--
Width (ft.)	3.5 (min.)
Weight (oz/sq yd.) - ASTM D 3776	4.0 (min.)
Apparent Opening Size (AOS) Sieve No. – ASTM D 4751 2/	30 max. (nonwoven) 50 max. (woven)

1/ The fabric shall be tested wet in both warp and fill directions in accordance with ASTM D 1682, Grab Test, G using a 100 mm (4-inch) by 200-mm (8 inch) sample, 75-mm (3 inch) gauge length, 300-mm (12 inch) per minute in a CRE testing machine. The average of 5 tests in each direction shall meet the minimum value given above.

2/ Manufacturer's certification that the fabric meets the minimum value.

Physical Properties (English)	**Requirements**
Grab Tensile Strength (N), ASTM D 4632 1/	900 (min.)
Grab Elongation @ Break (%), ASTM D 4632 1/	12 (min.)
Burst Strength (kPa) – ASTM D 3786 2/	1720 (min.)
Trapezoidal Tear Strength (N) , ASTM D 4533 2/	--
Width (m.)	1 (min.)
Weight (g/m^2) - ASTM D 3776	135 (min.)
Apparent Opening Size (AOS) Sieve No. – ASTM D 4751 2/	600 µm max. (nonwoven) 300 µm max. (woven)

1/ The fabric shall be tested wet in both warp and fill directions in accordance with ASTM D 1682, Grab Test, G using a 100 mm (4-inch) by 200-mm (8 inch) sample, 75-mm (3 inch) gauge length, 300-mm (12 inch) per minute in a CRE testing machine. The average of 5 tests in each direction shall meet the minimum value given above.

2/ Manufacturer's certification that the fabric meets the minimum value.

Sediment logs shall be installed at the locations and in the manner shown in the plans.

~~156-2.2 BALE STAKES. Shall be four feet minimum length each and be either of sound wood 1" square (minimum) or #4 rebar.~~

156-2.3 HAY OR STRAW BALES. Bales shall be either hay or straw, approved by the Resident Engineer, compacted and adequately bound by wire to the approximate size of 12 x 18 x 36 in. (300 x 400 x 900 mm). The Contractor is responsible for following current Environmental Protection Agency standards to obtain acceptance for a National Pollutant Discharge Elimination System (NPDES) permit. The Contractor is responsible for any changes to the materials in order to approve the permit.

~~156-2.4 TEMPORARY MULCH. Temporary mulch shall meet the requirements of Item 908.~~

~~156-2.5 TEMPORARY SEED. Temporary grass seed shall be a quick growing species (such as cereal grain of wheat, rye or oats) suitable to the area to provide a temporary cover.~~

~~156-2.6 TEMPORARY DITCH CHECKS. Temporary ditch checks shall be constructed with products from the Department's approved list, rolled excelsior, or with aggregate placed on filter fabric when specified.~~

156-2.7 INLET AND PIPE PROTECTION. The protection shall be constructed with hay or straw bales, silt filter fence, or inlet filters.

CONSTRUCTION METHODS

156-3.1 GENERAL. The Contractor shall conduct his/her construction operations in accordance with the latest revision of the Illinois Environmental Protection Agency publication "Standards and

Specifications for Soil Erosion and Sediment Control".

Erosion control must be considered by the Contractor prior to exposing any erodible material. Erosion protection for Contractor-furnished borrow pits, equipment storage sites, plant sites and haul roads shall be provided by the Contractor.

The Contractor has the responsibility to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and embankment operations and to provide immediate permanent or temporary pollution control measures. Cut slopes shall be permanently seeded and mulched as the excavation proceeds to the extent considered desirable and practical.

Slopes that erode easily shall be temporarily seeded as the work progresses with a cereal grain of wheat, rye or oats obtained from a local supplier or seed store. The cereal grains may be planted by a hand seeder or other acceptable method and covered by a drag or harrow to provide a quick cover crop. Inspection of the cereal grain seed will not be required. The intent of using cereal grains as temporary erosion control is to permit the Contractor to quickly seed potential areas as the need arises with on-site personnel and equipment.

156-3.2 TEMPORARY EROSION CONTROL. The installation and maintenance temporary erosion control systems shall be as shown on the plans, or as directed by the Resident Engineer, and where appropriate, according to the manufacturer's specifications. Specific requirements for the various systems shall be as follows.

~~A. Temporary Ditch Checks. Manufactured ditch checks shall be installed according to manufacturers specifications. Spacing of ditch checks shall be such that the low point in the center of one ditch check is at the same elevation as the base the ditch check immediately upstream. Temporary ditch checks shall be sufficiently long enough that the top of the device in the middle of the ditch is 6 inches lower than the bottom of the terminating ends of the ditch side slopes.~~

~~When rolled excelsior is used, each ditch check shall be installed and maintained such that the device is no less than 10 inches high at the point of overflow. Units installed at a spacing requiring a height greater than 10 inches shall be maintained at the height for the spacing at which they were originally installed.~~

B. Inlet and Pipe Protection. When inlet filters are specified, they shall be installed either directly on the drainage structure or under the grate of the drainage structure resting on the lip of the frame. The fabric bag shall be hang down into the drainage structure. Prior to ordering materials, the Contractor shall determine the size and shape of the various drainage structures being protected.

~~C. Temporary Erosion Control Seeding. Seed bed preparation will not be required if the soil is in a loose condition. Light disking shall be done if the soil is hard packed or caked. Fertilizer nutrients will not be required.~~

~~The original seed bags shall be opened in the presence of the Resident Engineer. The seed shall be applied by hand broadcasting to achieve a reasonably uniform coverage at a rate of 100 lb/acre. Seed shall be applied to all bare areas every seven days, regardless of weather conditions or progress of work. The Resident Engineer may require that critical locations be seeded immediately and the~~

~~Contractor shall seed these areas within 48 hours of such a directive.~~

~~D. Temporary Mulch. The temporary mulch cover shall be installed according to Item 908.~~

E. Straw Bale Barrier. The installation and control of straw bale barriers shall be at the location shown on the plans, or as directed by the Resident Engineer.

~~156-3.3 TEMPORARY DITCH CHECKS. Temporary Ditch Checks shall be constructed by placing silt fence and bales at intervals of not greater than 200 feet along ditch lines, or as directed by the Resident Engineer.~~

156-3.4 SILT FENCE *AND SEDIMENT LOGS*. The installation and maintenance of silt fence *and sediment logs* shall be at the locations shown on the plans, or as directed by the Resident Engineer.

The Contractor shall maintain the alignment and condition of the silt fence *or sediment logs*, as necessary, throughout its use on the project. Upon completion and/or as directed, the Contractor shall remove the silt fence *and sediment logs* from the project.

156-3.5 STRAW BALE BARRIER. The installation and control of straw bale barriers shall be at the location shown in the plans, or as directed by the Resident Engineer.

156-3.6 DUST CONTROL. The Contractor shall employ construction methods and means that will keep flying dust to the minimum as directed by the Resident Engineer. The Contractor shall provide for the laying of water on the project, and on roads, streets, aprons and other areas immediately adjacent to the project limits, wherever traffic, or buildings that are occupied or in use, are affected by such dust caused by hauling or other operations. The cost of carrying out the foregoing provisions shall be incidental to the contract.

156-3.7 MAINTENANCE AND REMOVAL OF TEMPORARY EROSION CONTROL SYSTEM. The temporary erosion control systems installed by the Contractor shall be properly maintained as directed by the Resident Engineer to control siltation at all times during the life of the contract. ~~Any additional material and work required by the Resident Engineer will be measured and paid as herein specified.~~ If the Contractor fails to maintain the temporary erosion control systems as directed by the Resident Engineer, the Resident Engineer may at the expiration of a period of 48 hours, after having given the Contractor written notice, proceed to maintain the systems as deemed necessary, and the cost thereof shall be deducted from any compensation due, or which may become due the Contractor under this contract.

156-3.8 REMOVAL OF EROSION CONTROL. The Contractor shall remove temporary erosion control structures when ordered to do so by the Resident Engineer. The costs associated with the removals shall be incidental to *the project*. ~~this item. In the event that temporary erosion and pollution control measures are ordered by the Resident Engineer due to the Contractor's negligence or carelessness, the work shall be performed by the Contractor at his/her own expense.~~

METHOD OF MEASUREMENT

156-4.1. *There shall be no measurement for erosion control structures under this item. Erosion control shall be*

paid as a lump sum. ~~The footage of Silt Fence to be paid for shall be the number of lineal feet of silt fence measured in-place, satisfactorily installed and maintained throughout the duration of the contract.~~

~~156-4.2. The number of hay or straw bales to be paid for shall be the number of hay or straw bales shown in the plans or ordered by the Resident Engineer used to control erosion.~~

~~156-4.3. Temporary Seeding to be paid for shall be the number of acres seeded and mulched, measured on the ground surface. Temporary Mulching shall not be measured for payment, but shall be considered incidental to temporary Seeding.~~

~~156-4.4. Temporary ditch checks to be paid shall be the number of lineal feet measured along the long axis of the device in place.~~

~~156-4.5. Inlet and pipe protection to be paid shall be the number of individual items shown in the plans or ordered by the Resident Engineer.~~

BASIS OF PAYMENT

156-5.1. Payment will be made at the lump sum price for TEMPORARY EROSION CONTROL. This price shall be full compensation for furnishing all materials for all preparation and installation of these materials, including excavation, placement, tie-down stakes, staples, maintenance and removal and for all labor, equipment, tools, and incidentals necessary to complete this item.

156-5.2 Payment for INLET PROTECTION shall be made in accordance with the Standard Specifications and ITEM AR156500 INLET PROTECTION.

Payment will be made under:

Item AR156500	*Temporary Erosion Control – per Lump Sum (LS)*
Item AR156520	*Inlet Protection – per Each (EA)*

END OF ITEM 156000

ITEM 201661 CLEAN & SEAL BITUMINOUS CRACKS

DESCRIPTION

201-1.1 This item shall consist of cleaning, routing, and sealing designated joints and cracks in existing bituminous pavements. This item shall include the proper routing and/or cleaning of all cracks to be sealed and furnishing and installing hot pour crack sealer in accordance with these specifications. Wherever the word "cracks" is used, it shall be construed to mean cracks to be sealed.

MATERIALS

201-2.1 GENERAL All materials proposed for use shall be approved prior to installation.

201-2.2 CRACK SEALANT The crack sealant shall meet the requirements of ASTM D 5329 and ASTM D 6690.

201-2.3 BACKER ROD Backer rod shall be a closed cell non-absorptive polyolefin material compatible with hot pour. Backer rod shall be of sufficient diameter to be compressed in the routed crack or joint.

EQUIPMENT

201-3.1 GENERAL All machines, tools and equipment used in the performance of work required by these specifications will be subject to approval and maintained in a satisfactory working condition at all times.

201-3.2 CRACK ROUTING/CLEANING MACHINE The crack routing machine shall be portable and capable of routing the existing bituminous pavement surfaces along and adjacent to the crack. The unit shall be capable of following random cracks. The unit shall have an adjustable depth control and be capable of cutting width modification. The machine shall be capable of routing cracks to sufficient depths for installation of a backer rod and joint sealant in accordance with the details in the attachments.

CONSTRUCTION METHODS

201-4.1 PREPARATION OF CRACKS

General: The cracks shall be routed and/or cleaned to provide a sealant reservoir of a width to depth ratio of 1:1 with a minimum width of 3/8" and a depth equal to the width plus 1/4". No crack sealer material shall be placed until the cracks have been cleaned of all loose dirt and material. Following the initial routing and cleaning operation, all cracks will be blown out with compressed air. The cracks shall be inspected and approved prior to placing the sealer material. Any and all loose materials shall be disposed of by the Contractor off site. The Contractor may use any combination of joint/crack rakes, plows, routers, wire wheels and air compressors to clean the crack/joint of all laitance, sealant debris and dust film.

Crack/Joint Sealing (5/8" to 1" Wide): Cracks and joints in this width range shall be cleaned of all dirt, existing sealant and debris to a depth sufficient to allow for a backer rod and the new joint sealant at the thickness specified in Section 201-4.2.

Crack/Joint Sealing (3/8" to 5/8" Wide): These cracks and joints shall be cleaned of all dirt, debris, and old sealant. Routing shall be as necessary to shape the sealant reservoir and provide adequate depth for backer rod and sealant.

Crack/Joint Sealing (Less Than 3/8" Wide): These cracks and joints shall be routed to a minimum of 3/8" wide and to a sufficient depth to provide the backer rod and joint sealant. The routed reservoir shall be cleaned and sealed.

201-4.2 APPLICATION OF CRACK SEALING MATERIAL Final cleaning will not proceed in advance of sealing by more than one (1) working day, except as otherwise approved by the Resident Engineer.

The crack routing shall provide a width to depth ratio of 1:1 for sealant material.

The crack sealant shall be applied uniformly solid from bottom to top and shall be filled without formation of entrapped air or voids. The heating kettle shall be an indirect heating type, constructed as a double boiler. A positive temperature control and mechanical agitation shall be provided. The sealant shall not be heated to more than 20° F above the safe heating temperature. The safe heating temperature can be obtained from the manufacturer's shipping container. A direct connecting pressure type extruding device with nozzles shaped for insertion into the joint shall be provided. Sealing material should be used sparingly. Only enough material shall be poured into the opening to fill the crevice to within 1/4" of the pavement surface. Overfilling will not be permitted.

METHOD OF MEASUREMENT

201-5.1 The linear feet of cleaning and sealing of cracks to be paid for shall be the number of linear feet of each crack or joint routed, cleaned, sealed and accepted as complete. Measurement of linear feet of crack cleaning and sealing for payment shall be to the nearest foot.

BASIS OF PAYMENT

201-6.1 This item will be paid for at the contract unit price per linear foot of cleaning and sealing cracks in the pavement, complete; which price and payment shall constitute full compensation for all routing, cleaning, preparation and disposal of all loose materials; and for all materials, labor, equipment, tools and incidentals necessary to complete this item.

Payment will be made under:

Item AR201661 *Clean and Seal Bituminous Cracks – per Linear Foot (LF)*

END OF ITEM 201661

ITEM 201671 CRACK CONTROL FABRIC

DESCRIPTION

201-1.1 This item shall consist of constructing reflective crack control treatment of the type shown on the plans. This work shall be performed in accordance with the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.

MATERIALS

201-2.1 REFLECTIVE CRACK CONTROL SYSTEM A. The reinforcing fabric shall be a nonwoven polypropylene or other approved plastic fabric having the following properties:

Weight (ASTM D 3776) oz./sq yd (g/sq m), min.	4.0 (135)
Grab Tensile Strength (ASTM D 4632) lb (N), min.	90.0 (400)
Grab Elongation at Break (ASTM D 4632) %, min. - max.	40-100
Asphalt Retention gal/sq yd (L/sq m), min.	0.20 (0.9)

The asphalt binder shall be PG58-22 or PG64-22 meeting the requirements of ASTM D6373.

201-2.2 REFLECTIVE CRACK CONTROL SYSTEM B. Waterproofing membrane interlayer shall incorporate a high strength fabric embedded in a layer of self-adhesive suitably plasticized asphalt with the following properties:

Property	Value	Test Method
Thickness	0.065 in., min.	ASTM E 96
Permeance-Perms	0.10 max.	Procedure B
Tensile Strength	50 lb/in., min.	ASTM D 882 (modified for 1 inch opening)
Puncture Resistance (fabric)	200 lb, min.	ASTM E 154
Pliability -1/2 in. - mandrel	No cracks in fabric or plasticized	ASTM D 146

CONSTRUCTION METHODS

201-3.1 This work shall be performed in accordance with the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.

METHOD OF MEASUREMENT

201-4.1 ~~Crack control fabric will be measured in place and the area computed in square yards.~~

This item is to be considered incidental to the cost of the contract and will not be measured for payment separately.

BASIS OF PAYMENT

201-5.1 ~~This item shall be paid for at the contract unit price per square yard for Crack Control Fabric. This price shall be payment for completing all work.~~

This item is to be considered incidental to the cost of the contract and will not be paid for separately.

END OF ITEM 201671

ITEM 401610 BITUMINOUS SURFACE COURSE

DESCRIPTION

401-1.1. This item shall consist of a Hot-Mix Asphalt (HMA) surface course composed of mineral aggregate and bituminous material mixed in a central mixing plant and placed on a prepared course in accordance with these specifications and shall conform to the lines, grades, thicknesses, and typical cross sections shown on the plans.

Each course shall be constructed to the depth, typical section, or elevation required by the plans and shall be rolled, finished, and approved before the placement of the next course. The Contractor shall be responsible for the Quality Control in the production and construction of the HMA (Hot Mix Asphalt) surface course. The HMA surface course shall be laid in one two (2) inch lift. If necessary, thicker lifts not to exceed three (3) inches may be authorized by the Resident Engineer provided a continuous paving operation is maintained.

MATERIALS

401-2.1 AGGREGATE. Aggregates shall consist of crushed stone or crushed gravel, blended with crushed or natural sand(s) and/or mineral filler.

Crushed Stone: Crushed stone shall be defined as the angular fragments resulting from crushing, by mechanical means, the following types of rocks quarried from undisturbed consolidated deposits: granite and similar phanerocrystalline igneous rocks, limestone, dolomite, or massive metamorphic quartzite, or similar rocks. Dolomite shall be a carbonate rock containing 11.0 percent or more magnesium oxide (MgO). Limestone shall be a carbonate rock containing less than 11.0 percent magnesium oxide (MgO).

Crushed Gravel: Crushed gravel shall be the product resulting from crushing, by mechanical means, and shall consist entirely of particles obtained by crushing gravel, all of which before crushing will be retained on a screen with openings equal to or larger than the maximum nominal size of the resulting crushed material. If approved by the Engineer, final product gradations may be obtained by screening or blending various sizes of crushed gravel material.

Mineral Filler: Mineral filler shall consist of dry limestone dust, or other material approved by the Engineer and shall meet the requirements of ASTM D 242.

The portion of the materials retained on the No. 8 sieve shall be known as coarse aggregate, the portion passing the No. 8 sieve and retained on the No. 200 sieve as fine aggregate, and the portion passing the No. 200 sieve as mineral filler.

A. Coarse Aggregate. Coarse aggregate shall consist of sound, tough, durable particles conforming to the following quality requirements:

QUALITY TEST(IDOT B Quality)	PERCENT
$Na_2 SO_4$ Soundness, 5 Cycle, ASTM C 88 (Illinois Modified AASHTO T 104) Max. % Loss	15

Los Angeles Abrasion, ASTM C 131 Max. % Loss	40

DELETERIOUS TEST	PERCENT
Materials (Max. % allowed)	
Shale %	2.0
Clay Lumps %	0.5
Soft & Unsound Frag. %	6.0
Other Deleterious %	2.0
Total Deleterious Allowed %	*6.0*

B. Fine Aggregate. Fine aggregate shall be defined as follows:

1. Sand: Sand shall be the fine granular material resulting from the natural disintegration of rock. Sand produced from deposits simultaneously with and by the same operations as gravel coarse aggregate may contain crushed particles in the quantity resulting normally from the crushing and screening of oversize particles.

2. Stone Sand: Stone sand shall be produced by washing or processing by air separation the fine material resulting from crushing rock quarried from undisturbed consolidated deposits.

3. Slag Sand: Slag sand shall be the graded product resulting from the screening of air cooled blast furnace slag. Air cooled blast furnace slag shall be the nonmetallic product, consisting essentially of silicates and alumino-silicates of lime and other bases, which is developed in a molten condition simultaneously with iron in a blast furnace.

4. Steel Slag Sand: Steel slag sand shall be the graded product resulting from the screening of crushed steel slag. Crushed steel slag shall be the nonmetallic product which is developed in a molten condition simultaneously with steel in an open hearth, basic oxygen or electric furnace.

The fine aggregate shall also conform to the following quality requirements:

QUALITY TEST(IDOT B Quality)	PERCENT
Na_2SO_4 Soundness, 5 Cycle, ASTM C 88 (Illinois Modified AASHTO T 104) Max. % Loss	15
Minus No. 200 Sieve Material, ASTM C 136 Max. % Loss [1]	6.0 [2]

1/ Fine aggregate shall not contain more than 3 percent clay (2 micron or smaller) particles.
2/ Does not apply to Stone Sand.

DELETERIOUS TEST	PERCENT
Materials (Max. % allowed)	
Shale %	3.0

Clay Lumps %	3.0
Coal, Lignite & Shells %	3.0
Conglomerate %	3.0
Other Deleterious %	3.0
Total Deleterious Allowed %	*5.0*

If necessary to obtain the gradation of aggregate blend or workability, natural sand may be used. The amount of sand to be added will be adjusted to produce mixtures conforming to requirements of this specification.

C. Sampling and Testing. All aggregates proposed in the manufacture of the mix will be sampled and tested by the Contractor. ASTM D 75 shall be used in sampling coarse aggregate and fine aggregate, and ASTM C 183 shall be used in sampling mineral filler. The Contractor shall provide the Engineer with aggregate producer (quarry) and Contractor (plant) quality control gradations. No aggregate shall be used in the production of mixture without prior approval.

D. Sources of Aggregates. All aggregate sources that are approved by the Illinois Department of Transportation, Division of Highways, conforming to the description, gradation and quality specified herein, shall be permitted for use in the manufacture of the HMA surface course. The supplier of aggregates must participate and meet the requirements of the Illinois Department of Transportation Division of Highways source certification program. The Engineer reserves the right to inspect the source(s) and manufacturing of all aggregates. If satisfactory quality control and production procedures are not being implemented, the Engineer may remove approval of the source(s). Approval of the source(s) of aggregate(s) does not relieve the Contractor in any way of the responsibility for delivery of aggregates to the job site that meet the requirements specified herein.

E. Samples of Aggregates. All the source(s) of the proposed aggregates for use by the Contractor in the Contractor's proposed HMA mix design must be approved in writing by the *Engineer* ~~Illinois Division of Aeronautics Engineer of Construction & Materials~~ prior to use in any design or production of bituminous material.

401-2.2 FILLER. If filler, in addition to that naturally present in the aggregate, is necessary, it shall meet the requirements of ASTM D 242.

401-2.3 BITUMINOUS MATERIAL. Performance Graded asphalt PG 64-22 shall be used for all HMA produced unless otherwise specified. When requested, producers shall provide the Engineer with viscosity/temperature relationships for the performance graded asphalt binders delivered and incorporated in the work

The asphalt binder shall meet the requirements of AASHTO M 320, Table 1 "Standard Specification for Performance Graded Asphalt Binder" for the grade shown on the plans. Elastomers shall be added to the base asphalt binder to achieve the specified performance grade and shall be either a styrene-butadiene diblock or triblock copolymer without oil extension, or a styrene-butadiene rubber. Air

blown asphalts, acid modification, and other modifiers will not be allowed. Asphalt modification at hot-mix asphalt plants will not be allowed.

The Contractor shall furnish vendor's certified test reports for each carload or equivalent of bitumen shipped to the project. The report shall be delivered to the Engineer before permission is granted for use of the material. The furnishing of the vendor's certified test report for the bituminous material shall be the basis for final acceptance.

COMPOSITION

401-3.1 COMPOSITION OF MIXTURE. The HMA plant mix shall be composed of a mixture of aggregate, filler if required, and bituminous material. The several aggregate fractions shall be sized, uniformly graded, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula.

401-3.2 JOB MIX FORMULA. The Contractor is responsible for the JMF and no HMA mixture for payment shall be produced until a letter from the *Engineer* ~~Illinois Division of Aeronautics" Engineer of Construction & Materials~~ approving the Contractor's proposed JMF has been issued to the Contractor. The approved JMF shall indicate the definite percentage on each sieve for each aggregate, the percent of bitumen, and the number of gyrations specified for the individual project. The Contractor shall provide all laboratory sampling and testing to the Engineer, upon the completion of the proposed JMF. The exact tests and procedures are outlined in the Illinois Division of Aeronautics (IDOA) latest *Policy Memorandum 2003-1: "Requirements for Laboratory, Testing, Quality Control and Paving of Superpave Bituminous Concrete Mixtures for Airports*," located at the IDOT internet site.

The job mix formula for each mixture shall be in effect until modified in writing by the Project Engineer. Should a change in sources of materials be made, a new job mix formula shall be established before the new material is used.

The HMA mixture shall be tested according to the Asphalt Institute's most current Superpave Series No. 2 (SP-2) manual entitled, "Superpave Mix Design" and shall meet the criteria set forth in TABLES 1 and 2 herein.

TABLE 1 SUPERPAVE DESIGN CRITERIA

TRAFFIC MIX			
Design Parameter	Aircraft under 60,000 lbs.		Automobile
	Runway or Taxiway	Parking Apron	Entrance roads and Parking Lots
Nini $_2$	5	5	5
Ndes $_3$	30	30	30
Nmax	42	42	42
% Air Voids Va	2-4	2-4	2-4
VFA (min %)	75-90	75-90	75-90

1/ Stone sand (IDOT Gradation FA20 or FA21) shall be required as part of the fine aggregate portion of the JMF. The exact amount of stone sand will be determined by the Contractor based on preparation of the Mix Design. The percentage of stone sand will be verified as acceptable by the Engineer ~~Division of Aeronautics~~ based upon the Contractor's final proposed JMF. The Engineer ~~Division~~ reserves the right to request a change in the amount of stone sand at any point in the mix design process, as well as during production, based upon performance of the mix during placement.

2/ Where N= number of gyrations on an IDOT approved superpave gyratory compactor.

3/ The N_{des} value may be changed in order to obtain an acceptable mix design when approved by the Engineer.

The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory screens, will conform to the gradation or gradations specified in TABLE 2, when tested in accordance with ASTM Standard C 136 (dry sieve only). The percentage by weight for the bituminous material shall be within the limits specified.

TABLE 2. AGGREGATE HMA BASE COURSE		
Percentage by Weight Passing Sieves		
	Job Mix Formula (JMF)	
Sieve Size	Gradation B Range3/4" Maximum	Ideal Target
1 in.	100	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	20 – 43	30
No. 30	14 – 32	22
No. 100	5 – 16	8
No. 200	5 – 7	6
Bitumen %:	5.0 – 7.0	6.0

The gradations in TABLE 2 represent the limits which shall determine the suitability of aggregate for use from the sources of supply. The gradation shown in TABLE 2 is such that the maximum size aggregate used shall not be more than one-half of the thickness of the layer of the course being constructed. The aggregate shall have a gradation within the limits designated in TABLE 4 and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa, but shall be uniformly graded from coarse to fine.

The course and fine aggregate gradations specified in the Illinois Division of Highways Specifications for Road and Bridge Construction, current edition, may be blended to meet the job mix formula.

The job mix tolerances shown in TABLE 3 shall be applied to the job mix formula to establish a job control grading band. The tolerances listed in TABLE 3 will only apply when they cause a grading band within the band listed in TABLE 2. Otherwise, the grading bands listed in TABLE 2 shall apply.

TABLE 3. JOB MIX FORMULA TOLERANCES (Based on a Single Test)	
	Tolerances
Material	Plus or Minus
Aggregate passing No. 4 sieve or larger	7 percent
Aggregate passing Nos. 8 and 16 sieves	5 percent
Aggregate passing Nos. 30 sieve	4 percent

Aggregate passing Nos. 100 and 200 sieves	2 percent
Bitumen	0.45 percent
Temperature of mixing and placing	20 degrees F.

The aggregate gradation may be adjusted within the limits of TABLE 2, as directed, without adjustments in the contract unit prices.

Should a change in sources of materials be made, a new job mix formula shall be established before the new material is used. Deviation from the approved JMF for bitumen content and gradation of aggregates shall not be greater than the tolerances permitted and shall be based on extraction, or calibrated ignition oven test for aggregate gradations and asphalt content. Results falling outside the set tolerances shall be cause for rejection of all the material placed from the time of testing until a passing test is obtained. The applicable ASTM and IDOT tests are outlined in the current IDOA *Policy Memorandum 2003-1: "Requirements for Laboratory, Testing, Quality Control and Paving of Superpave Bituminous Concrete Mixtures for Airports,"* located at the IDOT internet site. These tests shall be performed by Contractor quality control personnel. Split mix samples shall be maintained by the Contractor for random testing by the Engineer.

401-3.3 BITUMINOUS AND AGGREGATE MATERIAL CONTRACTOR'S RESPONSIBILITY. Samples of the bituminous and aggregate materials that the Contractor proposes to use, together with a statement of their source and character, shall be submitted to the Engineer; approval must be obtained before the use of such material begins. The Contractor shall require the manufacturer or producer of the bituminous and aggregate materials to furnish material subject to this and all other pertinent requirements of the contract. Only those materials that have demonstrated performance under the proposed design requirements will be accepted.

The Engineer or his/her authorized representative shall have access, at all times, to all parts of the paving plant for the purpose of inspecting equipment, conditions and operation of the plant, for verification of weights or proportions and character of materials, and to determine temperatures maintained in the preparation of the mixtures.

The Contractor shall furnish vendor's certified test reports for each carload or equivalent of bitumen shipped to the project. The report shall be delivered to the Engineer before permission is granted for use of the material. The furnishing of the vendor's certified test report for the bituminous material shall not be interpreted as a basis for final acceptance. All such test reports shall be subject to verification by testing samples of materials received for use on the project.

401-3.4 TEST SECTION. *A test section is not required.* ~~(For Method II only: Over 2,500 tons/pay item) Prior to the manufacture of mix for the test section, Contractor quality control personnel shall have~~

completed all proportioning and testing in accordance with Policy Memorandum 2003-1, to assure that the mix produced will meet the JMF. The Contractor shall then prepare a quantity of HMA surface course mixture in order to construct the test section.

The test section shall have a length of approximately 200 to 300 lineal feet and shall be of the same depth specified for the construction of the course which it represents. The Contractor may place up to 50 tons of mix prior to construction of the test section in order to line-out the plant, the mix, and the paving operation. The underlying grade or pavement structure upon which the test section is to be constructed shall be the same as the remainder of the course represented.

A. Construction of the Test Section:

The test section shall consist of two (2) parts: Development of a Growth Curve and establishing a Rolling Pattern.

1. Growth Curve

To construct the Growth Curve a self-propelled vibratory roller meeting the following minimum requirements shall be required:

Drum diameter 48 inches, length of drum 66 inches, vibrators 1600 vibrations per minute (VPM) minimum, unit static force on vibrating drum(s) 125 pounds per lineal inch (PLI), total applied force 325 pounds per inch (PLI), adjustable eccentrics, reversible eccentrics on nondriven drum(s). The total applied force for various combinations of VPM and eccentric positions shall be shown on decals on the vibrating roller or on a chart maintained with the roller. The vibratory roller shall be equipped with water tanks and sprinkling devices, or other approved methods, which shall be used when necessary to wet the drum to prevent the HMA mixture from sticking. The Contractor shall have a vibrating reed tachometer (hand type) at the job site for checking roller vibrations. The reed tachometer shall have a range of 1000 to 4000 vibrations per minute (vpm). The vibrating reed tachometer shall have two (2) rows of reeds. One row shall range from 1000 to 2000 vpm and the other row shall range from 2000 to 4000 vpm.

The Growth Curve shall be constructed by successive passes of the vibratory roller, in a given area, in order to determine the maximum compactibility of the mix. The Growth Curve shall be construed under the supervision of the Engineer, or his/her designated representative, who must validate the Growth Curve results before continuing with the remainder of the Test Section. More than one Growth Curve may be required as part of the test section if adjustments to the mix, plant operation, laydown, etc., are necessary to reach optimum compactibility.

2. Rolling Pattern

The Contractor shall then proceed to establish the Rolling Pattern using the equipment that he/she intends to use for compacting the rest of the HMA course.

B. Test Section Acceptance

The Test Section shall be evaluated and approved based on the following:

~~1. The completed Test Section (Rolling Pattern area) shall be divided into four (4) subsections with one (1) sample, consisting of two (2) cores, obtained from each subsection for determination of density. One additional core sample shall be obtained from the Growth Curve.~~

~~2. The Contractor shall correlate a nuclear density gauge to the Test Section for Quality Control testing. The nuclear density gauge shall not be used for acceptance testing.~~

~~3. The completed Test Section (rolling pattern area) shall have a minimum density of 94.0 percent (6.0 percent air voids) of the maximum theoretical specific gravity of the mix (ASTM D 2041). Individual test (average of two cores) results below 94.0% shall constitute a failing test section.~~

~~4. If the test section fails to meet these requirements, the Contractor shall construct a new Test Section meeting these requirements at his/her own expense.~~

~~5. Full production shall not be allowed until all tests, Reflux extraction or Ignition Oven , Gradation, Gravities of mix, and Core Densities are completed in order to determine compliance with these specifications.~~

~~6. The completed Test Section(s) shall be part of the proposed work. When recommended by the Resident Engineer and approved by the Engineer, test sections that do not conform to the specifications shall be removed and replaced at the Contractors expense.~~

~~7. When a Test Section passes, the Test Section tonnage shall be paid 100%.~~

~~The mix used in construction of the Test Section shall be paid under Section 401-6.1. Construction of the Test Section shall be paid for under Section 401-6.1. Payment will be made for only one (1) Test Section.~~

CONSTRUCTION METHODS

401-4.1 WEATHER LIMITATIONS. The HMA mixture shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in TABLE 4. The temperature requirements may be waived, but only when so directed by the Engineer.

TABLE 4. BASE TEMPERATURE LIMITATIONS		
Mat Thickness	Base Temperature (Minimum)	
	F	C
3 in. or greater	40	4
Greater than 1 in. but less than 3 in.	45	7
1 in. or less	50	10

No paving shall commence unless the ambient air temperature is 40° F. and rising. Paving shall halt when the ambient air temperature is 45° F. and falling.

401-4.2 HMA MIXING PLANT. The HMA mixing plant(s) shall conform to the following requirements, or the Engineer may accept the use of a hot-mix plant approved by the IDOT Division of

Highways for the manufacture of Class I HMA mixtures in accordance with the current IDOT *Standard Specifications for Road and Bridge Construction*. When recyclable asphalt pavement is used, the hot-mix plant shall also conform to the additional IDOT plant requirements for hot-mix recycling, although recycled asphalt pavement is not allowed in any surface course mix ~~without written permission from the Division of Aeronautics~~.

If the supplier is equipped with an automated plant the automation feature shall be used in the production of bituminous material for the project. If the supplier is equipped with a recordation feature, it also shall be used. Sufficient storage space shall be provided for each size of aggregate. The different aggregate sizes shall be kept separated until they have been delivered to the cold elevator feeding the drier. The storage yard shall be neat and orderly, and the separate stockpiles shall be readily accessible for sampling.

Plants used for the preparation of HMA mixtures shall conform to all requirements under A., except that scale requirements shall apply only where weight proportioning is used. In addition, batch mixing plants shall conform to the requirements under B., continuous mixing plants shall conform to the requirements under C., and drum mixers shall conform to the requirements under D.
A. Requirements for All Plants. Mixing plants shall be of sufficient capacity to adequately handle the proposed HMA construction.

1. Plant scales. Scales shall be accurate to 0.5 percent of the required load. Poises shall be designed to be locked in any position to prevent unauthorized change of position. In lieu of plant and truck scales, the Contractor may provide an approved automatic printer system to print the weights of the material delivered, provided the system is used in conjunction with an approved automatic batching and mixing control system. Such weights shall be evidenced by a weigh ticket for each load. Scales shall be inspected for accuracy and sealed as often as the Engineer may deem necessary. The Contractor shall have on hand not less than ten 50-pound weights for testing the scales.

2. Equipment for preparation of bituminous material. Tanks for the storage of bituminous material shall be equipped to heat and hold the material at the required temperatures. Heating shall be accomplished by approved means so that flames will not contact the tank. The circulating system for the bituminous material shall be designed to assure proper and continuous circulation during the operating period. Provision shall be made for measuring quantities and for sampling the material in the storage tanks.

3. Cold feeders. The plant shall be provided with accurate mechanical or electrical means for uniformly feeding the aggregates into the drier to obtain uniform production and temperature. When added mineral filler is specified, a separate bin and feeder shall be furnished with its drive interlocked with the aggregate feeders.

4. Drier. The plant shall include a drier(s) which continuously agitates the aggregate during the heating and drying process.

5. Screens. Plant screens, capable of screening all aggregates to the specified sizes and proportions and having normal capacities in excess of the full capacity of the mixer, shall be provided.

6. Bins. The plant shall include storage bins of sufficient capacity to supply a mixer operating at full capacity. Bins shall be arranged to assure separate and adequate storage of appropriate fractions of the mineral aggregates. When used, separate dry storage shall be provided for filler of hydrated lime, and the plant shall be equipped to feed such material into the mixer. Each bin shall be provided with overflow pipes of such size and at such location to prevent backup of material into the compartments or bins. Each compartment shall be provided with its individual outlet gate to prevent leakage. The gates shall cut off quickly and completely. Bins shall be constructed so that samples may be obtained readily. Bins shall be equipped with adequate tell-tale devices which indicate the position of the aggregates in the bins at the lower quarter points.

7. Bituminous control unit. Satisfactory means, either by weighing or metering, shall be provided to obtain the specified amount of liquid asphalt material in the mix. Means shall be provided for checking the quantity or rate of flow of bituminous material into the mixer.

8. Thermometric equipment. An armored thermometer of adequate range shall be placed in the bituminous feed line at a suitable location near the charging valve of the mixer unit. The plant shall also be equipped with an approved thermometric instrument placed at the discharge chute of the drier to indicate the temperature of the heated aggregates.

The Engineer may require replacement of any thermometer by an approved temperature-recording apparatus for better regulation of the temperature of aggregates.

9. Dust collector. The plant shall be equipped with a dust collector to waste any material collected or to return all or any part of the material uniformly to the mixture as directed.

10. Truck scales. Unless an automatic batching plant with automatic printers is used, the HMA mixture shall be weighed on approved scales furnished by the Contractor or on public scales at the Contractor's expense. Scales shall be inspected for accuracy and sealed as often as the Engineer deems necessary.

11. Safety requirements. Adequate and safe stairways to the mixer platform and sampling points shall be provided, and guarded ladders to other plant units shall be placed at all points where accessibility to plant operations is required. Accessibility to the top of truck bodies shall be provided by suitable device to enable the Engineer to obtain sampling and mixture temperature data. Means shall be provided to raise and lower scale calibration equipment, sampling equipment, and other similar equipment between the ground and the mixer platform. All gears, pulleys, chains, sprockets, and other dangerous moving parts shall be thoroughly guarded. Ample and unobstructed passage shall be maintained at all times in and around the truck loading area. This area shall be kept free of drippings from the mixing platform.

12. Testing laboratory. The Contractor or producer shall provide a testing laboratory, meeting the requirements of Illinois Division of Aeronautics‟ latest *Policy Memorandum 2003-1: "Requirements for Laboratory, Testing, Quality Control and Paving of Superpave Bituminous Concrete Mixtures for Airports,"* located at the IDOT internet site, for Quality Control and acceptance testing during periods of mix production, sampling, and testing, and whenever materials subject to the provision of these specifications are being supplied or tested. The laboratory shall provide adequate equipment, space, and utilities as required for the performance of the specified tests. All labs must be certified to do Marshall Mix design and testing, having AMRL and AASHTO accreditation for all equipment.

B. Requirements for Batching Plants.

1. Weigh box or hopper. The equipment shall include a means for accurately weighing each size of aggregate in a weigh box or hopper of ample size to hold a full batch without hand raking or running over. The gate shall close tightly so that no material is allowed to leak into the mixer while a batch is being weighed.

2. Bituminous control. The equipment used to measure the bituminous material shall be accurate to within +0.5 percent. The bituminous material bucket shall be of a nontilting type with a loose sheet metal cover. The length of the discharge opening or spray bar shall be not less than three-fourths the length of the mixer and it shall discharge directly into the mixer. The bituminous material bucket, its discharge valve(s), and spray bar shall be adequately heated. Steam jackets, if used, shall be efficiently drained, and all connections shall be so constructed that they will not interfere with the efficient operation of the bituminous scales. The capacity of the bituminous material bucket shall be at least 15 percent in excess of the weight of bituminous material required in any batch. The plant shall have an adequately heated, quick-acting nondrip charging valve located directly over the bituminous material bucket.

The indicator dial shall have a capacity of at least 15 percent in excess of the quantity of bituminous material used per batch. The controls shall be constructed to lock at any dial setting and automatically reset to that reading after each additional batch of bituminous material. The dial shall be in full view of the mixer operator. The flow of bituminous material shall be automatically controlled to begin when the dry mixing period is over. All of the bituminous material required for one batch shall be discharged in not more than 15 seconds after the flow has begun. The size and spacing of the spray-bar openings shall provide a uniform application of bituminous material the full length of the mixer. The section of the bituminous line between the charging valve and the spray bar shall have a valve and outlet for checking the meter when a metering device is substituted for a bituminous material bucket.

3. Mixer. The batch mixer shall be an approved type capable of producing a uniform mixture within the job mix tolerances. If not enclosed, the mixer box shall be equipped with a dust hood to prevent loss of dust. The clearance of blades from all fixed and moving parts shall not exceed 1 inch.

4. Control of mixing time. The mixer shall be equipped with an accurate time lock to control the operations of a complete mixing cycle. It shall lock the weigh-box gate after the charging of the mixer and keep it locked until the closing of the mixer gate at the completion of the cycle. It shall lock the bituminous material bucket throughout the dry mixing period and shall lock the mixer gate throughout the dry and wet mixing periods. The dry mixing period is defined as the interval of time between the opening of the weigh-box gate and the introduction of bituminous material. The wet mixing period is the interval of time between the introduction of bituminous material and the opening of the mixer gate.

The timing control shall be flexible and shall be capable of settings of 5-second intervals or less throughout a 3-minute cycle. A mechanical batch counter shall be installed as a part of the timing device and shall be designed to register only completely mixed batches.

The setting of time intervals shall be at the direction of the Engineer who shall then lock the case covering the timing device until a change is made in the timing periods.

C. Requirements for Continuous Mix Plants.

1. Aggregate proportioning. The plant shall include means for accurately proportioning each size of aggregate.

The plant shall have a feeder mounted under each compartment bin. Each compartment bin shall have an accurately controlled individual gate to form an orifice for the volumetric measuring of material drawn from each compartment. The feeding orifice shall be rectangular with one dimension adjustable by positive mechanical means and provided with a lock.

Indicators shall be provided for each gate to show the respective gate opening in inches.

2. Weight calibration of aggregate feed. The plant shall include a means for calibration of gate openings by weighing test samples. Provision shall be made so that materials fed out of individual orifices may be bypassed to individual test boxes. The plant shall be equipped to conveniently handle individual test samples of not less than 200 pounds. Accurate scales shall be provided by the Contractor to weigh such test samples.

3. Synchronization of aggregate feed and bituminous material feed. A satisfactory means shall be provided to afford positive interlocking control between the flow of aggregate from the bins and the flow of bituminous material from the meter or other proportioning device. This control shall be by interlocking mechanical means or by any other positive method satisfactory to the Engineer.

4. Mixer. The plant shall include an approved continuous mixer adequately heated and capable of producing a uniform mixture within the job mix tolerances. It shall be equipped with a discharge hopper with dump gates to permit rapid and complete discharge of the mixture. The paddles shall be adjustable for angular position on the shafts and shall be reversible to retard the flow of the mix. The mixer shall have a manufacturer's plate giving the net volumetric contents of the mixer at the several heights inscribed on a permanent gauge. Charts shall be provided showing the rate of feed per minute for each aggregate used.

D. Requirements for Drum Mixers.

1. Exclusions. Paragraphs 401-4.2 A. 4. through 401-4.2 A. 9. do not apply to drum mixers.

2. Aggregate delivery system. An automatic plant shutoff shall be provided to operate when any aggregate bin becomes empty. Provisions shall be provided for conveniently sampling the full flow of materials from each cold feed and the total cold feed. Total cold feed shall be weighed continuously. The weighing system shall have an accuracy of 0.5 percent when tested for accuracy. The plant shall provide positive weight control of the cold aggregate feed by use of a belt scale, or other appropriate device, which will automatically regulate the feed gate and permit instant correction of variations in load. The cold feed flow shall be automatically coupled with the asphalt flow to maintain the required proportions of each material. Provisions shall be made for introducing the moisture content of the cold feed aggregates into the belt weighing signal and correcting wet aggregate weight to dry aggregate weight. Screens or other suitable devices which will reject oversize particles or lumps of aggregate that

have been cemented together shall be installed in the feeder mechanism between the bins and the dryer drum.

Dry weight of the aggregate flow shall be displayed digitally in appropriate units of weight and time and totalized.

3. Bituminous material and additive delivery systems. Satisfactory means of metering shall be provided to introduce the proper amount of bituminous material and additives into the mix. Delivery systems shall prove accurate to plus or minus 1 percent when tested for accuracy. The bituminous material and additive delivery shall be interlocked with the aggregate weight. The bituminous material and additive flow shall be displayed digitally in appropriate units of volume (or weight) and time shall be totalized.

4. Thermometric equipment. A recording thermometer of adequate range shall be located to indicate the temperature of the bituminous material in storage. The plant shall also be equipped with approved recording thermometers, pyrometers, or other approved recording thermometric instruments at the discharge chute of the drum mixer.

5. Drum mixer. A drum mixer of satisfactory design shall be provided. It shall be capable of drying and heating the aggregate to the moisture and temperature requirements set forth in the paving mixture requirements and capable of producing a uniform mixture. If the quality requirements of Section 401-3.2 cannot be met, the Contractor will be required to utilize either batch or continuous mix plants.

6. Temporary storage of HMA mixture. Use of surge bins or storage bins for temporary storage of HMA mixtures will be permitted as follows:

a. The HMA mixture may be stored in surge bins for a period of time not to exceed 3 hours.

b. The HMA mixture may be stored in insulated and heated storage bins for a period of time not to exceed 12 hours, provided an inert gas atmosphere is maintained in the bin during the storage period.

If the Engineer determines that there is an excessive amount of heat loss, segregation and/or oxidation of the mixture due to temporary storage, use of surge bins or storage bins will be discontinued.

E. Inspection of Plant. The Engineer or his/her authorized representative shall have access, at all times, to all parts of the paving plant for checking adequacy of equipment; inspecting operation of the plant; verifying weights, proportions, and character of materials; and checking the temperatures maintained in the preparation of the mixtures.

401-4.3 HAULING EQUIPMENT. Trucks used for hauling HMA mixtures shall have tight, clean, smooth metal beds. To prevent the mixture from adhering to them, the beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other approved material. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary, so that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated and covers shall be securely fastened. All trucks used for hauling HMA mixtures shall have a tightly closing tailgate to prevent spilling of material on airfield pavements or entrance roads used for haul roads.

Prior to leaving the placing site, the end of the truck beds shall be cleaned of all loose material which may spill onto the pavements and the tail gate shall be secured.

401-4.4 HMA PAVERS. HMA pavers shall be self-contained, power-propelled units with an activated screed capable of vibrating at approximately 3000 VPM or strike-off assembly, heated if necessary, and shall be capable of spreading and finishing courses of HMA plant mix material which will meet the specified thickness, smoothness, and grade. Pavers used for shoulders and similar construction shall be capable of spreading and finishing courses of HMA plant mix material in widths shown on the plans. All width extensions required to place material shall have the same placement features and equipment functions as provided on the main body of the paver. Augers shall be extended as additional sections of screed are bolted on or automatically adjustable screeds are extended. The augers need not be extended when the screed extensions on either side of the machine are one foot or less and the finished surface of the mat is uniform. The use of any machine obsolete in design or in poor mechanical condition will not be permitted.

The paver shall have a receiving hopper of sufficient capacity to permit a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed. The screed or strike-off assembly shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture.

The paver shall be capable of operating at forward speeds consistent with satisfactory laying of the mixture.

An automatic grade control system shall be used to automatically maintain the screed elevation as specified herein.

The controls shall be capable of working in conjunction with any of the following attachments, as specified by the Project Engineer:

A. Ski-type device of not less than 30 feet in length or as directed by the Engineer.

B. Taut stringline (wire) set to grade.

C. Short ski or shoe.

401-4.5 ROLLERS. Rollers may be of the vibratory, steel wheel, or pneumatic-tired type. They shall be in good condition, capable of reversing without backlash, and operating at slow speeds to avoid displacement of the HMA mixture. The number, type, and weight of rollers shall be sufficient to compact the mixture to the required density without detrimentally affecting the compacted material.

401-4.6 PREPARATION OF BITUMINOUS MATERIAL. The bituminous material shall be heated to the specified temperature in a manner that will avoid local overheating and provide a continuous supply of the bituminous material to the mixer at a uniform temperature. The temperature of the bituminous material delivered to the mixer shall be sufficient to provide a suitable viscosity for adequate coating of the aggregate particles, but shall not exceed the applicable maximum temperature set forth in AASHTO M 320 and not be more than 25° F above the temperature of the aggregate as specified in Section 401-4.7.

401-4.7 PREPARATION OF MINERAL AGGREGATE. The aggregate for the mixture shall be dried and heated to the temperature designated by the job formula within the job tolerance specified. Immediately after heating, the surface course aggregate(s) shall be screened into at least three sizes. This requirement does not apply to drum mixer plants. The maximum temperature and rate of heating shall be such that no permanent damage occurs to the aggregates. Particular care shall be taken that aggregates high in calcium or magnesium content are not damaged by overheating. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

$$\text{Mixing time (seconds)} = \frac{\text{Pugmill dead capacity in pounds}}{\text{Pugmill output in pounds per second}}$$

401-4.8 PREPARATION OF HMA MIXTURE. The aggregates and the bituminous material shall be measured or gauged and introduced into the mixer in the amount specified by the job mix formula.

The combined materials shall be mixed until a complete and uniform coating of the particles and a thorough distribution of the bituminous material throughout the aggregate are secured. Wet mixing time shall be approved by the Engineer for each plant and for each type aggregate used. Normally, the mixing time after introduction of bituminous material should not be less than 30 seconds. For continuous mix plants, the minimum mixing time shall be determined by dividing the weight of its contents at operating level by the weight of the mixture delivered per second by the mixer.

401-4.9 TRANSPORTING, SPREADING, AND FINISHING. The mixture shall be transported from the mixing plant to the point of use in vehicles conforming to the requirements of Section 401-4.3. Deliveries shall be scheduled so that spreading and rolling of all mixture prepared for one day's run can be completed during daylight, unless adequate artificial lighting is provided. Hauling over freshly placed material shall not be permitted until the material has been compacted, as specified, and allowed to cool to atmospheric temperature.

Immediately before placing the HMA mixture, the underlying course shall be cleared of all loose or deleterious material with power blowers, power brooms, or hand brooms as directed. A bituminous tack coat shall be applied on all underlying courses, as well as between any subsequent lifts of HMA.

The mix shall be placed at a temperature of not less than 275° F. Moisture content of the mix shall not exceed 0.5 percent.

Upon arrival, the mixture shall be spread to the full width by an approved HMA paver. It shall be struck off in a uniform layer of such depth that, when the work is completed, it shall have the required thickness and shall conform to the grade and contour indicated. The speed of the paver shall be regulated to eliminate pulling and tearing of the HMA mat. The maximum allowed paver speed is 50 ft/min. Unless otherwise directed, placing shall begin along the centerline of areas to be paved on a crowned section or on the high side of areas with a one-way slope. The mixture shall be placed in consecutive adjacent strips having a minimum width of 10 feet, except where edge lanes require strips less than 10 feet to complete the area. The longitudinal joint in one layer shall offset that in the layer immediately below by at least 1 foot; however, the joint in the top layer shall be at the centerline of the

pavement. Transverse joints in one layer shall be offset by at least 2 feet from transverse joints in the previous layer. Transverse joints in adjacent lanes shall be offset a minimum of 10 feet.

The first lane of the first lift of the HMA surface course shall be started at the center of the pavement with a taut stringline (guide wire) set to grade at both sides of the paver. The automatic grade control system of the paver shall be used to control grade of both sides of the paver from these reference stringlines. The grade control for the adjacent lanes of pavement shall be maintained by using a matching shoe with the previous laid pavement and a stringline on the outer edge of the next lane. A stringline and matching shoe shall be used to pave all remaining lanes of the first lift of surface course. If grade is established on the first lift, succeeding lifts shall be laid with a traveling ski on both sides of the paver for the center lane with matching shoe and traveling ski on adjacent lanes. If grade is not established on the first lift, the Engineer shall require taut stringline references until satisfactory grade is established.

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the mixture may be spread, raked, and luted by hand tools.

401-4.10 COMPACTION OF MIXTURE. After spreading, the mixture shall be thoroughly and uniformly compacted with power rollers as directed by the Engineer. Rolling of the mixture shall begin as soon after spreading as it will bear the roller without undue displacement or hair checking. On the first strip spread, rolling shall start at the low edge and progress toward the high edge. When adjoining lanes are placed, the same rolling procedure should be followed, but only after compaction of fresh mix at the longitudinal joint with 6 to 8 inches of the vibrating roller width overlapping on the previously compacted lane. Vibratory rollers will be operated so as to obtain a minimum of 10 impacts per foot. If a static roller is being used, 6 to 8 inches should be on the fresh mix at the longitudinal joint with the remainder of the roller width on the previously compacted lane. Rollers operated in static mode shall not exceed 3 mph (264 ft/min).

Initial rolling shall be done longitudinally. The rollers shall overlap on successive trips. Alternate trips of the roller shall be of slightly different lengths, and cross rolling shall not exceed more than one half the width of the pavement on crowned sections. The speed of the roller shall, at all times, be slow to avoid displacement of the hot mixture. Any displacement occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected at once by rakes and fresh mixture.

A self-propelled pneumatic-tire roller meeting the following requirements shall be required on the top lift of surface course mixture:

The roller shall be of the oscillating wheel type consisting of not less than 7 pneumatic-tired wheels revolving on 2 axles, and capable of being ballasted to the mass (weight) required. The front and rear wheels shall be staggered so that the tire sidewalls will have a minimum overlap of ½ inch. The roller shall provide for a smooth operation when starting, stopping or reversing direction. The tires shall withstand inflation pressures between 60 and 120 psi. The roller shall be equipped with an adequate scraping or cleaning device on each tire to prevent the accumulation of material on the tires. When used for the compaction of HMA mixtures, the roller shall be equipped with a water system which will keep all tires uniformly wet to prevent material pickup. The Contractor shall provide means for determining the mass (weight) of the roller as distributed on each wheel. Ballast shall be included in

determining the mass (weight). The maximum speed for pneumatic-tired rollers is 3.5 mph(308 ft/min).

Sufficient rollers shall be used to handle the output of the plant. Rolling shall continue until all roller marks are eliminated producing a surface of uniform texture true to grade and cross section.

The Contractor shall provide, at all times, an approved Troxler (or equal) nuclear density gauge with a qualified operator to maintain quality control of the density as specified herein.

To prevent adhesion of the mixture to the roller, the wheels shall be kept properly moistened, but excessive water will not be permitted.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with hot hand tampers.

Any mixture which becomes loose and broken, mixed with dirt, or in any way defective prior to the application of the finish coat shall be removed and replaced with fresh hot mixture and immediately compacted to conform with the surrounding area. This shall be done at the Contractor's expense.

401-4.11 JOINTS. The formation of all joints shall be made in such a manner as to ensure a continuous bond between old and new sections of the course. All joints shall present the same texture, density, and smoothness as other sections of the course.

The roller shall not pass over the unprotected end of the freshly laid mixture except when necessary to form a transverse joint. When necessary to form a transverse joint, it shall be made by means of placing a bulkhead or by tapering the course, in which case the edge shall be cut back to its full depth and width on a straight line to expose a vertical face. In both methods all contact surfaces shall be given a tack coat of bituminous material before placing any fresh mixture against the joint.

Longitudinal joints which are irregular, damaged, or otherwise defective shall be cut back to expose a clean, sound surface for the full depth of the course. All contact surfaces shall be given a tack coat of bituminous material prior to placing any fresh mixture against the joint.

All longitudinal joints constructed are to be compacted in such a manner that they are “pinched” to provide adequate density at the joint. When laying the HMA adjacent to a previously placed lane, the first pass of the roller shall be along the longitudinal joint on the fresh mixture with the compression wheel not more than 6 in. from the joint. The second pass of the roller shall overlap the longitudinal joint not more than 12 in. on the previously placed lane, after which the rolling shall proceed uniformly. Each stop shall be regulated to prevent trapping of water on the rolled surface. The steel wheeled rollers shall be operated with the compression wheels toward the direction of paving. The Contractor shall cut two cores per 2,500 tons at a random location over the longitudinal construction joint. The cores shall be delivered to the Engineer for density testing and the two results will be used to obtain an average density. This average density at the joint shall be a minimum of 90%.

Density results below an average of 90% shall result in an immediate suspension of paving operations until a sufficient investigation and solution to the density problem is agreed to by the Engineer. The result of this deficiency will be a 5% penalty on all production done on the day the core was taken or represents.

If at any time during the 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 shall 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 a tack coat and this work shall be considered incidental to Item 401 Bituminous Surface Course, and no additional payment will be allowed.

401-4.12 SHAPING EDGES. While the surface is being compacted and finished, the Contractor shall carefully trim the outside edges of the pavement to the proper alignment. Edges so formed shall be beveled while still hot with the back of a rake or a smoothing iron and thoroughly compacted by tampers or by other satisfactory methods.

401-4.13 ACCEPTANCE TESTING OF HMA MIXES FOR DENSITY. (For Method I only: Under 2,500 tons/pay item): After the completion of compaction, the pavement will be tested for acceptance by the Engineer and payment made on the basis of percent air voids in the final compacted mat.

The HMA Surface Course shall be compacted to a minimum density of 93 percent (7 percent air voids) and a maximum of 99 percent (1 percent air voids) of the Maximum Theoretical Specific Gravity (ASTM D 2041). If, during construction, the density test falls below 93 percent, additional approved rollers shall be required. Failure to achieve density within these limits shall be cause for rejection of the material, as determined by the Engineer ~~Division of Aeronautics~~.

Two random nuclear density tests shall be taken for each 500 tons of mix placed. Each nuclear density test shall be the average of five (5) nuclear tests taken as a cross-section of the pavement. One random mix sample shall be taken from each 1,000 tons of mix laid, for Extraction or Ignition Oven, Maximum Specific Gravity and Air Void tests. The Engineer shall have a nuclear gauge and qualified operator on the project when constructing this item.

~~(For Method II only: Over 2,500 tons/pay item): After the compaction is completed, the pavement will be tested and payment made on the basis of percent air voids in the final compacted mat. The HMA surface course shall be compacted to a minimum density of 93 percent (7 percent air voids) and a maximum of 99 percent (1 percent air voids) of the maximum theoretical specific gravity (ASTM D 2041) and accepted by the following statistical procedure. When more than one surface course mix design is used on the same project, each mix will be evaluated separately under the statistical acceptance procedure specified herein.~~

~~A. Lot Size. The plant-produced mixture shall be tested on a lot basis. A lot shall consist of 4 sublots. End or final lots may contain between 3 and 6 sublots.~~

~~A sublot shall consist of 500 tons for each type of mix.~~

~~One density sample shall be taken randomly from each sublot. Each density sample shall be the average of two cores extracted from the sample location.~~

~~The Contractor shall take one random mix sample from each 1,000 tons of mix placed. This sample shall be split into two samples with one half tested by the Contractor for Extraction or Ignition oven, Maximum Specific Gravity, Gradation, and Air Void tests. The other sample half shall be~~

appropriately marked and retained by the Contractor until the Engineer requests the mix for testing or directs the Contractor in writing to dispose of the mix.

All tests shall be completed and reported to the Engineer no later than the morning of the day following production.

B. Lot Early Termination. When less than 3 sublots are produced, such as at the end of construction of the surface course or at the end of the construction season, the final sublot data shall be included with the previous lot for payment. The final lot may thus contain up to six (6) sublots.

C. Acceptance Criteria. The acceptance of each lot of HMA surface course shall be based on the **P**ercentage of material **W**ithin specification **L**imits (PWL). The PWL is determined using standard statistical techniques and involves the number of tests in each lot (n) and the quality indexes (QL is the Quality Index for the lower limit; QU is the Quality Index for the upper limit). The quality indexes are calculated using the following formulae:

$$Q_L = \frac{X - 1}{S} \qquad Q_U = \frac{7 - X}{S}$$

Where

Q	=	Quality Index (lower or upper)
X	=	Mean (average) value of air voids in percent
% Air Voids	=	(100 % density)
S	=	Standard Deviation of test results

For mat in-place air voids, estimate the **P**ercentage **W**ithin **T**olerance (PWT) for the lower and upper tolerance limits by entering TABLE 6 with Q_L and Q_U using the column appropriate to the total number (n) of core samples. The total percent of material between the lower and upper limits is defined as the **P**ercent **W**ithin **L**imits and is calculated by the following formula:

PWL = [PWT(lower) + PWT(upper)] 100

Each lot of bituminous material shall be accepted for 100 percent payment when the PWL equals or exceeds 90 percent. When the PWL is below 90 percent for a given lot, the lot tonnage shall be adjusted in accordance with TABLE 5.

TABLE 5 -- PAY ADJUSTMENT SCHEDULE [1]

PWL	% ADJUSTMENT IN LOT QUANTITY
90 100	100
80 89.9	0.5 PWL + 55.0
65 79.9	2.0 PWL 65.0
Below 65	[2]

1/ All preliminary calculations used in determining the Percent Within Limits should be rounded to a minimum of four digits right of the decimal point. The PWL that is used for TABLE 5 purposes should then be rounded to one digit right of the decimal point to determine the percent of contract quantity to be paid. The final percent pay figure should be rounded to one digit right of the decimal point. The Resident Engineer shall notify the Contractor, in writing, of the final percent pay for each lot as soon as all lot tests are completed.

2 The lot shall be removed and replaced. However, the Engineer may decide to accept the deficient lot. In that case, it will be paid for at 50% adjustment.

~~D. Mix sampling. All mix sampling shall be done on a random basis as determined by the Resident Engineer. Samples that are obviously defective or become defective prior to testing shall be discarded and retaken. New samples shall be considered as if they were initial samples.~~

401-4.14 SURFACE TESTS. Tests for conformity with the specified crown and grade shall be made by the Contractor immediately after initial compression. Any variation shall be corrected by the removal or addition of materials and by continuous rolling.

The finished surface shall not vary more than ¼ inch for the surface course when tested with a 16-foot straightedge applied parallel with, or at right angles to, the centerline.

After the completion of final rolling, the smoothness of the course shall again be tested; humps or depressions exceeding the specified tolerances shall be immediately corrected by removing the defective work and replacing with new material, as directed by the Engineer. This shall be done at the Contractor's expense.

The finished surfaces of HMA courses shall not vary from the gradeline, elevations, and cross sections shown on the contract drawings by more than ½ inch. The Contractor shall correct pavement areas varying in excess of this amount by removing and replacing the defective work. Skin patching will not be permitted.

401-4.15 SAMPLING PAVEMENT. The completed pavement shall be cleaned so that no debris or dirt from coring operations is left on the surface of the pavement. Three (3) cores per lot shall be tested for thickness for any methods used.

~~(For Method II only: Over 2,500 tons/pay item): Cores from each sublot shall be taken at random locations as outlined by the Resident Engineer. No core samples shall be taken within two feet of the edge of pavement. Any core less than 1 ½ inch thickness shall not be used and a new location and sample shall be selected.~~

~~Core samples of approximately 4 inches in diameter, for determination of in-place air voids of the completed pavement, shall be obtained by the Contractor at no extra expense. The number and locations of the samples shall be as determined by the Resident Engineer. The Contractor shall furnish all tools, labor, and materials for sampling and replacing pavement.~~

~~All core tests necessary to determine initial conformance with specification requirements will be performed by the Resident Engineer at no cost to the Contractor.~~

~~Resampling and Retesting. Resampling of a lot may be allowed only under the following conditions:~~

~~A. The Contractor must request, in writing, the resampling and retesting of a complete lot within 48 hours after receiving the written test results of the lot from the Resident Engineer. Only one retest per lot will be permitted.~~

~~B. If the retested lot should result in a higher "Percent Within Limits" figure than the original, based on all lot samples (original and new) the following will apply:~~

~~1. The cost of resampling and retesting will be borne by the Engineer.~~

~~2. The new "Percent Within Limits" figure shall be calculated using all LOT samples, (original and new) for calculating the lot payment.~~

~~C. If the retested lot should result in a "Percent Within Limits" figure equal to or less than the original, based on all the lot samples (original and new), the following will apply:~~

~~1. The cost of resampling and retesting will be borne by the Contractor.~~

~~2. The new "Percent Within Limits" figure shall be calculated using all lot samples, (original and new) for calculating the lot payment.~~

~~D. Procedures in ASTM E-178 shall be used to determine outliers based on all samples taken and a 5% significance level.~~

~~E. Results of the retesting and resampling shall be final.~~

METHOD OF MEASUREMENT

401-5.1 Plant mix HMA surface course will be measured by the ton. The tonnage shall be the weight used in the accepted pavement. No deduction will be made for the weight of bituminous material in the mixture. Plant batch weights will be accepted. Loads shall be checked periodically by weighing full truckloads of the HMA mixture on an approved platform scale at the plant or on a commercial scale.

The Contractor shall furnish approved duplicate load tickets upon which is recorded the net weight of the HMA mixture in each truck. The load ticket shall have sufficient space for signatures, identification of the HMA mixture, date of delivery, and any other data which the Project Engineer may require. The Contractor shall submit one load ticket to the Project Engineer, or his/her duly authorized representative, at the plant after the truck is loaded and another load ticket to the Project Engineer, or his/her duly authorized representative, at the construction site when the truck load is incorporated into the pavement.

Measurement for payment will not be made for any HMA surface course in excess of 103 percent of plan quantity plus (or minus) theoretical quantities authorized by the Engineer. (Maximum payment percentages apply only to those pay items paid for on the basis of volume or weight.)

In areas where an undercut is warranted and directed by the Engineer, HMA Surface course required as shown in the plans in this area will not be measured for payment under Item 401610.

BASIS OF PAYMENT

401-6.1 ~~The quantity of HMA surface course mixture measured as outlined in Section 401-5.1 shall be adjusted in accordance with Section 401-4.13 herein.~~ Final payment shall be compensation for furnishing all materials, for all preparation, mixing, testing, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

~~(For Method I only: Under 2,500 tons/pay item).~~ Payment shall be based upon the acceptance test results for density. Acceptance test results that do not meet the limits set forth in Section 401-4.13 shall be cause for a payment adjustment, or removal and replacement, of the material placed in the failed sublot(s), as determined by the *Engineer*.

~~(For Method II only: Over 2,500 tons/pay item). Payment shall be calculated by multiplying the contract unit price per ton of HMA surface course and the adjusted tons per lot, as determined using TABLE 5.~~

~~The test section shall be paid for at the contract unit price per each, which price shall include the additional specified equipment, labor, Engineering, and testing.. time necessary to construct this item.~~

In areas where an undercut is warranted and directed by the Engineer, HMA Surface course required as shown in the plans in this area will not be paid for under Item 401610..

Payment will be made under:

Item AR401610	*Bituminous Surface Course – per Ton (TON)*

END OF ITEM 401610

ITEM 401650 BITUMINOUS PAVEMENT MILLING

DESCRIPTION

401-1.1 This item of work shall consist of removing variable depths of existing HMA surface, as shown in the plans and as directed by the Resident Engineer. *This item shall consist of preparation of existing pavement surfaces for mill and overlay, removal of existing pavements, and other miscellaneous items. Removal of existing pavements shall consist of removal of bituminous pavements, hauling, and the recycling for use on the project and/or disposal of this material offsite. The work shall be accomplished in accordance with these specifications and the applicable drawings.*

EQUIPMENT

401-2.1 Equipment used shall be subject to approval by the Engineer and shall comply with the following:

Surface removal equipment shall be a power operated mechanical scarifier, roto-mill, planing machine, grinder or other device capable of removing the surface to the depth indicated leaving a sound, bondable surface.

The equipment shall be in good working condition free from oil or fuel leaks. Power brooms and sweepers, vacuum sweepers and air compressors shall be in good working condition and shall be used in sufficient numbers or combinations to remove dust and debris from the milled surface.

CONSTRUCTION METHODS

401-3.1 The Contractor shall remove the pavement surface to the limits shown in the plans and as directed by the Resident Engineer. The material removed shall be disposed of off Airport property. The roughened surface shall be free of dirt and loose material prior to subsequent paving. If power brooms or sweepers are used, the surface shall be cleaned with high pressure air to remove dust and debris.

The areas denoted on the plans to be milled and overlaid or removed under this item shall be as shown on the drawings and staked or otherwise marked on the ground by the Contractor. The Contractor shall be required to stake the limits of mill and overlay or removal as shown on the plans prior to commencing operations. The Contractor's removal operation shall not cause damage to curbs, cables, utility ducts, pipelines, or drainage structures under the pavement. Any damage shall be repaired by the Contractor at no expense to the Airport.

The temperature at which the work is performed, the nature and condition of the equipment and the manner of performing the work shall be such that the milled surface is not torn, gouged, shoved or otherwise injured by the milling operation. Sufficient cutting passes shall be made so that all irregularities or high spots are eliminated to the satisfaction of the Engineer.

Millings shall be disposed of off airport property unless the Airport identifies a location on airport property for stockpiling of millings. The materials to be salvaged to the Airport, if indicated, will be identified by the Resident Engineer prior to demolition. The Contractor shall transport and dispose of the millings at no cost to the Airport either on airport property if directed or off airport property. If the Contractor is directed to dispose of the millings on airport property, the millings shall be deposited to heights as approved by the Engineer. The Contractor shall reshape milling stockpiles as directed by the Engineer as necessary. Reshaping of stockpiles shall be incidental.

401-3.2 HAUL. All hauling will be considered a necessary and incidental part of the work. Its cost shall be considered by the Contractor and included in the contract unit price for the pay of items of work involved. No payment will be made separately or directly for hauling on any part of the work or for transport of the excess excavation to the stockpiling site shown on the drawings or from intermediate stockpiles to the project site.

Project waste area management will be considered a necessary and incidental part of the work. Waste area management shall include furnishing all material, labor and equipment for the preparation of the waste area; and for placing, grading and compacting of all demolished pavements and excessive soils in the project waste area. Management shall also include all temporary and final seeding measures necessary for the project waste area.

METHOD OF MEASUREMENT

401-4.1 The ~~yardage~~ quantity to be paid for shall be the number of square yards of bituminous pavement milling as measured in the field, completed and accepted. ~~Pavement milling required for butt joint construction will not be measured for payment under this item.~~

BASIS OF PAYMENT

401-5.1 The accepted quantities of bituminous pavement milling will be paid for at the contract unit price per square yard which price and payment shall be full compensation for furnishing all materials, equipment, labor, hauling, and all other incidental items necessary to complete the work to the satisfaction of the Engineer.

Payment will be made under:

Item AR401650	*Bituminous Pavement Milling– per Square Yard (SY)*

END OF ITEM 401650

ITEM 401910 REMOVE AND REPLACE BITUMINOUS PAVEMENT

DESCRIPTION

401910-1.1. *This item shall consist of all construction activities to meet the dimensions and typical section shown on the plans including but not limited to the following activities: saw cutting, milling and/or removing a portion of existing bituminous pavement below the level on the initial 2" mill, crack control fabric, tack coat and replacement with new bituminous pavement section as shown in the plans. This work will apply at locations in accordance to the Plans and/or as directed by the Resident Engineer.*

MATERIALS

401910-2.1 *Materials used in completing this item shall meet the individual requirements of the Standard Specifications and these Special Provisions. Materials include:*

Crack Control Fabric	*Item 201671*
Bituminous Pavement Sawing	*Item 401665*
Subgrade Backfill	*(As required)*
Crushed Aggregate Base Course	*Item 209*
Bituminous Surface Course	*Item 401610*
Bituminous Base Course	*Item 403610*
Bituminous Prime Coat	*Item 602*
Bituminous Tack Coat	*Item 603510*

CONSTRUCTION METHODS

401910-3.1 *This item shall be completed in the following manner:*

a. Saw Cut. The limits of pavement to be removed and replaced will be marked by the Resident Engineer. Initial and secondary saw cuts shall be performed as shown in the Plans. It shall be the Contractor's responsibility to determine the depth of pavement prior to saw cutting to provide a full depth cut. Saw cutting will not be measured separately for payment and is to be included in the unit price for Item 401910.

b. Removal. After the initial 2" mill has taken place, the additional HMA material, to the depths specified by the Resident Engineer and the widths as shown in the plans, shall be excavated and disposed of by the Contractor at an off-Airport location unless a specified airside stockpile location has been determined. No additional compensation will be made for hauling and disposal of the removed material. During removal, should any of the pavement to remain be damaged, the damaged pavement shall be replaced in a manner satisfactory to the Resident Engineer. However, this additional pavement replacement shall not be measured for payment.

c. Subgrade Inspection. The subgrade will be inspected by the Resident Engineer for its suitability. Should removal and replacement of unsuitable subgrade be required, excavation and backfill with suitable subgrade material shall be paid under Item 152511.

d. Bituminous Tack Coat. Bituminous tack coat shall be applied as shown in the plans and to each successive layer of Bituminous base/surface course and between the bituminous lifts, as specified in Item 603510.

e. Bituminous Base Course. New Bituminous Base course shall be constructed in accordance with Item 403610. The thickness of Base/Surface course shall match the existing pavement but shall not be less than four (2.0) inches. The maximum thickness of any one lift of Base/Surface course shall not exceed three (3) inches.

METHOD OF MEASUREMENT

401910-4.1 *Removal and Replacement of Bituminous pavement to be paid shall be the area in square yards measured in place, completed and accepted. The length and width for measurement will be the outside lines as marked by the Engineer prior to removal. Replacement of areas outside the limits marked by the Engineer will be completed in accordance with this item, but shall not be measured for payment.*

With the exception of unsuitable subgrade removal and backfill, if required, which shall be paid under Item 152511, no other material or work will be separately measured for payment. Prior to any Removal and Replacement of Bituminous Pavement, the initial Bituminous Pavement Milling work is to be completed as specified, measured and paid for under Item 401650.

Bituminous surface course, under item AR401610, and bituminous tack coat, under item 603510, associated with the surface course pavement is work outside of this item and will not be measured in association with item AR401910.

BASIS OF PAYMENT

401910-5.1 *Payment will be made at the Contract unit price per square yard for pavement removal and replacement, which shall be full compensation for all labor, materials, equipment, tools and incidentals necessary to complete the item specified and accepted.*

Bituminous surface course, under item AR401610, and bituminous tack coat, under item 603510, associated with the surface course pavement is work outside of this item and will not be paid in association with item AR401910.

Payment will be made under:

Item AR401910	*Remove & Replace Bit. Pavement - per square yard.*

END OF ITEM 401910

ITEM 602 BITUMINOUS PRIME COAT

DESCRIPTION

602-1.1 This item shall consist of an application of bituminous material on the prepared base course in accordance with this specification applied at the rate specified by the Project Engineer. The type of bituminous material to be used shall be selected by the Project Engineer from those included in this specification.

602-1.2 QUANTITIES OF BITUMINOUS MATERIAL. After the base has been prepared, and when in a dry condition, the bituminous material shall be applied uniformly at a rate of 0.25 to 0.5 gal/sq. yd., the exact rate to be specified by the Engineer.

MATERIALS

602-2.1 BITUMINOUS MATERIAL. The bituminous priming material shall be MC-30. Medium curing liquid asphalt will be accepted according to the latest revision of the Bureau of Materials and Physical Research policy memorandum "Cut-Back Asphalt and Road Oil Acceptance Procedure."

In additional to MC-30, penetrating emulsified prime (PEP) may also be used as a material in accordance with the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction, specifically Section 403.02.

CONSTRUCTION METHODS

602-3.1 WEATHER LIMITATIONS. The prime coat shall be applied only when the existing surface is dry or contains sufficient moisture to get uniform distribution of bituminous material. This work shall be done between May 1 and October 1, both dates inclusive. Bituminous materials shall be applied only when the temperature of the air in the shade is above ° F. No work shall be started if the local conditions indicate that rain is imminent. This work may be done between October 1 and October 31 providing the temperature of the air for three consecutive days immediately preceding the day of application has been: (1) Above ° F in the shade each day, (2) A minimum of ° F and (3) The temperature of the air in the shade at time of application is above ° F.

602-3.2 EQUIPMENT.

A. Pressure Distributor. The pressure distributor used for applying liquid bituminous materials shall be a self-propelled motor vehicle and shall meet the requirements given hereinafter:

B. Truck. The truck shall be capable of operating smoothly at speeds as low as 0.8 mph when used on heavy penetration construction, and at normal road speeds when used for transporting bituminous materials. In order to develop these speeds satisfactorily, the truck shall have at least 4 speeds forward.

C. Tank. The tank on the distributor shall have a capacity of not less than 600 gallons. Approval shall be obtained from the Engineer for the use of a distributor having a capacity greater than 2500 gallons. The tank shall be covered with at least 1 inch of approved insulation. It shall be equipped with a removable manhole cover, and overflow pipe and a suitable strainer located at the intake or outlet to the pump to prevent the passage of any material which might clog the

nozzles. A dial gauge plainly visible to the spray bar operator shall be conveniently placed to indicate the contents of the tank at various levels.

D. Heating System. The distributor shall be equipped with an approved heating system to heat the bituminous material. The heating system shall consist of heat flues having sufficient radiation to ensure the rapid circulation of hot gases of combustion from one or more efficient smokeless burners of the torch type, a circulating device to ensure uniform heating of the material, and a suitable fuel supply tank.

E. Pump. The distributor pump shall be of the rotary positive pressure type of sufficient size and discharge capacity to apply uniformly the specified amount of bituminous material per square yard in widths up to 24 ft. It shall be driven in the most direct method obtainable by a gasoline motor other than the vehicle propelling motor or by other methods approved by the Engineer. The pump

motor shall have sufficient power to operate the distributor pump at the required volume and pressure. If the motor pump is equipped with a transmission, it shall have a governor. Suitable housing or heating jackets shall be provided to enclose the distributor pump and piping in order to retain the heat and to ensure a constant, even flow of material.

F. Spray Bars. Spray bars of various lengths shall be used to spray bituminous material over widths varying from 4 to 24 ft. The spray bars shall be arranged so that they may be swung from side to side over a distance of not less than 9 inches to match joints and to clear obstructions. They shall be equipped with spray nozzles of such design and size of orifice as to ensure uniform distribution of the bituminous material in the specified quantities. Means shall be provided to stop the flow of bituminous material quickly and to prevent it from dripping when the flow is shut off.

Means shall be provided for obtaining samples of the materials from the tank or from the piping leading from the tank to the spray bars.

A hand spray bar and nozzle having a suitable length of flexible hose with packed couplings shall be provided for applying material at fillets or similar locations.

G. Thermometer. A calibrated thermometer having the stem extending into the material or into an approved well shall be placed in a suitable position in the tank to give a true average temperature of the contents of the tank.

H. Operator's Platform. A substantial platform for the operator shall be provided at the rear of the distributor. It shall be so located that it will provide a clear view of the operation of the spray bars.

I. Tachometer or Synchronizer. A tachometer shall be attached to the truck in such a manner as to be visible to the truck operator and to enable him/her to maintain the constant speed necessary for the correct application of the specified quantity of bitumen. Suitable charts shall be furnished by the Contractor showing the truck speeds necessary to obtain the desired results.

J. When a synchronizer is used, the tachometer may be omitted. The synchronizer shall deliver a specified quantity of bituminous material on the pavement surface regardless of the speed of the truck.

K. Calibration. The distributor will be calibrated by the Contractor and verified by the Resident Engineer before the work is started. The Contractor shall furnish all equipment, tools, materials and assistance necessary to verify the calibration.

602-3.3 APPLICATION OF BITUMINOUS MATERIAL. Immediately before applying the prime coat, the full width of the surface to be primed shall be swept with a power broom to

remove all loose dirt and other objectionable material. The temperature of the bituminous material at the time of application shall be such that it will spray uniformly without clogging the spraying nozzles and shall be applied within the temperature range of 85 F to 90 F. Bituminous material delivered in the tank cars may be heated by steam coils; that delivered in mobile tanks may be heated in asphalt tanks or in a pressure distributor. In all cases, precautions shall be taken to avoid danger of fire. If heated in asphalt tanks, the material shall be agitated during the heating period to prevent localized overheating. If heated in a pressure distributor, the material shall be circulated while it is being heated. All flames shall be extinguished during application of the bituminous material. In all methods of heating, means shall be provided to determine the temperature of the material at frequent intervals to prevent it from being overheated or damaged.

The application of the bituminous material shall be made by means of a pressure distributor at the temperature, pressure, and in the amounts directed by the Resident Engineer. A hand spray bar shall be used at places which are not covered by the distributor. The entire length of the spray bar shall be set at the height above the surface recommended by the manufacturer for even distribution of the bituminous material. Any loss of bituminous material in handling due to faulty valves, leaking pipes, overflow loss of excess, or other reasons will be deducted from the amount due the Contractor. The distributor shall be operated in a manner such that missing or overlapping will be avoided. When required by the Resident Engineer, adjacent construction shall be protected by shields, covers, or other means. If bituminous material is applied to adjacent construction either by accident or because of inadequate protection, the Contractor shall remove such material to the satisfaction of the Engineer. If the Contractor is unable to obtain satisfactory application due to unsuitable or poorly regulated distributing equipment, or to incompetent operators, the Contractor shall immediately replace or repair such equipment or furnish competent operators.

The prime coat shall be permitted to cure until the penetration has been approved by the Engineer, but at no time shall the curing period be less than 24 hours. Pools of bituminous material occurring in the depressions shall be broomed or squeegeed over the surrounding surface the same day the prime coat is applied. At no time during curing shall traffic be allowed upon the primed surface. The prime coat shall be maintained at all times by the Contractor.

602-3.4 BITUMINOUS MATERIAL CONTRACTOR'S RESPONSIBILITY. Samples of the bituminous materials that the Contractor proposes to use, together with a statement as to their source and character, must be submitted and approved before use of such material begins. The Contractor shall require the manufacturer or producer of the bituminous materials to furnish material subject to this and all other pertinent requirements of the contract. Only satisfactory materials, so demonstrated by service tests, shall be acceptable.

The Contractor shall furnish vendor's certified test reports for each carload, or equivalent, of bituminous material shipped to the project. The report shall be delivered to the Engineer before permission is granted for use of the material. The furnishing of the vendor's certified test report for the bituminous material shall not be interpreted as basis for final acceptance. All such test reports shall be subject to verification by testing samples of materials received for use on the project.

The bituminous material shall be supplied from an IDOT certified source indicated on the latest IDOT Certified Source List for Emulsified Asphalt and/or the certified source list for Asphalt

Cement, Cutback Asphalt, and Road Oil, as applicable.

602-3.5 FREIGHT AND WEIGH BILLS. Before the final estimate is allowed, the Contractor shall file with the Engineer receipted bills when railroad shipments are made, and certified weigh bills when materials are received in any other manner, of the bituminous materials actually used in the construction covered by the contract. The Contractor shall not remove bituminous material from the tank car or storage tank until the initial outage and temperature measurements have been taken by the Resident Engineer, nor shall the car or tank be released until the final outage has been taken by the Resident Engineer.

Copies of freight bills and weigh bills shall be furnished to the Resident Engineer during the progress of the work.

METHOD OF MEASUREMENT

602-4.1 The ~~bituminous prime coat to be paid for shall be the number of gallons of the material used as ordered for the accepted work, corrected to 60° F., in accordance with the temperature-volume correction tables for asphalt materials contained in ASTMD-1250.~~

~~Measurement for payment will not be made for any bituminous prime coat in excess of 105 percent of plan quantity plus (or minus) theoretical quantities authorized by the Engineer. (Maximum payment percentages apply only to those pay items paid for on the basis of volume or weight.) Plan quantities were calculated using the maximum application rates shown in the specifications unless shown otherwise in the plans.~~

This item is to be considered incidental to the cost of the contract and will not be measured for payment separately.

BASIS OF PAYMENT

602-5.1 ~~Payment shall be made at the contract unit price per gallon for bituminous prime coat. This price shall be full compensation for furnishing all materials and for all preparation, delivering, and applying the materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.~~

This item is to be considered incidental to the cost of the contract and will not be paid for separately.

END OF ITEM 602

ITEM 603510 BITUMINOUS TACK COAT

DESCRIPTION

603-1.1 This item shall consist of supplying and applying bituminous material to a previously prepared, bonded and/or bituminized binder, leveling, or base course or existing pavement in accordance with these specifications and to the width shown on the typical cross section on the plans.

603-1.2 QUANTITY OF MATERIAL. The approximate amount of diluted (unless cutback material is used) bituminous material per square yard for the tack coat application shall be *0.05 - 0.15 gal/SY for emulsions and 0.03 – 0.08 gal/SY for cutback asphalt.* ~~as shown in TABLE 1~~. The exact application rate shall be determined in the field and approved by the Resident Engineer based on a visual inspection and existing conditions. The ratio of emulsified asphalt to water shall be as specified in 603-2.1 Bituminous Material.

MATERIALS

603-2.1 BITUMINOUS MATERIAL. The Contractor shall use any one of the applicable bituminous materials for the tack coat shown in TABLE 1. The Contractor shall dilute the emulsified asphalt ~~as shown in TABLE 1~~ *at a rate of 50% emulsion/50% water (does not apply for cutback asphalt)*. HFE-90 shall be diluted by the manufacturer. No additional diluting at the jobsite is allowed for HFE-90. The diluted material shall be thoroughly agitated within 24 hours of application and show no separation of water and emulsion. The diluted material shall not be returned to an approved emulsion storage tank.

Table 1
Bituminous Material

Type and Grade	*Specification*	*Application Temperatures Degrees F*
SS-1, SS-1h	*ASTM D 977*	*75-130*
CSS-1, CSS-1h	*ASTM D 2397*	*75-130*

CONSTRUCTION METHODS

603-3.1 WEATHER LIMITATIONS. The tack coat shall be applied only when the existing surface is dry, when the atmospheric temperature is above 60° F., and when the weather is not foggy or rainy. The temperature requirements may be waived, but only when so directed by the Engineer in writing.

~~Weather Limitations shall be as shown in TABLE 1.~~

603-3.2 EQUIPMENT.

A. Pressure Distributor. The pressure distributor used for applying liquid bituminous materials shall be a self-propelled motor vehicle and shall meet the requirements given hereinafter:

B. Truck. The truck shall be capable of operating smoothly at speeds as low as 0.8 mph when used on heavy penetration construction, and at normal road speeds when used for transporting bituminous

materials. In order to develop these speeds satisfactorily, the truck shall have at least 4 speeds forward.

C. Tank. The tank on the distributor shall have a capacity of not less than 600 gallons. Approval shall be obtained from the Engineer for the use of a distributor having a capacity greater than 2500 gallons. The tank shall be covered with at least 1 inch of approved insulation. It shall be equipped with a removable manhole cover, and overflow pipe and a suitable strainer located at the intake or outlet to the pump to prevent the passage of any material which might clog the nozzles. A dial gauge plainly visible to the spray bar operator shall be conveniently placed to indicate the contents of the tank at various levels.

D. Heating System. The distributor shall be equipped with an approved heating system to heat the bituminous material. The heating system shall consist of heat flues having sufficient radiation to ensure the rapid circulation of hot gases of combustion from one or more efficient smokeless burners of the torch type, a circulating device to ensure uniform heating of the material, and a suitable fuel supply tank.

E. Pump. The distributor pump shall be of the rotary positive pressure type of sufficient size and discharge capacity to apply uniformly the specified amount of bituminous material per square yard in widths up to 24 ft. It shall be driven in the most direct method obtainable by a gasoline motor other than the vehicle propelling motor or by other methods approved by the Engineer. The pump motor shall have sufficient power to operate the distributor pump at the required volume and pressure. If the motor pump is equipped with a transmission, it shall have a governor. Suitable housing or heating jackets shall be provided to enclose the distributor pump and piping in order to retain the heat and to ensure a constant, even flow of material.

F. Spray Bars. Spray bars of various lengths shall be used to spray bituminous material over widths varying from 4 to 24 ft. The spray bars shall be arranged so that they may be swung from side to side over a distance of not less than 9 inches to match joints and to clear obstructions. They shall be equipped with spray nozzles of such design and size of orifice as to ensure uniform distribution of the bituminous material in the specified quantities. Means shall be provided to stop the flow of bituminous material quickly and to prevent it from dripping when the flow is shut off.

Means shall be provided for obtaining samples of the materials from the tank or from the piping leading from the tank to the spray bars.

A hand spray bar and nozzle having a suitable length of flexible hose with packed couplings shall be provided for applying material at fillets or similar locations.

G. Thermometer. A calibrated thermometer having the stem extending into the material or into an approved well shall be placed in a suitable position in the tank to give a true average temperature of the contents of the tank.

H. Operator's Platform. A substantial platform for the operator shall be provided at the rear of the distributor. It shall be so located that it will provide a clear view of the operation of the spray bars.

I. Tachometer or Synchronizer. A tachometer shall be attached to the truck in such a manner as to be visible to the truck operator and to enable him/her to maintain the constant speed necessary for the

correct application of the specified quantity of bitumen. Suitable charts shall be furnished by the Contractor showing the truck speeds necessary to obtain the desired results.

When a synchronizer is used, the tachometer may be omitted. The synchronizer shall deliver a specified quantity of bituminous material on the pavement surface regardless of the speed of the truck.

J. Calibration. The distributor will be calibrated by the Contractor and verified by the Engineer before the work is started. The Contractor shall furnish all equipment, tools, materials and assistance necessary to verify the calibration.

603-3.3 APPLICATION OF BITUMINOUS MATERIAL. Immediately before applying the tack coat, the full width of surface to be treated shall be swept with a power broom to remove all loose dirt and other objectionable material.

The application of the bituminous material shall be made by means of a pressure distributor at the pressure, temperature, and in the amounts directed by the Engineer. The bituminous material for the tack coat shall be applied in such a manner as to yield the coverage shown in TABLE 1. *The Contractor shall re-tack at no additional cost to the contract, areas previously sprayed but bituminous tack material is worn away due to construction equipment operations. The Resident Engineer shall determine affected areas.*

Following the application, the surface shall be allowed to cure without being disturbed for such period of time as may be necessary to permit drying out and setting of the tack coat. ~~The cure period for the bituminous tack coat shall be as shown in TABLE 1.~~ The surface shall then be maintained by the Contractor until the next course has been placed. Suitable precautions shall be taken by the Contractor to protect the surface against damage during this interval, including any sand necessary to blot up excess bituminous material.

603-3.4 BITUMINOUS MATERIAL CONTRACTOR'S RESPONSIBILITY. Samples of the bituminous material that the Contractor proposes to use, together with a statement as to its source and character, must be submitted and approved before use of such material begins. The Contractor shall require the manufacturer or producer of the bituminous material to furnish material subject to this and all other pertinent requirements of the contract. Only satisfactory materials so demonstrated by service tests, shall be acceptable.

The Contractor shall furnish vendor's certified test reports for each carload, or equivalent, of bituminous material shipped to the project. The report shall be delivered to the Engineer before permission is granted for use of the material. The furnishing of the vendor's certified test report for the bituminous material shall not be interpreted as a basis for final acceptance. All such test reports shall be subject to verification by testing samples of material received for use on the project.

The bituminous material shall be supplied from an IDOT certified source indicated on the latest IDOT Certified Source List for Emulsified Asphalt and/or the certified source list for Asphalt Cement, Cutback Asphalt, and Road Oil, as applicable.

603-3.5 FREIGHT AND WEIGH BILLS. Before the final estimate is allowed, the Contractor shall file with the Engineer receipted bills when railroad shipments are made, and certified weigh bills when materials are received in any other manner, of the bituminous materials actually used in the

construction covered by the contract. The Contractor shall not remove bituminous material from the tank car or storage tank until the initial outage and temperature measurements have been taken by the Engineer, nor shall the car or tank be released until the final outage has been taken by the Engineer.

Copies of freight bills and weigh bills shall be furnished to the Engineer during the progress of the work.

METHOD OF MEASUREMENT

603-4.1 The bituminous tack coat to be paid for shall be the number of gallons of the material used as ordered for accepted work, corrected to 60° F., in accordance with the temperature-volume correction tables for asphalt, and asphaltic emulsion materials, contained in ASTM D-1250.

Measurement for payment will not be made for any bituminous tack coat in excess of 105 percent of plan quantity plus (or minus) theoretical quantities authorized by the Engineer. (Maximum payment percentages apply only to those pay items paid for on the basis of volume or weight.) Plan quantities were calculated using the maximum application rates shown in the specifications unless shown otherwise in the plans.

BASIS OF PAYMENT

603-5.1 Payment shall be made at the contract unit price per gallon of bituminous tack coat. This price shall be full compensation for furnishing all materials and for all preparation, delivering, and application of these materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item AR603510	*Bituminous Tack Coat – per Gallon (GAL)*

END OF ITEM 603510

ITEM 620520 PAVEMENT MARKING -WATERBORNE

DESCRIPTION

620-1.1 This item shall consist of the painting of numbers, markings, and stripes on the surface of runways, taxiways, *and other paved surfaces* applied in accordance with these specifications and at the locations shown on the plans, or as directed by the Resident Engineer.

MATERIALS

620-2.1 MATERIAL ACCEPTANCE. Paint and reflective glass beads shall be pre-approved by the Illinois Department of Transportation. The Contractor shall provide to the Engineer an LA-15 with Test ID number (Supplier's Certification of Shipment of Approved Materials) or a manufacturer's certification listing the IDOT approval number for each batch/lot of paint and beads. Certification or LA-15s shall be submitted to the Engineer upon delivery of materials (or prior to delivery of materials) to the jobsite. The manufacturer's certification shall include a statement that the material meets the specification requirements. It shall also include a batch or lot number that correlates with a batch or lot number on the material container. The Division of Aeronautics, however, reserves the right to perform verification testing for acceptance of these materials.

620-2.2 PAINT. Paint shall be one of the following types, as specified:

A. WATERBORNE. The waterborne paint shall meet the following requirements:

NOTE TO THE CONTRACTOR: The requirements for yellow and white paint are the same as the requirements found in the current Illinois Department of Transportation's Standard Specifications for Road and Bridge Construction.

The finished paint shall be formulated and manufactured from first-grade materials. *It shall not contain lead, chromium, cadmium and barium.* It shall be free from defects and imperfections that might adversely affect the serviceability of the finished product. It shall be completely free from dirt and other foreign material and shall dry within the time specified to a good, tough, serviceable film. The paint shall show no evidence of excessive settling, gelling, skinning, spoilage or livering upon storage in the sealed shipping containers under normal above freezing temperatures within twelve (12) months of deliver. Any settled portion shall be easily brought back into suspension by hand mixing. When the settled portion is brought back into suspension in the vehicle, the paint shall be homogenous and shall not show a viscosity change of more than 5 KU from the original viscosity. Any paint that has settled within the period of 12 months after delivery to the degree that the settled portion cannot be easily brought into suspension by hand mixing shall be disposed of by the vendor and immediately replaced with acceptable material entirely at the vendor's expense, including handling and transportation charges. The paint, when applied by spraying methods to a HMA Asphalt pavement, shall not be discolored due to the solvent action of the paint on the surface.

Ingredients. The ingredients used to manufacture the paint shall meet the following requirements:

1. Ingredient Materials

a. TITANIUM DIOXIDE. This material shall comply with the latest revisions of the Specifications for Titanium Dioxide Pigments, ASTM D 476, Type II, Rutile. A notarized certificate of compliance from the pigment manufacturer shall be required.

b. YELLOW PIGMENT. This material shall be non-toxic organic pigment, Yellow 65: Engelhard 1244 or equivalent

c. CALCIUM CARBONATE. This material shall comply with the latest revision of the specifications for Calcium Carbonate Pigments, ASTM D 1199, Type GC, Grade 1, with minimum of 95% Calcium Carbonate or Type PC, minimum 98% Calcium Carbonate.

d. ACRYLIC EMULSION POLYMER. This material shall be Rohm and Haas E-2706 or Dow Chemical DT-211.

e. METHYL ALCOHOL. This material shall comply with the latest revision of the Specification for Methyl Alcohol, ASTM D 1152.

f. CARBON BLACK. This material shall be a carbon black pigment, either powdered or pre-dispersed form.

g. MISCELLANEOUS MATERIALS.

i. Water: Potable
ii. Dispersant: Tamol 850 (Rohm and Haas) or equivalent
iii. Surfactant: Triton CF-10 (Union Carbide) or equivalent
iv. Defoamer: Colloids 654 (Rhone-Poulenc) or equivalent
v. Rheology Modifier: Natrasol 250 HBR (Aqualon Company) or equivalent
vi. Coalescent: Texanol (Eastman Chemical)
vii. Preservative: Troy 192 (Troy Chemical)or equivalent

2. Manufacture. All ingredient materials shall be delivered in the original containers and shall be used without adulteration. The containers shall be marked with the type of material, name of manufacturer and lot number.

The manufacturers shall furnish to the Division *of Aeronautics* the batch formula which will be used in manufacturing the paint.

No change shall be made in this formula without prior approval by the Division *of Aeronautics* and no change will be approved that adversely affects the quality or serviceability of the paint.

The following Standard Formulas shall be the basis for the paint. The finished products shall conform on a weight basis to the composition requirements of these formulas. No variations will be permitted except for the replacement of volatile lost in processing. Amounts are shown in kilograms (pounds) of material.

	WHITE	YELLOW	BLACK
Carbon Black	--	--	9.53 (21)**
C.I. Pigment Yellow 65	--	14.52 (32)	--
Titanium Dioxide, Rutile, Type II	45.36 (100)	9.53 (21)	--
Calcium Carbonate, Type PC	68.04 (150)	68.04 (150)	362.87 (800)***
Calcium Carbonate, Type GC	195.05 (430)	210.92 (465)	***
Rheology Modifier	0.23 (0.5)	0.23 (0.5)	.23 (0.5)*
Acrylic Emulsion, 50% Solids	245.40 (541)	242.68 (535)	196.77 (434)
Coalescent	10.89 (24)	10.43 (23)	9.53(21)
Defoamer	2.27 (5)	2.27 (5)	2.27(5)
Dispersant	3.63 (8)	4.08 (9)	3.18 (7)
Surfactant	0.91 (2)	0.91 (2)	1.13 (2.5)
Methyl Alcohol	13.15 (29)	12.70 (28)	13.61 (30)
Preservative	0.68 (1.5)	0.68 (1.5)	0.68 (1.5)
Aqua Ammonia	--	--	0.23 (0.5)
Water	4.54 (10)	4.54 (10)	26.79 (59)**
Total Kilograms (Pounds)	*590.15 (1301)*	*581.53 (1282)*	*626.82 (1382)*

* Rheology Modifier may be varied by up to 0.05 kg (0.1 pound) to adjust viscosity to desired range.

** Carbon black and water content may vary depending upon the pigment form used. Both must be adjusted to meet the paint properties specified herein.

*** *The amount shown is total calcium carbonate, Type PC and Type GC.*

3. Paint Properties. The finished paint shall meet the following requirements.

a. PIGMENT. Analysis of the extracted pigment shall conform to the following requirements:

	WHITE	YELLOW	BLACK
Carbon Black (%)	--	--	Min. 1.5
Organic Yellow 65 (%)	--	Min. 4.8	--
Titanium Dioxide (%)	Min. 13.4	Min. 2.8	--
Calcium Carbonate (%)	Max. 86	Max. 93	Min. 58

The percent pigment by weight of the furnished product shall not be less than 50% nor more than 54% for white and yellow paint and not less than 59% for black paint.

b. VEHICLE. The non-volatile portion of the vehicle shall be composed of a 100% acrylic polymer and shall not be less than 44% by weight for white and yellow paint and not less than 38% by weight for black paint.

c. ORGANIC VOLATILES. The finished paint shall contain less than 150 grams of volatile organic matter per liter of total paint. (ASTM D 3960)

d. TOTAL SOLIDS. The finished paint shall not be less than 73% total non-volatile by weight. (ASTM D2369) for white and yellow paint and not less than 75% for black paint.

e. UNIT WEIGHT. The unit weight at 25° C (77° F.) of the production batches shall not vary more than plus or minus 0.024 kg/L (0.2 lbs. per gal.) from the weight of the qualification samples.

f. VISCOSITY. The consistency of the paint shall not be less than 83 nor more than 98 Krebs Units at 25° C (77° F.) for white and yellow paint and not less than 78 nor more than 88 Kreb Units at 25° C (77° F) for black paint.

g. DRY OPACITY. The minimum contrast ratio shall be 0.97 when tested in accordance with Federal Specification, Method 141 a, No. 4121, Procedure B when applied at a wet film thickness of 0.38 mm (15 mils.).

h. COLOR AND DIRECTIONAL REFLECTANCE (white and yellow paint). The paint, applied at a wet film thickness of 0.38 mm (15 mils) and allowed to dry 24 hours, shall meet the following requirements for daylight reflectance and color, when tested, using a color spectrophotometer with 45° circumferential/0° geometry, illuminant C, and 2° observer angle. The color instrument shall measure the visible spectrum from 380 to 720 nm with a wavelength measurement interval and spectral bandpass of 10 nm.

White Daylight Reflectance (Y) 85 percent minimum.
*Yellow Daylight Reflectance (Y) 50 percent minimum.

**Shall match Federal 595 Color No. 33538 and chromaticity limit as follows:*

X 0.490 0.475 0.485 0.530
Y 0.470 0.438 0.425 0.456

i. WATER RESISTANCE. The paint shall conform to Federal Specification TT-P-1952D, Section 3.2.5.

j. FREEZE-THAW STABILITY. The paint shall show no coagulation or change in consistency greater than 10 Kreb Units, when tested in accordance with Federal Specification TT-P-1952D, Section 4.3.8.

k. ACCELERATED PACKAGE STABILITY. The paint shall show no coagulation, discoloration, or change in consistency greater than 10 Kreb Units when tested in accordance with Federal Specification TT-P-1952D, Section 4.3.4.

l. DILUTION TEST. The paint shall be capable of dilution with water at all levels without curdling or precipitation such that the wet paint can be readily cleaned up with water only.

m. STORAGE STABILITY. After 30 days storage in a three-quarters filled, closed container, the paint shall show no caking that cannot be readily re-mixed to a smooth, homogenous state, no skinning, livering, curdling or hard settling. The viscosity shall not change more than 5 Kreb Units from the viscosity of the original sample.

n. NO PICK-UP TIME. The no pick-up time shall be less than 10 minutes. The test shall follow the requirements of ASTM D 711 with a wet film thickness of 0.38 mm (15 mils).

o. GRIND. The paint shall have a grind of not less than 3 on a Hegman Grind Gauge.

p. FLEXIBILITY. The paint shall show no cracking or flaking when tested in accordance with Federal Specification TT-P-1952D, Section 4.3.5.

q. DRY THROUGH TIME. The paint, when applied to a non-absorbent substrate at a wet film thickness of 0.38 mm (15 mils) and placed in a humidity chamber controlled at 90 ± 5% R.H. and a 22.5 ± 1.4° C (72.5 + 2.5° F.) shall have a "dry through time" not greater than 15 minutes of the IDOT standard formula. The dry through time shall be determined according to ASTM D 1640, except the pressure exerted shall be the minimum needed to maintain contact with the thumb and film.

r. NO TRACKING TIME FIELD TEST. The paint shall dry to a no-tracking condition under traffic in three minutes maximum when applied at 0.38 ± 0.03 mm (15 ± 1 mil) wet thickness at 54.4 - 65.6° C (130 - 150° F.), and from three to ten minutes when applied at ambient temperatures with 0.72 kg (6 pounds) of glass beads per liter (gallon) of paint for white and yellow paint and without beads for black paint. "No tracking" shall be the time in minutes required for the line to withstand the running of a standard automobile over the line at a speed of approximately 65 km/hr (40 mph), simulating a passing procedure without tracking of the reflectorized line when viewed from a distance of 15 m (50 feet).

B. EPOXY. The epoxy paint shall meet the following requirements:

NOTE TO THE CONTRACTOR: These requirements are the same as the requirements found in the current Illinois Department of Transportation's Standard Specifications for Road and Bridge Construction.

1. The epoxy marking material shall consist of a 100 percent solid two-part system formulated and designed to provide a simple volumetric mixing ratio of two components (must be two volumes of Part A and one volume of Part B). No volatile or polluting solvents or fillers will be allowed.

Total solids shall not be less than 99 percent when determined, on the missed material, according to ASTM D 2369, excluding the solvent dispersion.

2. The Epoxide Value (WPE) of Component A shall be tested according to ASTM D 1652 on a pigment free basis. The WPE shall not vary more than plus or minus 50 units of the qualification samples.

3. The Total Amine Value of Component B shall be tested according to ASTM D 2074. The Total Amine Value shall not vary more than plus or minus 50 units of the qualification samples.

4. Composition by Weight of Component A as Determined by Low Temperature Ashing. A 0.5 gram sample of component A shall be dispersed with a paperclip on the button of an aluminum dish, weighed and then heated in a muffle furnace at 1000 degrees F (538 degree C) for one hour an weighed again. No solvents shall be used for dispersion. The difference in the weights shall be calculated and meet the following:

PIGMENT*	WHITE	YELLOW
Titanium Dioxide ASTM D-476 Type II	21-24%	--
Chrome Yellow ASTM D-211 Type III	--	23-26%
Epoxy Resin	76-79%	74-77%

*No extender pigments are permitted.
**From the pigment and epoxy resin content determined on qualification samples.

5. Upon heating to application temperature, the material shall not exclude fumes which are toxic or injurious to persons or property.

6. The daylight directional reflectance of the cured epoxy (without glass spheres) *shall not be less than 80% (white) and 50% (yellow) relative to magnesium oxide when tested using a color spectrophotometer with a 45 degree circumferential/zero degrees geometry, illuminant C, and two degree observer angle. The color instrument shall measure the visible spectrum from 380 to 720 nm with a wavelength measurement interval and spectral bandpass of 10 nm.* In addition, the color of the yellow epoxy shall visually match Color Number 33538 of Federal Standard 595a to the satisfaction of the Division of Aeronautics.

7. The epoxy pavement marking material, when mixed in the proper ratio and applied at 0.35 mm to 0.41 mm (14 to 16 mils) wet film thickness and with the proper saturation of glass spheres, shall exhibit no tracking time of twenty minutes or more when tested according to ASTM D-711.

8. The epoxy pavement marking materials when *applied to a 100mm x 100mm x 50mm (4 inch by 4 inch by 2 inch) concrete block,* shall have a degree of adhesion which results in a 100 percent concrete failure in the performance of this test.

   The concrete block shall be brushed on one side and have a minimum strength of 24,100 kPa (3500 psi). A 50 mm (2 inch) square film of the mixed epoxy shall be applied to the brushed surface and allowed to

cure for 72 hours at room temperature. A 50 mm (2 inch) square cube is then affixed to the surface of the epoxy by means of an epoxy glue. After the glue has cured for 24 hours, the epoxy specimen is placed on a dynamic testing machine in such a fashion so that the specimen block is in a fixed position and the 50 mm (2 inch) cube (glued to the epoxy surface) is attached to the dynamometer head. Slowly apply direct upward pressure until the epoxy system fails. Record the location of the break and the amount of concrete failure.

9. The epoxy pavement marking materials when tested according to ASTM D 2240, shall have a shore D hardness of between 75 and 100. Films shall be cast on a rigid substrate at 0.35 mm to 0.41 mm (14 to 16 mils) in thickness and allowed to cure at room temperature for 72 hours before testing.

10. The abrasion resistance shall be evaluated, according to ASTM D 4060, on a Taber Abrader with a 1,000 gram load and CS 17 wheels. The duration of test shall be 1,000 cycles. The loss shall be calculated by difference and be less than 82 mgs. The tests shall be run on cured samples of material which have been applied at a film thickness of 0.35 mm to 0.41 mm (14 to 16 mils) to code S-16 stainless steel plates. The films shall be allowed to cure at room temperature for at least 72 hours before testing.

11. When tested according to ASTM D 638, the epoxy pavement marking materials shall have a tensile strength of not less than 41,300 kPa (6,000 psi). The Type IV specimens shall be cast in a suitable mold not more than 6.3 mm (1/4 inch) thick and pulled at a rate of 6.3 mm (1/4 inch) per minute by a suitable dynamic testing machine. The samples shall be allowed to cure at room temperature for at least 72 hours before testing.

12. When tested according to ASTM D 695, the catalyzed epoxy pavement marking materials shall have a compressive strength of not less than 83,000 kPa (12,000 psi). The cast sample shall be conditioned at room temperature for a minimum of 72 hours before performing the indicated tests. The rate of compression of these samples shall be 6.3 mm (1/4 inch) per minute or less.

13. The epoxy paint shall be applied to an aluminum alloy panel (Federal Test Std. No. 141, Method 2013) at a film thickness of 0.35 mm to 0.41 mm (14 to 16 mils) and allowed to cure for 72 hours at room temperature. Subject the coated panel for 75 hours to accelerated weathering using the light and water exposure apparatus (fluorescent UV - condensation type) as specified in ASTM G 53 (equipped with UVB-313 lamps).

    The cycle shall consist of 4 hours UV exposure at 50° C (122° F), followed by 4 hours of condensation at 40° C (104° F). UVB bulbs shall be used. At the end of the exposure period, the panel shall show no substantial change in color or gloss.

14. The material shall be shipped to the job-site in substantial containers and shall be plainly marked with the manufacturer's name and address, the name and color of the material, date of manufacture, and batch number.

15. Prior to approval and use of the epoxy pavement marking materials, the manufacturer shall submit a notarized certification of an independent laboratory, together with the results of all tests, stating these materials meet the requirements as set forth herein. The certified test report

shall state the lot tested, manufacturer's name, brand name of epoxy and date of manufacture. The certification shall be accompanied by ½ liter (one-pint) samples each of Part A and Part B. After approval by the Division of Aeronautics, certification by the epoxy manufacturer shall be submitted for each batch used. New independent laboratory certified test results and samples for testing by the Division of Aeronautics shall be submitted any time the manufacturing process or paint formulation is changed. All costs of testing (other than tests conducted by the Division of Aeronautics) shall be borne by the Manufacturer.

16. Acceptance samples shall consist of two ½-L (one pint) samples of Part A and one ½ L (one pint) of Part B, of each lot of paint. The samples shall be submitted to the Division of Aeronautics for testing, together with a manufacturer's certification. The certification shall state the formulation for the lot represented is essentially identical to that used for qualification testing. All acceptance samples shall be taken by a representative of the Illinois Department of Transportation. The epoxy pavement marking materials shall not be used until tests are completed and they have met the requirements as set forth herein.

17. When concrete pavement is to be painted, it shall attain an age of 28 days before the curing compound is removed and the paint is applied.

620-2.3 REFLECTIVE MEDIA. The glass beads shall be sampled and pre-approved for use by the Illinois Department of Transportation. Type B beads shall be used and shall have a silicone, moisture resistant coating and pass IDOT tests for moisture resistance, as well as packaging specifications and any other relevant IDOT tests.

CONSTRUCTION METHODS

620-3.1 WEATHER LIMITATIONS. The painting shall be performed only upon a dry surface, when the atmospheric temperature is above 45 degrees F. and when the weather is not foggy or windy.

620-3.2 EQUIPMENT. All equipment for the work shall be approved by the Engineer and shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, and such auxiliary hand painting equipment as may be necessary to satisfactorily complete the job.

The mechanical marker shall be an atomizing spray-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall be designed so as to apply markings of uniform cross sections and clear-cut edges without running or spattering.

620-3.3 PREPARATION OF SURFACE. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other foreign material which would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by sweeping and blowing or by other methods as required to remove all dirt, laitance, and loose materials. Markings shall be applied to the cleaned surface on the same calendar day. If this cannot be accomplished, the surface area shall be re-cleaned prior to applying the markings. No markings shall be placed until the Engineer approves the cleaning.

Paint shall not be applied to Portland cement concrete pavement until the concrete in the areas to be

painted is clean of curing material. Sand blasting or high pressure water shall be used to remove curing material from concrete surfaces.

620-3.4 LAYOUT OF MARKINGS. On those sections of pavement where no previously applied markings are available to serve as a guide, the proposed markings shall be laid out in advance of the paint application.

620-3.5 APPLICATION. Markings shall be applied at the locations and to the dimensions and spacing shown on the plans. Paint shall not be applied until the layout and condition of the surface have been approved by the Engineer.

The paint shall be mixed in accordance with the manufacturer"s instructions and applied to the pavement with a marking machine in two applications, each at the rate(s) shown in TABLE 1. The addition of thinner will not be permitted.

TABLE 1. Application Rates for Paint and Glass Beads

Paint Type	Paint Square feet per gallon, ft2/gal (Square meters per liter, m2/l) (Per application)	Glass Beads, Type I, Gradation A Pounds per gallon of paint, lb/gal (Kilograms per liter of paint, kg/l) (Applied to second coat only)
Waterborne	115 ft2/gal maximum (2.8 m2/l)	7 lb/gal minimum (0.85 kg/l)
Epoxy	90 ft2/gal maximum (2.2 m2/l)	15 lb/gal minimum (1.8 kg/l)

A period of 14 days minimum shall elapse between placement of a HMA surface course or seal coat and application of the paint unless paint in accordance with Federal Specification TT-P-1952 is used. When this paint is used, a minimum of 24 hours shall elapse.

The edges of the markings shall not vary from a straight line more than ½ inch in 50 feet, and the dimensions shall be within a tolerance of plus or minus 5 percent. Glass spheres shall be distributed to the surface of the marked areas immediately after application of the paint. A dispenser shall be furnished which is properly designed for attachment to the marking machine and suitable for dispensing glass spheres. When painting Item 402 Porous Friction Course with waterborne paints, the paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine from two directions at the rate(s) shown in TABLE 1 from each direction.

Glass spheres shall be required on all pavement markings with the exception of black markings.

The Contractor shall furnish certified test reports for the materials shipped to the project. The reports shall not be interpreted as a basis for final acceptance. The Contractor shall notify the Engineer upon arrival of a shipment of paint to the job site. All emptied containers shall be returned to the paint storage area for checking by the Engineer. The containers shall not be removed from the airport or destroyed until authorized by the Engineer.

620-3.6 PROTECTION. After application of the paint, all markings shall be protected damage until the paint is dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings of paint.

620-3.7 PAVEMENT MARKING REMOVAL. The Contractor shall remove existing and temporary markings as shown in the plans or as directed by the Engineer using sandblasting, water blasting, shot blasting, or other approved method.

620-3.8 TEMPORARY PAVEMENT MARKING. Temporary pavement marking shall be applied with one coat at the rate shown in TABLE 1.

Glass beads will be required where shown on the plans.

METHOD OF MEASUREMENT

620-4.1 The quantity of *pavement* ~~and taxiway~~ markings *painted with specified materials* to be paid for shall be the number of square feet of painting performed in accordance with the specifications *and lines shown on the plans measured only once for an application of two coats of paint* and accepted by the Engineer.

When the project is constructed essentially to the lines, grades, or dimensions shown on the Plans and the Contractor and the Engineer have agreed in writing by the use of form AER-981 that the plan quantities are accurate, no further measurement will be required and payment will be made for the quantities shown in the contract for the various items involved except that if errors are discovered after work has been started, appropriate adjustments will be made.

When the Plans have been altered or when disagreement exists between the Contractor and the Engineer as to the accuracy of the plan quantities, either party shall, before any work is started which would affect the measurement, have the right to request in writing and thereby cause the quantities involved to be measured as herein specified.

~~The quantity of permanent pavement marking, temporary pavement marking and removal of permanent and temporary markings to be paid for shall be the number of square feet of painting or removal performed in accordance with the specifications and accepted by the Engineer.~~

BASIS OF PAYMENT

620-5.1 Payment shall be made at the contract unit price per square foot for pavement marking~~, temporary marking, and pavement marking removal.~~ This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item. The application of the reflective media shall be considered incidental to the item of pavement marking for which it is used and no additional compensation will be allowed.

Payment will be made under:

Item AR620520	*Pavement Marking – Waterborne – per Square Foot (SF)*

END OF ITEM 620520

ITEM 209606 CRUSHED AGG. BASE COURSE – 6″

DESCRIPTION

209-1.1. This item shall consist of a base course composed of crushed aggregates. It shall be constructed on a prepared underlying course in accordance with these specifications and shall conform to the dimensions and typical cross section shown on the plans and with the lines and grades established by the Resident Engineer.

MATERIALS

209-2.1. Crushed Coarse Aggregate. The crushed coarse aggregate shall be crushed stone, crushed gravel, or crushed concrete as described below:

A. Crushed Stone. Crushed stone shall be the angular fragments resulting from crushing, by mechanical means, the following types of rocks quarried from undisturbed consolidated deposits: granite and similar phanerocrystalline igneous rocks, limestone, dolomite, massive metamorphic quartzite, or similar rocks. Dolomite shall be a carbonate rock containing 11.0 percent or more magnesium oxide (MgO). Limestone shall be a carbonate rock containing less than 11.0 percent magnesium oxide (MgO).

B. Crushed Gravel. Crushed gravel shall be the product resulting from crushing by mechanical means, and shall consist entirely of particles obtained by crushed gravel, all of which before crushing will be retained on a 1 inch screen. If approved by the Engineer, final product gradations may be obtained by screening or blending various sizes of crushed gravel material.

C. Crushed Concrete. Crushed concrete shall be the angular fragments resulting from crushing Portland cement concrete by mechanical means. The acceptance and use of crushed concrete shall be according to the latest Bureau of Materials and Physical Research policy memorandum. Evidence of this acceptance must be provided to the Resident Engineer.

The crushed stone shall consist of hard, durable particles or fragments of stone, free from dirt or other objectionable matter.

The crushed coarse aggregate shall conform to the following quality requirements:

QUALITY TEST(IDOT D Quality)	PERCENT
Na2 SO4 Soundness 5 Cycle, ASTM C 88 (Illinois Modified AASHTO T 104), Max. % Loss 1/	25
Los Angeles Abrasion, ASTM C 131, Max. % Loss	45

1/ Does not apply to crushed concrete.

The aggregate shall be free from vegetation, lumps, or excessive amounts of clay and other objectionable substances.

All material passing the No. 4 mesh sieve produced in the crushing operation of the stone shall be incorporated in the base material unless there is an excessive amount which, if included, would not meet the gradation requirements.

The crushed aggregate shall meet the requirements of one of the gradations given in TABLE 1 when tested in accordance with ASTM C 117 and ASTM C 136.

TABLE 1. REQUIREMENTS FOR GRADATION OF AGGREGATE

Sieve Designation	**Percentage by weight passing sieves**		
	~~A~~	B	~~C~~
	~~2" maximum~~	**1 1/2" maximum**	**~~1"maximum~~**
2 inch	~~100~~	--	~~--~~
1-1/2 inch	~~90-100~~	100	~~--~~
1 inch	~~70-95~~	90-100	~~100~~
3/4 inch	~~--~~	--	~~90-100~~
1/2 inch	~~45-75~~	60-90	~~65-95~~
No. 4	~~30-50~~	30-56	~~40-60~~
No. 16	~~15-35~~	10-40	~~15-45~~
No. 200	~~4-12~~	4-12	~~5-13~~
IDOT Gradations	~~(CM-4)~~	***(CA-6)***	~~(CA-10)~~

The gradations in the table represent the limits which shall determine suitability of aggregate for use from the sources of supply. The final gradations decided on within the limits designated in the table shall be well graded from coarse to fine and shall not vary from the low limit on one sieve to the high limit on the adjacent sieves or vice versa.

The amount of the fraction of material passing the No. 200 mesh sieve shall not exceed one half the fraction passing the No. 16 mesh sieve.

The portion of the base aggregate, including any blended material, passing the No. 16 mesh sieve shall have a plasticity index of not more than 4 when tested in accordance with ASTM D 4318.

The selection of any of the gradations shown in the table shall be such that the maximum size aggregate used in any course shall not be more than two thirds the thickness of the layer of course being constructed.

209-2.2 ADDITIONAL FINE MATERIAL. If additional fine material, in excess of that naturally present in the base course material, is necessary for correcting the gradation to the limitations of the specified gradation, or for the satisfactory bonding of the base material, *or*

for changing the soil constants of the material passing the No. 16 mesh sieve, it shall be uniformly blended and mixed with the base course material at the crushing plant or by an approved plant.

There shall be no reworking of the base course material in-place to obtain the specified gradation. The additional fine material for this purpose shall be obtained from the crushing of stone, and when used, shall be of a gradation as necessary to accomplish the specified gradation in the final mixed base course material.

In addition, recycled material meeting the requirements of this section may be used with the Engineers approval.

209-2.3 AGGREGATE MATERIAL SUPPLIERS RESPONSIBILITY Samples of the crushed aggregate base that the Contractor proposes to use along with a statement of their source and character shall be submitted to the Engineer 10 working days prior to the Contractor starting work on this item.

When submitting materials for consideration, the Contractor shall provide written certification that the material meets the specified requirements and is an IDOT approved source.

CONSTRUCTION METHODS

209-3.1 PREPARING UNDERLYING COURSE. The underlying course shall be checked and accepted by the Resident Engineer before placing and spreading operations are started. Any ruts or soft, yielding places caused by improper drainage conditions, hauling, or any other cause, shall be corrected and rolled to the required compaction before the base course is placed thereon.

Grade control ~~between the edges of the runways~~ shall be accomplished by grade stakes, steel pins, or forms placed in lanes parallel to the centerline of the pavement and at intervals sufficiently close that string lines or check boards may be placed between the stakes, pins, or forms.

To protect the underlying course and to insure proper drainage, the spreading of the base shall begin along the centerline of the pavement on a crowned section or on the high side of the pavement with a one-way slope.

209-3.2 PLANT MIX. The base material shall be uniformly blended during crushing operations or mixed in an approved plant. The type of plant may be either a central proportioning and mixing plant or a traveling plant. The plant shall blend and mix the materials to meet these specifications and to secure the proper moisture content for compaction.

209-3.3 PLACING AND SPREADING. The crushed aggregate base course material shall contain the optimum amount of moisture prior to placement. The amount of moisture required shall be that determined by the Engineer for the material and compaction methods

being used. The water and aggregate shall be mixed at a central mixing plant. The plant shall be equipped with a mechanical mixing device, and aggregate and water measuring devices, meeting the approval of the Engineer.

The aggregate shall be free from vegetation, lumps, or excessive amounts of clay and other objectionable substances.

A. Central Plant. The crushed aggregate base material that has been proportioned in a crushing and screening plant, or proportioned and processed in a central mixing plant, shall be placed on the prepared underlying course and compacted in layers of the thickness shown on the plans. The depositing and spreading of the material shall commence where designated and shall progress without breaks. The material shall be deposited and spread in lanes in a uniform layer and without segregation of size to such loose depth that, when compacted, the layer shall have the required thickness. The base aggregate shall be spread by spreader boxes or other approved devices or methods that shall spread the aggregate in the required amount to avoid or minimize the need for rehandling the material and to prevent the rutting of the underlying course. The spreader boxes or other devices shall be equipped with strike-off templets or screeds that can be adjusted or controlled to secure the required thickness of the material. Dumping from vehicles in piles on the underlying course which will require rehandling shall not be permitted. Hauling over the uncompacted base course shall not be permitted.

B. Traveling Plant. If a traveling plant is used for mixing, the base material shall be placed on the underlying course in such condition to provide a base mixture conforming to the specified gradation and moisture content, and in such quantity to develop the thickness of the layer of the base and the density after compaction. The material shall be shaped to a uniform section. The Engineer shall examine the mixture to determine that the mixing is complete and satisfactory and that the proper moisture content is maintained before compaction is started. No spreading shall be done except when authorized. Care shall be taken that no material from the underlying course is mixed with the base material.

If necessary, the base course shall be bladed until a smooth, uniform surface is obtained that is true to line, grade, and cross section and until the mix is in condition for compacting.

C. Method of Placing. The base course shall be constructed in a layer not less than 2 ½ inches nor more than 4 ½ inches of compacted thickness. The aggregate, as spread, shall be of uniform gradation with no segregation or pockets of fine or coarse materials. Unless otherwise permitted by the Engineer, the aggregate shall not be spread more than 2,000 square yards in advance of the rolling. Any necessary sprinkling shall be kept within these limits. No material shall be placed in snow or on a soft, muddy, or frozen underlying course.

When more than one layer is required, the construction procedure described herein shall apply similarly to each layer.

The base material shall have a satisfactory moisture content when rolling is started, and any

minor variations prior to or during rolling shall be corrected by sprinkling or aeration, if necessary.

During the placing and spreading, sufficient caution shall be exercised to prevent the incorporation of subgrade, subbase, or shoulder material in the base course mixture.

209-3.4 FINISHING AND COMPACTING. After spreading, the crushed aggregate shall be thoroughly compacted by rolling. The rolling shall progress gradually from the sides to the center of the lane under construction, or from one side toward previously placed material by lapping uniformly each preceding rear wheel track by one-half the width of such track. Rolling shall continue until the entire area of the course has been rolled by the rear wheels. The rolling shall continue until the stone is thoroughly set, the interstices of the material reduced to a minimum, and until creeping of the stone ahead of the roller is no longer visible. Rolling shall continue until the base material has been compacted to not less than 95% *of the maximum density of lab specimens prepared and tested in accordance with ASTM D 1557.* ~~density, as determined by the compaction control tests specified in Division VII.~~ Blading and rolling shall be done alternately, as required or directed, to obtain smooth, even, and uniformly compacted base.

The Contractor shall provide a qualified nuclear gauge and operator for Quality Control (QC) testing for density. The Contractor shall provide recent (within the same year that the aggregate base course is constructed) representative proctor(s) for each aggregate source and gradation approved for use on the project. If in the opinion of the Resident Engineer, the proctor(s) are determined to be non-representative of the material used to construct the aggregate base course, the Contractor, at his/her expense, shall obtain a representative sample of the aggregate in question and have it retested and a new proctor curve developed. The aggregate base course shall be tested and accepted for density by the Resident Engineer or his/her representative. The in-place field density shall be determined in accordance with ASTM D 1556, D 2167 or D 2922. The acceptance testing frequency is a minimum of one random density test per 1500 square yards per lift of aggregate. The Contractor shall not proceed to the next lift of aggregate base course until the previous lift has been accepted by the Engineer.

The course shall not be rolled when the underlying course is soft or yielding or when the rolling causes undulation in the base course. When the rolling develops irregularities that exceed 3/8 inch when tested with a 16-foot straightedge, the irregular surface shall be loosened, refilled with the kind of material as that used in constructing the course, and rolled again as required.

In areas inaccessible to rollers, the base course material shall be tamped thoroughly with mechanical tampers.

The sprinkling during rolling, if necessary, shall be in the amount and by equipment approved by the Resident Engineer.

209-3.5 RESERVED

209-3.6 RESERVED

209-3.7 SURFACE GRADE ACCURACY. After the course has been completely compacted, the surface shall be checked for accuracy of grade and crown and shall *be within +0/-0.04 feet of* ~~not vary by more than 3/16 inch from~~ the surface elevations shown on the plans or authorized by the Engineer. Any failing areas shall be scarified, reshaped, re-compacted, and otherwise manipulated as the Resident Engineer may direct until the required accuracy is obtained.

209-3.8 THICKNESS CONTROL. *The aggregate base course shall be constructed to the thickness shown in the plans. One determinations of thickness shall be made for each lot of material placed. The lot size shall consist of a maximum of 600 square yards or one days production, whichever is less. Each lot shall be divided into four equal sublots. One test shall be made for each sublot. Sampling locations will be determined by the Engineer on a random basis.* Where the thickness is deficient by more than ½", the Contractor shall correct such areas at no additional cost by excavating to the required depth and replacing with new material; however, the surface elevation of the completed aggregate base course shall not exceed ~~by more than 3/16 inch~~ the surface elevation shown on the plans or authorized by the Engineer. Additional test *holes at contractor's expense* may be required to identify the limits of the deficient areas.

209-3.9 MAINTENANCE. Following the completion of the base course, the Contractor shall perform all maintenance work necessary to keep the base course in a condition satisfactory for priming. After priming, the surface shall be kept clean and free from foreign material. The base course shall be properly drained at all times. If cleaning is necessary, or if the prime coat becomes disturbed, any work or restitution necessary shall be performed at the expense of the Contractor.

209-3.10 PROTECTION. Work on the base course shall not be accomplished during freezing temperatures or when the subgrade is wet. When the aggregates contain frozen materials or when the underlying course is frozen, the construction shall be stopped.

Hauling equipment may be routed over completed portions of the base course, provided no damage results and provided that such equipment is routed over the full width of the base course to avoid rutting or uneven compaction. However, the Resident Engineer in charge shall have full and specific authority to stop all hauling over completed or partially completed base course when, in his/her opinion, such hauling is causing damage. Any damage resulting to the base course from routing equipment over the base course shall be repaired by the Contractor at his/her own expense.

209-3.11 OPERATION AT SOURCES OF SUPPLY. All work involved in clearing and stripping of quarries and pits, including the handling of unsuitable material, shall be performed by the Contractor at his/her own expense. The base material shall be obtained from approved sources. The material shall be handled in a manner that shall secure a uniform and satisfactory product.

209-3.12 EQUIPMENT. All equipment necessary for the proper construction of this work shall be on the project, in first-class working condition, and approved by the Resident Engineer before construction is permitted to start.

METHOD OF MEASUREMENT

In areas where an undercut is warranted and directed by the Engineer, crushed aggregate base course required as shown in the plans in this area will not be measured for payment under Item 209606.

~~209-4.1 When specified or shown in the plans, the quantity of crushed aggregate base course to be paid for shall be the number of tons of base course material placed and accepted. The aggregate shall be weighed either at the place of loading in the trucks, at the place of unloading from the trucks, or at such other points that the Resident Engineer may designate. The Contractor shall furnish approved duplicate load tickets upon which is recorded the net weight of the aggregates in each truck. The Contractor shall submit one (1) load ticket to the Resident Engineer, or his/her duly authorized representative, at the job site when the truck load is incorporated into the base. If at the time the aggregates are weighed, they contain more than six (6) percent of absorbed and free moisture by weight, a deduction for the moisture in excess of this amount shall be made in determining the pay quantity.~~

~~The Contractor shall furnish or arrange for the use of scales of a type approved by the Resident Engineer.~~

~~209-4.1 When specified or shown in the plans, the crushed aggregate base course will be measured by the square yard of the thickness specified in place, completed and accepted. The Contractor shall furnish approved duplicate load tickets upon which is recorded the net weight of the aggregates in each truck. The Contractor shall submit one (1) load ticket to the Resident Engineer, or his/her duly authorized representative, at the job site when the truck load is incorporated into the base.~~

~~209-4.3 Measurement for payment will not be made for any crushed aggregate base course in excess of 108 percent of plan quantity plus (or minus) theoretical quantities authorized by the Engineer. (Maximum payment percentages apply only to those pay items paid for on the basis of volume or weight.)~~

BASIS OF PAYMENT

~~209-5.1 Payment shall be made at the contract unit price per ton or per square yard as specified per the plans for crushed aggregate base course. This price shall be full compensation for furnishing all materials and for all preparation, hauling, and placing *and compacting* of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.~~

~~*Payment will be made under:*~~

~~*Item AR209606 Crushed Agg. Base Course – 6″ – per Square Yard (SY)*~~

Crushed Aggregate Base Course – 6″ required in areas of undercut will not be paid for separately but shall be considered incidental to item AR 152511.

END OF ITEM 209

ITEM 403610 BITUMINOUS BASE COURSE

DESCRIPTION

403-1.1. This work shall consist of a Hot-Mix Asphalt (HMA) base course composed of mineral aggregate and bituminous material mixed in a central mixing plant and placed on a prepared course in accordance with these specifications and shall conform to the lines, grades, thicknesses, and typical cross sections shown on the plans. The term "Hot Mix Asphalt" or "HMA" shall refer to this mixture in various combinations and uses.

Each course shall be constructed to the depth, typical section, or elevation required by the plans and shall be rolled, finished, and approved before the placement of the next course. The Contractor shall be responsible for the Quality Control in the production and construction of the HMA (Hot Mix Asphalt) base course. The HMA base course shall be laid in a maximum of two (2) inch lifts. Thicker lifts not to exceed three (3) inches may be authorized by the Engineer provided a continuous paving operation is maintained.

For all IDOT Division of Aeronautics projects, the production, placement, and acceptance of flexible (HMA) pavements is performed by either Method I or Method II, when indicated. The two Methods are differentiated by the quantity of material placed. Refer to the plans and project Special Provisions for which method is used for each pay item. In all cases, Method I refers to quantities less than 2,500 tons, while Method II refers to quantities greater than or equal to 2,500 tons.

MATERIALS

403-2.1 AGGREGATE. Aggregates shall consist of crushed stone or crushed gravel, or recyclable asphalt pavement (RAP), blended with crushed or natural sand(s) and/or mineral filler.

Crushed Stone: Crushed stone shall be the angular fragments resulting from crushing by, mechanical means the following types of rocks quarried from undisturbed consolidated deposits: granite and similar phanerocrystalline igneous rocks, limestone, dolomite, massive metamorphic quartzite, or similar rocks. Dolomite shall be a carbonate rock containing 11.0 percent or more magnesium oxide (MgO). Limestone shall be a carbonate rock containing less than 11.0 percent magnesium oxide (MgO).

Crushed Gravel: Crushed gravel shall be the product resulting from crushing by mechanical means, and shall consist entirely of particles obtained by crushing gravel, all of which before crushing will be retained on a screen with openings equal to or larger than the maximum nominal size of the resulting crushed material. If approved by the Engineer, final product gradations may be obtained by screening or blending various sizes of crushed gravel material.

Recyclable Asphalt Pavement (RAP): Recyclable asphalt pavement shall be defined as the product resulting from milling and/or crushing of HMA pavement composed of aggregates and asphalt that originally met the quality requirements as stated herein. The Contractor shall furnish evidence satisfactory to the Division and the FAA that the material met the specified

quality requirements.

Mineral Filler: Mineral filler shall consist of dry limestone dust, or other material approved by the Engineer and shall meet the requirements of ASTM D 242.

The portion of the materials retained on the No. 8 sieve shall be known as coarse aggregate, the portion passing the No. 8 sieve and retained on the No. 200 sieve as fine aggregate, and the portion passing the No. 200 sieve as mineral filler.

A. Coarse Aggregate. Coarse aggregate shall consist of sound, tough, durable particles conforming to the following quality requirements:

QUALITY TEST (IDOT C Quality)	PERCENT
Na2 SO4 Soundness, 5 Cycle, ASTM C 88 (Illinois Modified AASHTO T 104) Max. %	20
Los Angeles Abrasion, ASTM C 131 Max. % Loss	45

DELETERIOUS TEST	PERCENT
Materials (Max. % allowed)	
Shale %	4.0
Clay Lumps %	0.5
Soft & Unsound Frag. %	8.0
Other Deleterious %	2.0
Total Deleterious Allowed %	*10.0*

B. Fine Aggregate. Fine aggregate shall be defined as follows:

1. Sand: Sand shall be the fine granular material resulting from the natural disintegration of rock. Sand produced from deposits simultaneously with and by the same operations as gravel coarse aggregate may contain crushed particles in the quantity resulting normally from the crushing and screening of oversize particles.

2. Stone Sand: Stone sand shall be produced by washing or processing by air separation the fine material resulting from crushing rock quarried from undisturbed consolidated deposits.

3. Slag Sand: Slag sand shall be the graded product resulting from the screening of air cooled blast furnace slag. Air cooled blast furnace slag shall be the nonmetallic product, consisting essentially of silicates and alumino-silicates of lime and other bases, which is developed in a molten condition simultaneously with iron in a blast furnace.

4. Steel Slag Sand: Steel slag sand shall be the graded product resulting from the screening of crushed steel slag. Crushed steel slag shall be the nonmetallic product which is developed in a molten condition simultaneously with steel in an open hearth, basic oxygen or electric furnace.

The fine aggregate shall also conform to the following quality requirements:

QUALITY TEST(IDOT B Quality)	PERCENT
Na_2SO_4 Soundness, 5 Cycle, ASTM C 88 (Illinois Modified AASHTO T 104) Max. % Loss	15
Minus No. 200 Sieve Material, ASTM C 136 Max. % Loss	6.0 2/

1/ Fine aggregate shall not contain more than 3 percent clay (2 micron or smaller) particles.

2/ Does not apply to Stone Sand.

DELETERIOUS TEST	PERCENT
Materials (Max. % allowed)	
Shale %	3.0
Clay Lumps %	3.0
Coal, Lignite & Shells %	3.0
Conglomerate %	3.0
Other Deleterious %	3.0
Total Deleterious Allowed %	*5.0*

If necessary to obtain the gradation of aggregate blend or workability, natural sand may be used. The amount of sand to be added will be adjusted to produce mixtures conforming to requirements of this specification.

C. Sampling and Testing. All aggregates proposed in the manufacture of the mix will be sampled and tested by the Contractor. ASTM D 75 shall be used in sampling coarse aggregate and fine aggregate, and ASTM C 183 shall be used in sampling mineral filler. The Contractor shall provide

the Engineer with aggregate producer (quarry) and Contractor (plant) quality control gradations. No aggregate shall be used in the production of mixture without prior approval.

D. Sources of Aggregates. All aggregate sources that are approved by the Illinois Department of Transportation, Division of Highways, conforming to the description, gradation and quality specified herein, shall be permitted for use in the manufacture of the HMA base course. The supplier of aggregates must participate and meet the requirements of the Illinois Department of Transportation Division of Highways Source Certification Program (AGCS). The Engineer reserves the right to inspect the source(s) and manufacturing of all aggregates. If satisfactory quality control and production procedures are not being implemented, the Engineer may remove approval of the source(s). Approval of the source(s) of aggregate(s) does not relieve the Contractor in any way of the responsibility for delivery to the job site aggregates that meet the requirements specified herein.

E. Samples of Aggregates. All the source(s) of the proposed aggregates for use by the Contractor in the Contractor"s proposed HMA design must be approved in writing by the Division"s Engineer of Construction & Materials prior to use in any design or production of bituminous material.

403-2.2 FILLER. If filler, in addition to that naturally present in the aggregate, is necessary, it

shall meet the requirements of ASTM D 242.

403-2.3 BITUMINOUS MATERIAL. Performance Graded asphalt PG 64-22 shall be used for all HMA produced unless otherwise specified. When requested, producers shall provide the Engineer with viscosity/temperature relationships for the performance graded asphalt binders delivered and incorporated in the work.

The asphalt binder shall meet the requirements of AASHTO M 320, Table 1 "Standard Specification for Performance Graded Asphalt Binder" for the grade shown on the plans. Elastomers shall be added to the base asphalt binder to achieve the specified performance grade and shall be either a styrene- butadiene diblock or triblock copolymer without oil extension, or a styrene-butadiene rubber. Air blown asphalts, acid modification, and other modifiers will not be allowed. Asphalt modification at hot-mix asphalt plants will not be allowed.

The Contractor shall furnish vendor's certified test reports for each carload or equivalent of bitumen shipped to the project. The report shall be delivered to the Engineer before permission is granted for use of the material. The furnishing of the vendor's certified test report for the bituminous material shall be the basis for final acceptance.

COMPOSITION

403-3.1 COMPOSITION OF MIXTURE. The HMA shall be composed of a mixture of aggregate, filler if required, and bituminous material. The several aggregate fractions shall be sized, uniformly graded, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula.

403-3.2 JOB MIX FORMULA. The Contractor is responsible for the job mix formula (JMF) and no HMA for payment shall be produced until a letter from the Illinois Division of Aeronautics" Engineer of Construction & Materials approving the Contractor"s proposed JMF has been issued to the Contractor. The approved JMF shall indicate the definite percentage on each sieve for each aggregate, the percent of bitumen, and the number of gyrations specified for the individual project. The Contractor shall provide all laboratory sampling and testing to the Engineer upon the completion of the proposed JMF. The exact tests and procedures are outlined in the Illinois Division of Aeronautics (IDOA) latest *Policy Memorandum 2003-1: "Requirements for Laboratory, Testing, Quality Control and Paving of Superpave Bituminous Concrete Mixtures for Airports*," located at the IDOT internet site.

The job mix formula for each mixture shall be in effect until modified in writing by the Project Engineer. Should a change in sources of materials be made, a new job mix formula shall be established before the new material is used.

The HMA shall be tested according to the Asphalt Institute"s most current Superpave Series No. 2 manual entitled, "Superpave Mix Design" and shall meet the criteria set forth in TABLES 1 and 2 herein.

TABLE 1 SUPERPAVE DESIGN CRITERIA

TRAFFIC MIX

Design Parameter	Aircraft over 60,000 lbs. 1/		Aircraft under 60,000 lbs.		Automobile
	Runway or Taxiway	Parking Apron	Runway or Taxiway	Parking Apron	Entrance roads and Parking Lots
N_{ini} 2/	5	7	5	5	5
N_{des} 3/	40	50	30	30	30
N_{max}	58	74	42	42	42
% Air Voids V_a 4/	2-4	2-4	2-4	2-4	2-4
VFA (min %)	75-90	75-90	75-90	75-90	75-90

1/ Stone sand (IDOT Gradation FA20 or FA21) shall be required as part of the fine aggregate portion of the JMF. The exact amount of stone sand will be determined by the Contractor based on preparation of the Mix Design. The percentage of stone sand will be verified as acceptable by the Division of Aeronautics based upon the Contractor's final proposed JMF. The Division reserves the right to request a change in the amount of stone sand at any point in the mix design process, as well as during production, based upon performance of the mix during placement.
2/ Where N= number of gyrations on an IDOT approved superpave gyratory compactor.
3/ The Ndes value may be changed in order to obtain an acceptable mix design when approved by the Engineer.
4/ Contact the Division for optimum target voids required.

The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory screens, will conform to the gradation or gradations specified in TABLE 2, when tested in accordance with ASTM Standard C 136 (dry sieve only). The percentage by weight for the bituminous material shall be within the limits specified.

TABLE 2. AGGREGATE HMA BASE COURSE
Percentage by Weight Passing Sieves Job Mix Formula (JMF)

Sieve Size	Gradation B Range1" 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 %:	4.5 – 7.0	5.5

The gradation in TABLE 2 represents the limits which shall determine the suitability of aggregate for use from the sources of supply. The aggregate, as finally selected, shall have a

gradation within the limits designated in TABLE 2 and shall not vary from the low limit on one sieve to the high limit on the adjacent sieve, or vice versa, but shall be uniformly graded from coarse to fine. When approved by the Engineer, the Contractor may add up to 25 percent of recyclable asphalt pavement to meet the required gradations, provided he can produce a consistent mixture meeting the mix design, temperature, and density requirements specified herein.

The course and fine aggregate gradations specified in the Illinois Division of Highways Specifications for Road and Bridge Construction, current edition, may be blended to meet the job mix formula.

The job mix tolerances shown in TABLE 3 shall be applied to the job mix formula to establish a job control grading band. The tolerances listed in TABLE 3 will only apply when they cause a grading band within the band listed in TABLE 2. Otherwise, the grading bands listed in TABLE 2 shall apply.

TABLE 3. JOB MIX FORMULA TOLERANCES
(Based on a Single Test)

Material	Tolerances Plus or Minus
Aggregate passing No. 4 sieve or larger	7 percent
Aggregate passing Nos. 8 and 16 sieves	5 percent
Aggregate passing Nos. 30 sieve	4 percent
Aggregate passing Nos. 100 and 200 sieves	2 percent
Bitumen	0.45 percent
Temperature of mixing and placing	20 degrees F.

The aggregate gradation may be adjusted within the limits of TABLE 2, as directed, without adjustments in the contract unit prices.

Should a change in sources of materials be made, a new job mix formula shall be established before the new material is used. Deviation from the approved JMF for bitumen content and gradation of aggregates shall not be greater than the tolerances permitted and shall be based on extraction, or calibrated ignition oven test for aggregate gradations and asphalt content. Results falling outside the set tolerances shall be cause for rejection of all the material placed from the time of testing until a passing test is obtained. The applicable ASTM and IDOT tests are outlined in the current IDOA *Policy Memorandum 2003-1: "Requirements for Laboratory, Testing, Quality Control and Paving of Superpave Bituminous Concrete Mixtures for Airports,"* located at the IDOT internet site. These tests shall be performed by Contractor quality control personnel. Split mix samples shall be maintained by the Contractor for random testing by the Engineer.

403-3.3 BITUMINOUS AND AGGREGATE MATERIAL CONTRACTOR'S RESPONSIBILITY.

Samples of the bituminous and aggregate materials that the Contractor proposes to use, together with a statement of their source and character, shall be submitted to the Engineer; approval must be obtained before the use of such material begins. The Contractor shall require the manufacturer or producer of the bituminous and aggregate materials to furnish material

subject to this and all other pertinent requirements of the contract. Only those materials that have demonstrated performance under the proposed design requirements will be accepted.

The Engineer or his/her authorized representative shall have access, at all times, to all parts of the paving plant for the purpose of inspecting equipment, conditions and operation of the plant, for verification of weights or proportions and character of materials, and to determine temperatures maintained in the preparation of the mixtures.

The Contractor shall furnish vendor's certified test reports for each carload or equivalent of bitumen shipped to the project. The report shall be delivered to the Engineer before permission is granted for use of the material. The furnishing of the vendor's certified test report for the bituminous material shall not be interpreted as a basis for final acceptance. All such test reports shall be subject to verification by testing samples of materials received for use on the project.

403-3.4 TEST SECTION. *A test section is not required.* ~~(For Method II only: Over 2,500 tons/pay item) Prior to the manufacture of mix for the test section, Contractor quality control personnel shall have completed all proportioning and testing in accordance with Policy Memorandum 2003-1, to assure that the mix produced will meet the JMF. The Contractor shall then manufacture a quantity of HMA base course mixture in order to construct the test section.~~

~~The test section shall have a length of approximately 200 to 300 lineal feet and shall be of the same depth specified for the construction of the course which it represents. The Contractor may place up to 50 tons of mix prior to construction of the test section in order to line-out the plant, the mix, and the paving operation. The underlying grade or pavement structure upon which the test section is to be constructed shall be the same as the remainder of the course represented.~~

1. ~~Construction of the Test Section. The test section shall consist of two parts: Development of A Growth Curve and establishing a Rolling Pattern. Growth Curve: To construct the Growth Curve a self-propelled vibratory roller meeting the following minimum requirements shall be required:~~

~~Drum diameter 48 inches, length of drum 66 inches, vibrators 1600 vibrations per minute (VPM) minimum, unit static force on vibrating drum(s) 125 pounds per lineal inch (PLI), total applied force 325 pounds per lineal inch (PLI), adjustable eccentrics, reversible eccentrics on nondriven drum(s). The total applied force for various combinations of VPM and eccentric positions shall be shown on decals on the vibrating roller or on a chart maintained with the roller. The vibratory roller shall be equipped with water tanks and sprinkling devices, or other approved methods, which shall be used when necessary to wet the drum to prevent the HMA from sticking.~~

~~The Contractor shall have a vibrating reed tachometer (hand type) at the job site for checking roller vibrations. The reed tachometer shall have a range of 1000 to 4000 vibrations per minute (VPM). The vibrating reed tachometer shall have two (2) rows of reeds. One row shall range from 1000 to 2000 VPM and the other row shall range from 2000 to 4000 VPM.~~

~~The Growth Curve shall be constructed by successive passes of the vibratory roller, in a given area, in order to determine the maximum compactibility of the mix. The Growth Curve shall be done under the supervision of the Engineer, or his/her designated representative, who must~~

validate the Growth Curve results before continuing with the remainder of the Test Section. More than one Growth Curve may be required as part of the test section if adjustments to the mix, plant operation, laydown, etc., are necessary to reach optimum compactibility.

2. Rolling Pattern: The Contractor shall then proceed to establish the Rolling Pattern using the equipment that he intends to use for compaction of the rest of the HMA course.

B. Test Section Acceptance. The Test Section shall be evaluated and approved based on the following.

1. The completed Test Section (Rolling Pattern area) shall be divided into four (4) subsections with one (1) sample consisting of two (2) cores obtained from each subsection for determination of density. One additional core sample shall be obtained from the Growth Curve.

2. The Contractor shall correlate a nuclear density gauge to the Test Section for Quality Control testing. The nuclear density gauge shall not be used for acceptance testing.

3. The completed Test Section (rolling pattern area) shall have a minimum density of 94.0 percent (6.0 percent air voids) of the maximum theoretical specific gravity of the mix (ASTM D 2041). Individual test results (average of two cores) below 94.0% shall constitute a failing test section.

4. If the test section fails to meet these requirements, the Contractor shall construct a new Test Section meeting these requirements at his/her own expense.

5. Full production shall not be allowed until all tests, Reflux extraction or Ignition Oven, Gradation, Gravities of mix, and Core Densities are completed in order to determine compliance with these specifications.

6. The completed Test Section(s) shall be part of the proposed work. When recommended by the Resident Engineer and approved by the Engineer, test sections that do not conform to the specifications shall be removed and replaced at the Contractor"s expense.

7. When a Test Section passes, the Test Section tonnage shall be paid 100%.

The mix used in construction of the Test Section shall be paid for under Section 403610-6.1. Construction of the Test Section shall be paid for separately from the mix, but also in accordance with Section 403610-
6.1. Payment will be made for only one (1) Test Section.

CONSTRUCTION METHODS

403-4.1 WEATHER LIMITATIONS. The HMA shall not be placed upon a wet surface or when the surface temperature of the underlying course is less than specified in TABLE 4. The

temperature requirements may be waived, but only when so directed by the Engineer.

TABLE 4. BASE TEMPERATURE LIMITATIONS

Mat Thickness	Base Temperature (Minimum) F	C
3 in. or greater	40	4
Greater than 1 in. but less than 3 in.	45	7
1 in. or less	50	10

No paving shall commence unless the ambient air temperature is 40° F. and rising. Paving shall halt when the ambient air temperature is 45° F. and falling.

403-4.2 HMA PLANT. The Hot-Mix Asphalt (HMA) plant(s) shall conform to the following requirements, or the Engineer may accept the use of a hot-mix plant approved by the IDOT Division of Highways for the manufacture of Class I HMA mixtures in accordance with the current IDOT Standard Specifications for Road and Bridge Construction. When recyclable asphalt pavement is used, the hot- mix plant shall also conform to the additional IDOT plant requirements for hot-mix recycling.

If the supplier is equipped with an automated plant the automation feature shall be used in the production of bituminous material for the project. If the supplier is equipped with a recordation feature, it also shall be used. Sufficient storage space shall be provided for each size of aggregate. The different aggregate sizes shall be kept separated until they have been delivered to the cold elevator feeding the drier. The storage yard shall be neat and orderly, and the separate stockpiles shall be readily accessible for sampling.

Plants used for the preparation of HMA shall conform to all requirements under A., except that scale requirements shall apply only where weight proportioning is used. In addition, batch mixing plants shall conform to the requirements under B., continuous mixing plants shall conform to the requirements under C., and drum mixers shall conform to the requirements under D.

A. Requirements for All Plants. Mixing plants shall be of sufficient capacity to adequately produce the quantity of HMA for the proposed construction.

   1. Plant scales. Scales shall be accurate to 0.5 percent of the required load. Poises shall be designed to be locked in any position to prevent unauthorized change of position. In lieu of plant and truck scales, the Contractor may provide an approved automatic printer system to print the weights of the material delivered, provided the system is used in conjunction with an approved automatic batching and mixing control system. Such weights shall be evidenced by a weigh ticket for each load. Scales shall be inspected for accuracy and sealed as often as the Engineer may deem necessary. The Contractor shall have on hand not less than ten 50-pound weights for testing the scales.

   2. Equipment for preparation of bituminous material. Tanks for storage of bituminous material shall be capable of heating the material under effective and positive control,

at all times, to the temperature requirements specified herein. Heating shall be accomplished by steam coils, electricity, or other means that will allow no direct flames to come in contact with the bituminous material or its fumes. The circulating system for the bituminous material shall be of adequate size to insure proper and continuous circulation between storage tank and mixer during the entire operating period. Pipelines and fittings shall be steam-jacketed or otherwise properly heated, if required, or insulated to prevent heat loss. The storage tank capacity shall be sufficient for at least a one-day run. Provision shall be made for measuring quantities and for sampling the material in the storage tanks.

3. Feeder for drier. The plant shall be provided with accurate mechanical means for uniformly feeding the aggregate into the drier to obtain uniform production and temperature. When added mineral filler is specified, a separate bin and feeder shall be furnished with its drive interlocked with the aggregate feeders.

4. Drier. The plant shall include a drier(s) which continuously agitates the aggregate during the heating and drying process.

5. Screens. Plant screens, capable of screening all aggregates to the specified sizes and proportions and having normal capacities in excess of the full capacity of the mixer, shall be provided.

6. Bins. The plant shall include storage bins of sufficient capacity to supply a mixer operating at full capacity. Bins shall be arranged to assure separate and adequate storage of appropriate fractions of the mineral aggregates. When used, separate dry storage shall be provided for filler of hydrated lime, and the plant shall be equipped to feed such material into the mixer. Each bin shall be provided with overflow pipes of such size and at such location to prevent backup of material into the compartments or bins. Each compartment shall be provided with its individual outlet gate to prevent leakage. The gates shall cut off quickly and completely. Bins shall be constructed so that samples may be obtained readily. Bins shall be equipped with adequate tell-tale devices which indicate the position of the aggregates in the bins at the lower quarter points.

Prior to start of production of any mixture, the Contractor shall furnish the Engineer with calibrations showing the rate of feet of each aggregate for the cold bin or silo in which it is to be used. Change of material or change of cold bin or silo will require new calibrations. The calibrations shall show the rate of feed per minute per unit of opening or setting of feed.

7. Bituminous control unit. Satisfactory means shall be provided to obtain the proper amount of bituminous material in the mix within the tolerance specified by the job mix formula, either by weighing, metering, or volumetric measurements. Suitable means shall be provided, either by steam-jacketing or other methods of insulation, for maintaining the specified temperature of the bituminous material in the pipelines, meters, weigh buckets, spray bars, and other containers or flow lines. Means shall be provided for checking the quantity or rate of flow of bituminous material into the mixer.

8. Thermometric equipment. An armored thermometer of adequate range shall be fixed in the bituminous feed line at a suitable location near the discharge valve at the mixer unit. The plant shall be further equipped with either an approved recording dial scale, a mercury-actuated thermometer, an electric recording pyrometer, or other thermometric instruments, so placed at the discharge chute of the dryer as to register automatically or indicate the temperature of the heated aggregate. When required by the Engineer, additional thermometric equipment shall be placed at the pug mill to control the temperature of the mixture.

9. Dust collector. The plant shall be equipped with a dust collector to waste or return uniformly to the hot elevator all or any part of the material collected as directed. The plant shall have a mixed cover and such additional housing necessary to the control of dust.

10. Truck scales. Unless an automatic batching plant with automatic printers is used, the HMA mixture shall be weighed on approved scales furnished by the Contractor or on public scales at the Contractor's expense. Scales shall be inspected for accuracy and sealed as often as the Engineer deems necessary.

11. Safety requirements. Adequate and safe stairways to the mixer platform and sampling points shall be provided, and guarded ladders to other plant units shall be placed at all points where accessibility to plant operations is required. Accessibility to the top of truck bodies shall be provided by suitable device to enable the Engineer to obtain sampling and mixture temperature data. Means shall be provided to raise and lower scale calibration equipment, sampling equipment, and other similar equipment between the ground and the mixer platform. All gears, pulleys, chains, sprockets, and other dangerous moving parts shall be thoroughly guarded. Ample and unobstructed passage shall be maintained at all times in and around the truck loading area.

    This area shall be kept free of drippings from the mixing platform. Equipment exposed to steam or other lines carrying high temperatures, so located as to endanger workmen or create a fire hazard, shall be properly guarded or insulated as to prevent inadvertent injurious contact by workmen. Surge bins will not be allowed.

12. Testing laboratory. The Contractor or producer shall provide a testing laboratory, meeting the requirements of Illinois Division of Aeronautics‟ latest Policy Memorandum 96-2/2003-1, located at the IDOT internet site, for Quality Control and acceptance testing during periods of mix production, sampling, and testing, and whenever materials subject to the provision of these specifications are being supplied or tested. The laboratory shall provide adequate equipment, space, and utilities as required for the performance of the specified tests. All labs must be certified to do Marshall or Superpave mix design and testing, as required by design, having AMRL and AASHTO certification for all equipment.

13. Aggregate stockpiles. In preparation of the mineral aggregates, sufficient storage space shall be provided so that such aggregate size can be kept in separate stockpiles.

The stockpile will be constructed in uniform layers by use of a clamshell or other approved methods in such manner as to prevent segregation. The use of bulldozers in stockpiling of aggregates will not be permitted. The storage yard shall be neat and orderly and the separate stockpiles readily accessible for sampling.

B. Requirements for Batching Plants.

1. Weigh box or hopper. The equipment shall include means for weighing each bin size of aggregate in a weigh box or hopper suspended on scales, ample size to hold a full batch without hand raking or running over. The assembly, consisting of the weigh box or hopper and the supporting fulcrums and knife edges, shall be so constructed that no part of the assembly will be easily thrown out of alignment or adjustment. The gates on both the bins and hoppers shall be so constructed as to prevent leakage of aggregate when closed. On manually operated plants, an interlocking device shall be provided that will prevent the opening of more than one gate at a time. On automatic plants, designed for simultaneous weighing of all sizes of aggregate, this provision shall not apply while the plant is operating under automatic control.

2. Bituminous control. The equipment used to measure the bituminous material shall be accurate to within +0.5 percent. The bituminous material bucket shall be of a non-tilting type with a loose sheet metal cover. The length of the discharge opening or spray bar shall be not less than three-fourths the length of the mixer and it shall discharge directly into the mixer. The bituminous material bucket, its discharge valve(s), and spray bar shall be adequately heated. Steam jackets, if used, shall be efficiently drained, and all connections shall be so constructed that they will not interfere with the efficient operation of the bituminous scales. The capacity of the bituminous material bucket shall be at least 15 percent in excess of the weight of bituminous material required in any batch. The plant shall have an adequately heated, quick- acting non-drip charging valve located directly over the bituminous material bucket.

The indicator dial shall have a capacity of at least 15 percent in excess of the quantity of bituminous material used per batch. The controls shall be constructed to lock at any dial setting and automatically reset to that reading after each additional batch of bituminous material. The dial shall be in full view of the mixer operator. The flow of bituminous material shall be automatically controlled to begin when the dry mixing period is over. All of the bituminous material required for one batch shall be discharged in not more than 15 seconds after the flow has begun. The size and spacing of the spray-bar openings shall provide a uniform application of bituminous material the full length of the mixer. The section of the bituminous line between the charging valve and the spray bar shall have a valve and outlet for checking the meter when a metering device is substituted for a bituminous material bucket.

3. Mixer. The batch mixer shall be an approved type capable of producing a uniform mixture with well-coated aggregate in the prescribed mixing time within the job mix tolerance specified. If not enclosed, the mixer box shall be equipped with a dust hood to prevent loss of dust. The clearance of blades from all fixed and moving parts shall not exceed 1 inch.

4. Control of mixing time. The mixer shall be equipped with an accurate time lock to control the operations of a complete mixing cycle. It shall lock the weigh-box gate after the charging of the mixer and keep it locked until the closing of the mixer gate at the completion of the cycle. It shall lock the bituminous material bucket throughout the dry mixing period and shall lock the mixer gate throughout the dry and wet mixing periods. The dry mixing period is defined as the interval of time between the opening of the weigh-box gate and the introduction of bituminous material. The wet mixing period is the interval of time between the introduction of bituminous material and the opening of the mixer gate.

The timing control shall be flexible and shall be capable of settings of 5-second intervals or less throughout a 3-minute cycle. A mechanical batch counter shall be installed as a part of the timing device and shall be designed to register only completely mixed batches.

The setting of time intervals shall be at the direction of the Engineer who shall then lock the case covering the timing device until a change is made in the timing periods.

C. Requirements for Continuous Mix Plants.

1. Aggregate proportioning. The plant shall include means for accurately proportioning each size of aggregate.

The plant shall have a feeder mounted under each compartment bin. Each compartment bin shall have an accurately controlled individual gate to form an orifice for the volumetric measuring of material drawn from each compartment. The feeding orifice shall be rectangular with one dimension adjustable by positive mechanical means and provided with a lock.

Indicators shall be provided for each gate to show the respective gate opening in inches.

2. Weight calibration of aggregate feed. The plant shall include a means for calibration of gate openings by weighing test samples. Provision shall be made so that materials fed out of individual orifices may be bypassed to individual test boxes. The plant shall be equipped to conveniently handle individual test samples of not less than 200 pounds. Accurate scales shall be provided by the Contractor to weigh such test samples.

3. Synchronization of aggregate feed and bituminous material feed. A satisfactory means shall be provided to afford positive interlocking control between the flow of aggregate from the bins and the flow of bituminous material from the meter or other proportioning device. This control shall be by interlocking mechanical means or by any other positive method satisfactory to the Engineer.

4. Mixer. The plant shall include an approved continuous mixer adequately heated and capable of producing a uniform mixture within the job mix tolerances. It shall be equipped with a discharge hopper with dump gates to permit rapid and complete discharge of the mixture. The paddles shall be adjustable for angular position on the shafts and shall be reversible to retard the flow of the mix. The mixer shall have a

manufacturer's plate giving the net volumetric contents of the mixer at the several heights inscribed on a permanent gauge. Charts shall be provided showing the rate of feed per minute for each aggregate used.

D. Requirements for Drum Mixers.

1. Exclusions. Replace the appropriate sections of 403-4.2.A with the following sections that apply only for drum mixers.

2. Aggregate delivery system. An automatic plant shutoff shall be provided to operate when any aggregate bin becomes empty. Provisions shall be provided for conveniently sampling the full flow of materials from each cold feed and the total cold feed. Total cold feed shall be weighed continuously. The weighing system shall have an accuracy of 0.5 percent when tested for accuracy. The plant shall provide positive weight control of the cold aggregate feed by use of a belt scale, or other appropriate device, which will automatically regulate the feed gate and permit instant correction of variations in load. The cold feed flow shall be automatically coupled with the asphalt flow to maintain the required proportions of each material. Provisions shall be made for introducing the moisture content of the cold feed aggregates into the belt weighing signal and correcting wet aggregate weight to dry aggregate weight. Screens or other suitable devices which will reject oversize particles or lumps of aggregate that have been cemented together shall be installed in the feeder mechanism between the bins and the dryer drum.

   Dry weight of the aggregate flow shall be displayed digitally in appropriate units of weight and time and totalized.

3. Bituminous material and additive delivery systems. Satisfactory means of metering shall be provided to introduce the proper amount of bituminous material and additives into the mix. Delivery systems shall prove accurate to plus or minus 1 percent when tested for accuracy. The bituminous material and additive delivery shall be interlocked with the aggregate weight. The bituminous material and additive flow shall be displayed digitally in appropriate units of volume (or weight) and time shall be totalized.

4. Thermometric equipment. A recording thermometer of adequate range shall be located to indicate the temperature of the bituminous material in storage. The plant shall also be equipped with approved recording thermometers, pyrometers, or other approved recording thermometric instruments at the discharge chute of the drum mixer.

5. Drum mixer. A drum mixer of satisfactory design shall be provided. It shall be capable of drying and heating the aggregate to the moisture and temperature requirements set forth in the paving mixture requirements and capable of producing a uniform mixture. If the quality requirements of Section 403-3.2 cannot be met, the Contractor will be required to utilize either batch or continuous mix plants.

6. Temporary storage of HMA mixture. Use of surge bins or storage bins for temporary storage of HMA mixtures will be permitted as follows:

    a. The HMA mixture may be stored in surge bins for a period of time not to exceed 3 hours.

    b. The HMA mixture may be stored in insulated and heated storage bins for a period of time not to exceed 12 hours, provided an inert gas atmosphere is maintained in the bin during the storage period.

If the Engineer determines that there is an excessive amount of heat loss, segregation and/or oxidation of the mixture due to temporary storage, use of surge bins or storage bins will be discontinued.

E. Inspection of Plant. The Engineer or his/her authorized representative shall have access, at all times, to all parts of the paving plant for checking adequacy of equipment; inspecting operation of the plant; verifying weights, proportions, and character of materials; and checking the temperatures maintained in the preparation of the mixtures.

403-4.3 HAULING EQUIPMENT. Trucks used for hauling HMA shall have tight, clean, smooth metal beds. To prevent the mixture from adhering to them, the beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other approved material. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary, so that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated and covers shall be securely fastened.

All trucks used for hauling HMA shall have a tightly closing tailgate to prevent spilling of material on airfield pavements or entrance roads used for haul roads. Prior to leaving the placing site, the end of the truck beds shall be cleaned of all loose material which may spill onto the pavements and the tail gate shall be secured.

403-4.4 HMA PAVERS. HMA pavers shall be self-contained, power-propelled units with an activated screed capable of vibrating at approximately 3000 VPM or strike-off assembly, heated if necessary, and shall be capable of spreading and finishing courses of HMA which will meet the specified thickness, smoothness, and grade. Pavers used for shoulders and similar construction shall be capable of spreading and finishing courses of HMA in widths shown on the plans. All width extensions required to place material shall have the same placement features and equipment functions as provided on the main body of the paver. Augers shall be extended as additional sections of screed are bolted on or automatically adjustable screeds are extended. The augers need not be extended when the screed extensions on either side of the machine are one foot or less and the finished surface of the mat is uniform. The use of any machine obsolete in design or in poor mechanical condition will not be permitted.

The paver shall have a receiving hopper of sufficient capacity to permit a uniform spreading operation. The hopper shall be equipped with a distribution system to place the mixture uniformly in front of the screed. The screed or strike-off assembly shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the

mixture.

The paver shall be capable of operating at forward speeds consistent with satisfactory laying of the mixture. An automatic grade control system shall be used to automatically maintain the screed elevation as specified herein. The control system shall be automatically actuated from either a reference line or surface through a system of mechanical sensors or sensor-directed mechanisms or devices which will maintain the paver screed at a predetermined transverse slope and at the proper elevation to obtain the required surface.

The controls shall be capable of working in conjunction with any of the following attachments, as specified by the Project Engineer:

A. Ski-type device of not less than 30 feet in length or as directed by the Engineer.

B. Taut stringline (wire) set to grade.

C. Short ski or shoe.

403-4.5 ROLLERS. Rollers may be of the vibratory, steel wheel, or pneumatic-tired type. They shall be in good condition, capable of reversing without backlash, and operating at slow speeds to avoid displacement of the HMA. The number, type, and weight of rollers shall be sufficient to compact the mixture to the required density without detrimentally affecting the compacted material.

403-4.6 PREPARATION OF BITUMINOUS MATERIAL. The bituminous material shall be heated to the specified temperature in a manner that will avoid local overheating and provide a continuous supply of the bituminous material to the mixer at a uniform temperature. The temperature of the bituminous material delivered to the mixer shall be sufficient to provide a suitable viscosity for adequate coating of the aggregate particles, but shall not exceed the applicable maximum temperature set forth in AASHTO M 320 and not be more than 25° F above the temperature of the aggregate as specified in Section 403-4.7.

403-4.7 PREPARATION OF MINERAL AGGREGATE. The aggregate for the mixture shall be dried and heated to the temperature designated by the job formula within the job tolerance specified. Immediately after heating, the base course aggregate(s) shall be screened into at least four sizes. This requirement does not apply to drum mixer plants. The maximum temperature and rate of heating shall be such that no permanent damage occurs to the aggregates. Particular care shall be taken that aggregates high in calcium or magnesium content are not damaged by overheating. The temperature shall not be lower than is required to obtain complete coating and uniform distribution on the aggregate particles and to provide a mixture of satisfactory workability.

403-4.8 PREPARATION OF HMA. The aggregates and the bituminous material shall be measured or gauged and introduced into the mixer in the amount specified by the job mix formula.

The combined materials shall be mixed until a complete and uniform coating of the particles

and a thorough distribution of the bituminous material throughout the aggregate are secured. Wet mixing time shall be approved by the Engineer for each plant and for each type aggregate used. Normally, the mixing time after introduction of bituminous material should not be less than 30 seconds. For continuous mix plants, the minimum mixing time shall be determined by dividing the weight of its contents at operating level by the weight of the mixture delivered per second by the mixer.

Mixing time (seconds)=Pugmill dead capacity in pounds
Pugmill output in pounds per second

403-4.9 TRANSPORTING, SPREADING, AND FINISHING. The mixture shall be transported from the mixing plant to the point of use in vehicles conforming to the requirements of Section 403-4.3. Deliveries shall be scheduled so that spreading and rolling of all mixture prepared for one day's run can be completed during daylight, unless adequate artificial lighting is provided. Hauling over freshly placed material shall not be permitted until the material has been compacted, as specified, and allowed to cool to atmospheric temperature.

Immediately before placing the HMA, the underlying course shall be cleared of all loose or deleterious material with power blowers, power brooms, or hand brooms as directed and a tack coat shall be applied according to Item 603.

The mix shall be placed at a temperature of not less than ° F. Moisture content of the mix shall not exceed 0.5 percent. The Engineer may increase the asphalt content of the first lift by up to 0.3 percent when the HMA is placed directly on a prepared subgrade.

Upon arrival, the mixture shall be spread to the full width by an approved HMA paver. It shall be struck off in a uniform layer of such depth that, when the work is completed, it shall have the required thickness and shall conform to the grade and contour indicated. The speed of the paver shall be regulated to eliminate pulling and tearing of the HMA mat. The maximum allowed paver speed is 50 ft/min. Unless otherwise directed, placing shall begin along the centerline of areas to be paved on a crowned or on the high side of areas with a one-way slope. The mixture shall be placed in consecutive adjacent strips having a minimum width of 10 feet, except where edge lanes require strips less than 10 feet to complete the area. The longitudinal joint in one layer shall offset that in the layer immediately below by at least 1 foot; however, the joint in the top layer shall be at the centerline of the pavement. Transverse joints in one layer shall be offset by at least 2 feet from transverse joints in the previous layer. Transverse joints in adjacent lanes shall be offset a minimum of 10 feet.

The first lane of the first lift of the HMA base course shall be started at the center of the pavement with a taut stringline (guide wire) set to grade at both sides of the paver. The automatic grade control system of the paver shall be used to control grade of both sides of the paver from these reference stringlines. The grade control for the adjacent lanes of pavement shall be maintained by using a matching shoe with the previous laid pavement and a stringline on the outer edge of the next lane. A stringline and matching shoe shall be used to pave all remaining lanes of the first lift of base course. If grade is established on the first lift, succeeding lifts shall be laid with a traveling ski on both sides of the paver for the center lane with matching shoe and traveling ski on adjacent lanes. If grade is not established on the first lift, the Engineer shall require taut

stringline references until satisfactory grade is established.

On areas where irregularities or unavoidable obstacles make the use of mechanical spreading and finishing equipment impractical, the mixture may be spread, raked, and luted by hand tools.

403-4.10 COMPACTION OF MIXTURE. After spreading, the mixture shall be thoroughly and uniformly compacted with power rollers as directed by the Engineer. Rolling of the mixture shall begin as soon after spreading as it will bear the roller without undue displacement or hair checking. On the first strip spread, rolling shall start at the low edge and progress toward the high edge. When adjoining lanes are placed, the same rolling procedure should be followed, but only after compaction of fresh mix at the longitudinal joint with 6 to 8 inches of the vibrating roller width overlapping on the previously compacted lane. Vibratory rollers will be operated so as to obtain a minimum of 10 impacts per foot. If a static roller is being used, 6 to 8 inches should be on the fresh mix at the longitudinal joint with the remainder of the roller width on the previously compacted lane. Rollers operated in static mode shall not exceed 3 mph(264 ft/min).

Initial rolling shall be done longitudinally. The rollers shall overlap on successive trips. Alternate trips of the roller shall be of slightly different lengths, and cross rolling shall not exceed more than one half the width of the pavement on crowned sections. The speed of the roller shall, at all times, be slow to avoid displacement of the hot mixture. Any displacement occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected at once by rakes and fresh mixture.

Sufficient rollers shall be used to handle the output of the plant. Rolling shall continue until all roller marks are eliminated producing a surface of uniform texture true to grade and cross section.

The Contractor shall provide, at all times, an approved Troxler (or equal) nuclear density gauge with a qualified operator to maintain quality control of the density as specified herein.

To prevent adhesion of the mixture to the roller, the wheels shall be kept properly moistened, but excessive water will not be permitted.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with hot hand tampers.

Any mixture which becomes loose and broken, mixed with dirt, or in any way defective prior to the application of the finish coat shall be removed and replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This shall be done at the Contractor's expense.

403-4.11 JOINTS. The formation of all joints shall be made in such a manner as to ensure a continuous bond between old and new sections of the course. All joints shall present the same texture, density, and smoothness as other sections of the course.

The roller shall not pass over the unprotected end of the freshly laid mixture except when necessary to form a transverse joint. When necessary to form a transverse joint, it shall be made by means of placing a bulkhead or by tapering the course, in which case the edge shall be cut

back to its full depth and width on a straight line to expose a vertical face. In both methods all contact surfaces shall be given a tack coat of bituminous material before placing any fresh mixture against the joint.

Longitudinal joints which are irregular, damaged, or otherwise defective shall be cut back to expose a clean, sound surface for the full depth of the course. All contact surfaces shall be given a tack coat of bituminous material prior to placing any fresh mixture against the joint.

All longitudinal joints constructed are to be compacted in such a manner that they are "pinched" to provide adequate density at the joint. When laying the HMA adjacent to a previously placed lane, the first pass of the roller shall be along the longitudinal joint on the fresh mixture with the compression wheel not more than 6 in. from the joint. The second pass of the roller shall overlap the longitudinal joint not more than 12 in. on the previously placed lane, after which the rolling shall proceed uniformly. Each stop shall be regulated to prevent trapping of water on the rolled surface. The steel wheeled rollers shall be operated with the compression wheels toward the direction of paving. The Contractor shall cut two cores per 2,500 tons at a random location over the longitudinal construction joint. The cores shall be delivered to the Engineer for density testing and the two results will be used to obtain an average density. This average density at the joint shall be a minimum of 90%.

Density results below an average of 90% shall result in an immediate suspension of paving operations until a sufficient investigation and solution to the density problem is agreed to by the Engineer. The result of this deficiency will be a 5% penalty on all production done on the day the core was taken or represents.

403-4.12 SHAPING EDGES. While the surface is being compacted and finished, the Contractor shall carefully trim the outside edges of the pavement to the proper alignment. Edges so formed shall be beveled while still hot with the back of a rake or a smoothing iron and thoroughly compacted by tampers or by other satisfactory methods.

403-4.13 ACCEPTANCE TESTING OF HMA MIXES FOR DENSITY. (For Method I only; Under 2,500
tons/pay item) The HMA base course shall be compacted to a minimum density of 93 percent (7 percent air voids) and a maximum of 99 percent (1 percent air voids) of the Maximum Theoretical Specific Gravity (ASTM D 2041). If, during construction, the density test falls below 93 percent, additional approved rollers shall be required. Failure to achieve density within these limits shall be cause for rejection of the material, as determined by the Division.

Two random nuclear density tests shall be taken for each 500 tons of mix placed. Each nuclear density test shall be the average of five (5) nuclear tests taken as a cross-section of the pavement. The Engineer shall have a nuclear gauge and qualified operator on the project when constructing this item. One random mix sample shall be taken from each 1,000 tons of mix laid, for Extraction or Ignition Oven, Maximum Specific Gravity and Air Void tests. The Engineer shall have a nuclear gauge and qualified operator on the project when constructing this item.

~~(For Method II only; Over 2,500 tons/pay item) The HMA base course shall be compacted to a minimum density of 93 percent (7 percent air voids) and a maximum of 99 percent (1 percent air~~

voids) of the maximum theoretical specific gravity (ASTM D 2041) and accepted by the following statistical procedure. When more than one base course mix design is used on the same project, each mix will be evaluated separately under the statistical acceptance procedure specified herein.

A. Lot Size. The plant-produced mixture shall be tested on a lot basis. A lot shall consist of 4 sublots. End or final lots may contain between 3 and 6 sublots.

A sublot shall consist of 500 tons for each type of mix.

One density sample shall be taken randomly from each sublot. Each density sample shall be the average of two cores extracted from the sample location.

The Contractor shall take one random mix sample from each 1,000 tons of mix placed. This sample shall be split into two samples with one half tested by the Contractor for, Extraction or Ignition oven, Maximum Specific Gravity, Gradation, and Air Void tests. The other sample half shall be appropriately marked and retained by the Contractor until the Engineer requests the mix for testing or directs the Contractor in writing to dispose of the mix.

All tests shall be completed and reported to the Engineer no later than the morning of the day following production.

B. Lot Early Termination. When less than 3 sublots are produced, such as at the end of construction of the base course or at the end of the construction season, the final sublot data shall be included with the previous lot for payment. The final lot may thus contain up to six (6) sublots.

C. Acceptance Criteria. The acceptance of each lot of HMA base course shall be based on the **P**ercentage of material **W**ithin specification **L**imits (PWL). The PWL is determined using standard statistical techniques and involves the number of tests in each lot (n) and the quality indexes (Q_L is the Quality Index for the lower limit; Q_U is the Quality Index for the upper limit). The quality indexes are calculated using the following formulae:

$$Q_L = \frac{\bar{X} - 1}{S} \qquad Q_U = \frac{7 - \bar{X}}{S}$$

Where Q = Quality Index (lower or upper)

$\bar{X}$ = Mean (average) value of air voids in percent

% Air Voids = (100 - % density)

S = Standard Deviation of test results

For mat in-place air voids, estimate the **P**ercentage **W**ithin **T**olerance (PWT) for the lower and upper tolerance limits by entering TABLE 6 with Q_L and Q_U using the column appropriate to the total number (N) of core samples. The total percent of material between the lower and upper limits is defined as the **P**ercent **W**ithin **L**imits and is calculated by the following formula:

~~PWL = [PWT(lower) + PWT(upper)] ÷ 100~~

~~Each lot of bituminous material shall be accepted for 100 percent payment when the PWL equals or exceeds 90 percent. When the PWL is below 90 percent for a given lot, the lot tonnage shall be adjusted in accordance with TABLE 5.~~

~~TABLE 5 PAY ADJUSTMENT SCHEDULE 1/~~

PWL	% ADJUSTMENT IN LOT QUANTITY
90 - 100	100
80 - 89.9	0.5 PWL + 55.0
65 - 79.9	2.0 PWL - 65.0
Below 65	2/

~~1/ All preliminary calculations used in determining the Percent Within Limits should be rounded to a minimum of four digits right of the decimal point. The PWL that is used for Table 5 purposes should then be rounded to one digit right of the decimal point to determine the percent of contract quantity to be paid. The final percent pay figure should be rounded to one digit right of the decimal point. The Resident Engineer shall notify the Contractor, in writing, of the final percent pay for each lot as soon as all lot tests are completed.~~

~~2/ The lot shall be removed and replaced. However, the Engineer may decide to accept the deficient lot. In that case, it will be paid for at 50% adjustment.~~

~~D. Mix sampling~~ ~~All mix sampling shall be done on a random basis as determined by the Resident Engineer. Samples that are obviously defective or become defective prior to testing shall be discarded and retaken. New samples shall be considered as if they were initial samples.~~

403-4.14 SURFACE TESTS. Tests for conformity with the specified crown and grade shall be made by the Contractor immediately after initial compression. Any variation shall be corrected by the removal or addition of materials and by continuous rolling.

After the completion of final rolling, the smoothness of the base course shall be tested with a 16-foot straightedge applied parallel with the centerline. Any humps or depressions exceeding ¼ inch shall be immediately corrected by removing the defective work and replacing with new material, as directed by the Engineer. This shall be done at the Contractor's expense.

The finished surfaces of HMA courses shall not vary from the gradeline, elevations, and cross sections shown on the contract drawings by more than ½ inch. The Contractor shall correct pavement areas varying in excess of this amount by removing and replacing the defective work. Skin patching will not be permitted.

403-4.15 SAMPLING PAVEMENT. The completed pavement shall be cleaned so that no debris or dirt from coring operations is left on the surface of the pavement. Three (3) cores per lot shall be tested for thickness for any method used.

~~(For Method II only: Over 2,500 tons/pay item) Cores from each sublot shall be taken at random locations as outlined by the Resident Engineer. No core samples shall be taken within two feet of the edge of pavement. Any core less than 1 ½ inch thickness shall not be used and a new~~

location and sample shall be selected.

Core samples of approximately 4 inches in diameter, for determination of in-place air voids of the completed pavement, shall be obtained by the Contractor at no extra expense. The number and locations of the samples shall be as determined by the Resident Engineer. The Contractor shall furnish all tools, labor, and materials for sampling and replacing pavement.

All core tests necessary to determine initial conformance with specification requirements will be performed by the Resident Engineer at no cost to the Contractor.

Resampling and Retesting Resampling of a lot may be allowed only under the following conditions:

A. The Contractor must request, in writing, the resampling and retesting of a complete lot within 48 hours after receiving the written test results of the lot from the Resident Engineer. Only one retest per lot will be permitted.

B. If the retested lot should result in a higher "Percent Within Limits" figure than the original, based on all lot samples (original and new) the following will apply:

   1. The cost of resampling and retesting will be borne by the Engineer.

   2. The new "Percent Within Limits" figure shall be calculated using all LOT samples, (original and new) for calculating the lot payment.

C. If the retested lot should result in a "Percent Within Limits" figure equal to or less than the original, based on all the lot samples (original and new), the following will apply:

   1. The cost of resampling and retesting will be borne by the Contractor.
   2. The new "Percent Within Limits" figure shall be calculated using all lot samples, (original and new) for calculating the lot payment.

D. Procedures in ASTM E 178 shall be used to determine outliers based on all samples taken and a 5% significance level.

E. Results of the retesting and resampling shall be final.

METHOD OF MEASUREMENT

403-5.1 HMA base course will be measured by the ton. The tonnage shall be the weight used in the accepted pavement. No deduction will be made for the weight of bituminous material in the mixture. Plant batch weights will be accepted. Loads shall be checked periodically by weighing full truckloads of the HMA on an approved platform scale at the plant or on a commercial scale.

The Contractor shall furnish approved duplicate load tickets upon which is recorded the net weight of the HMA in each truck. The load ticket shall have sufficient space for signatures, identification of the HMA, date of delivery, and any other data which the Project Engineer may require. The Contractor shall submit one load ticket to the Project Engineer, or his/her duly authorized representative, at the plant after the truck is loaded and another load ticket to the

Project Engineer, or his/her duly authorized representative, at the construction site when the truck load is incorporated into the pavement.

Measurement for payment will not be made for any HMA base course in excess of 103 percent of plan quantity plus (or minus) theoretical quantities authorized by the Engineer. (Maximum payment percentages apply only to those pay items paid for on the basis of volume or weight.)

In areas where an undercut is warranted and directed by the Engineer, Bituminous Base Course required as shown in the plans in this area will not be measured for payment under Item 403610, instead this item will be incidental to Item 152511.

BASIS OF PAYMENT

403-6.1 ~~The quantity of HMA base course mixture measured as outlined in Section 403-5.1 shall be adjusted in accordance with Section 403610-4.13 herein.~~ Final payment shall be compensation for furnishing all materials, for all preparation, mixing, testing, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

~~(For Method I only: Under 2,500 tons/pay item).~~ Payment shall be based upon the acceptance test results for density. Acceptance test results not meeting the limits set forth in Section 403-4.13 shall be cause for a payment adjustment of the material placed in the failed sublot(s), as determined by the Division.

~~(For Method II only: Over 2,500 tons/pay item) Payment shall be calculated by multiplying the contract unit price per ton of HMA base course and the adjusted tons per lot.~~

~~The test section shall be paid for at the contract unit price per each, which price shall include the additional specified equipment, labor, Engineering, and testing time necessary to construct this item.~~

In areas where an undercut is warranted and directed by the Engineer, Bituminous Base Course required as shown in the plans in this area will not be paid for under Item 403610 instead this item will be incidental to Item 152511.

Payment will be made under:

Item AR403610	*Bituminous Base Course – per Ton (TON)*

END OF ITEM 403610