PROJECT MANUAL

Runway 18-36 / 13-31 Intersection Reconstruction

Hammond Northshore Regional Airport
Hammond, Louisiana

Prepared for

FEDERAL AVIATION ADMINISTRATION
A.I.P. No. 3-22-0018-019-2016

LOUISIANA DEPARTMENT OF
TRANSPORTATION AND DEVELOPMENT
DIVISION OF AVIATION
STATE PROJECT NO. H.011864

CITY OF HAMMOND
HAMMOND NORTHSHORE REGIONAL AIRPORT

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PUBLIC NOTICE
CITY OF HAMMOND

Invitation for Bids
Runway 18-36/13-31 Intersection Rehabilitation

The City of Hammond will receive proposals for the Runway 18-36/13-31 Intersection Rehabilitation project at Hammond Northshore Regional Airport, 600 Judge Leon Ford Drive in Hammond, Louisiana (70401), until Tuesday, August 9, 2016 at 10:30 a.m. CST, at which time all proposals received will be publicly opened and read aloud. Bids will not be accepted after this deadline. And no bid may be withdrawn after this deadline for a period of sixty (60) consecutive calendar days.

The work will generally consists of full-depth pavement removal, new pavement construction, edge drain installation, edge light replacement, and pavement marking. Contract time to complete this work will be thirty five (35) consecutive calendar days. If Additive Alternate 1 is awarded, twenty (20) consecutive calendar days will be added. If Additive Alternate 2 is awarded, five (5) consecutive calendar days will be added. If Additive Alternate 3 is awarded, twenty (20) consecutive calendar days will be added. In the event that the base bid and all additive alternates are awarded, the contract time to complete all work will be eighty (80) consecutive calendar days.

Bid security in the form of a bid bond equal to 5% of the total bid is required. Contract security in the form of 100% Performance and Payment Bonds will be required.

A Pre-bid Conference will be held in the Hammond Northshore Regional Airport Terminal Conference Room on Thursday, July 21, 2016 at 10:00 a.m. CST. Questions relating to the Bid Documents and bidding will be answered at that time. Attendance by prospective contractors is strongly recommended.

Bid documents may be examined at the following locations:

Office of the Engineer:	Michael Baker International, Inc. 2600 Citiplace Drive, Suite 450 Baton Rouge, Louisiana 70808 Please call 225-706-0744 to schedule an appointment
Airport Office:	Hammond Northshore Regional Airport 600 Judge Leon Ford Drive Hammond, Louisiana 70401 Please call 985-277-5667 to schedule an appointment

Physical copies of the Bid Documents may be obtained from Michael Baker International, Inc. upon payment of a non-refundable production fee of one hundred fifteen dollars ($115.00) per set. An additional forty five dollars ($45.00) will be charged for overnight delivery if mailing is required. This fee is also non-refundable.

Electronic copies of the Bid Documents may be obtained from the City of Hammond's website at http://www.hammond.org/?page_id=610.

Electronic copies of the Bid Documents may also be obtained and electronic bids may be submitted at https://www.centralauctionhouse.com/

The following requirements apply to this invitation and will be made a part of any contract awarded:

a. President's Executive Order No. 11246 as amended by 29 CFR Part 30 and 41 CFR Part 60.
b. David Bacon and Related Acts, 29 CFR Parts 1, 3, and 5.
c. Copeland Act, 29 CFR Part 3.
d. Contract Work Hours and Safety Standards Act, 40 USC Chapter 37.
e. Title VI of the Civil Rights Act of 1964, 42 USC Section 2000d et seq.
f. Disadvantaged Business Enterprise participation as described in Subpart D of 49 CFR Part 23, all pertinent amendments, and in the Disadvantage Business Enterprise (DBE) Program for the Hammond Northshore Regional Airport, which has established a contract goal of 11% participation by DBEs.
g. Buy American Preferences under 49 USC Section 50101 which require that all steel and manufactured goods used in Airport Improvement Program (AIP)-funded projects be produced in the United States.

Additionally, all bidders must be properly licensed under Title 37, Professions and Occupations, of the Louisiana Revised Status (RS 37) and must certify that neither it nor its principle(s) is/are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency or the State of Louisiana.

The City of Hammond reserves the right to waive any informalities or irregularities in or reject any or all bids and to award or refrain from awarding a contract for the work as deemed to be in the City's best interest and permitted by Louisiana Public Bid Law, RS 38:2211 et seq.

INSTRUCTIONS TO BIDDERS

1. DEFINED TERMS

1.1 Terms used in these INSTRUCTIONS TO BIDDERS are defined in the General Provisions, and the Supplementary Conditions of the Construction Contract and shall have the intent and meaning assigned them therein. Terms defined in the General Provisions being redefined by modification in the Supplementary Conditions shall have the intent and meaning assigned them in the Supplementary Conditions.

1.2 The term “Successful Bidder” means the lowest, qualified, responsible, responsive BIDDER to whom OWNER (on the basis of OWNER's evaluation as hereinafter provided) makes an award.

1.3 The term “Bidding Documents” means the Bidding Requirements, Contract Forms, Bid Forms, Conditions of the Contract, Specifications, Drawings, and Addenda issued by the OWNER for the purpose of obtaining a bid on the Work.

1.4 A BID is a complete and properly signed proposal to do the work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

2. BIDDING DOCUMENTS

2.1 Complete sets of Bidding Documents shall be used in preparing bids; neither OWNER nor ENGINEER assume any responsibility for errors or misinterpretations resulting from use of incomplete sets of Bidding Documents.

2.2 OWNER and ENGINEER in making copies of the Bidding Documents available on the above terms do so only for the purpose of obtaining bids on the Work and do not confer a license or grant for any other use.

3. QUALIFICATIONS OF BIDDERS

3.1 To demonstrate qualifications to perform the Work, the Low (Successful) BIDDER must submit, within (7) days of Bid Opening, as part of his BID on the prescribed form, evidence which may be required by the OWNER, such as, but not limited to, financial data and previous experience. Each BID must contain evidence of the BIDDER's qualification to do business in the state where the Project is located. Conditional or qualified BIDS will not be accepted. In addition, pertinent provisions of Paragraph 16 of this section determine additional requirements for qualifications of BIDDERS.

3.2 By submission of a BID the BIDDER agrees, that if awarded a contract, to perform on the Site and with his own organization, work equivalent to at least FORTY PERCENT (40%) of the total amount of the Work to be performed for the bid. If during the progress of the Work hereunder, the CONTRACTOR requests an adjustment of such percentage and the ENGINEER determines that it would be to the OWNER's advantage, the percentage of the Work required to be performed by the CONTRACTOR's organization may be adjusted; PROVIDED prior written approval of such adjustment is obtained from the ENGINEER.

3.2.1 Each BIDDER must furnish with his BID a list of items that he will perform with his own forces and the estimated total cost of these items.

3.3 Bidders are required to be licensed Contractors in accordance with the Code of Laws of

Louisiana. Additional requirements for bid submission are specified in Item 12 of these Instructions to Bidders.

4. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

4.1 Before submitting a BID, each BIDDER must (a) examine the Bidding Documents thoroughly; (b) visit the sites to familiarize himself with local conditions that may in any manner affect cost, progress or performance of the Work; (c) familiarize himself of federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work; (d) study and carefully correlate BIDDER's observations with the Drawings and Specifications; and (e) notify ENGINEER of all conflicts, errors or discrepancies.

4.2 Reference is made to the Supplementary Conditions for identification of:

4.2.1 **Those reports of explorations and tests of subsurface conditions at the site which have been utilized by ENGINEER in preparation of the Contract Documents. The reports were prepared prior to the site preparation and are included for information only**. BIDDER may rely upon the accuracy of the technical data contained in such reports but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof for the purposes of bidding or construction.

4.2.2 Those drawings of physical conditions in or relating to existing surface and subsurface conditions (except Underground Facilities) which are at or contiguous to the site which have been utilized by ENGINEER in preparation of the Contract Documents. BIDDER may rely upon the accuracy of the technical data contained in such drawings but not upon the completeness thereof for the purposes of bidding or construction.

4.3 Before submitting his BID each BIDDER may, at his/her own expense and assuming all risks, make such additional investigations and tests as the BIDDER may deem necessary to determine his BID for performance of the Work in accordance with the time, price and other terms and conditions of the Contract Documents. On request in advance, OWNER will provide each BIDDER access to the site to conduct such explorations and tests as each BIDDER deems necessary for submission of a BID. BIDDER shall fill all holes, cleanup and restore the site to its former condition upon completion of such explorations.

4.4 The lands upon which the Work is to be performed rights-of-way for access thereto and other lands designated for use by the CONTRACTOR in performing the Work are identified in the Contract Documents.

4.5 The submission of a BID will constitute an incontrovertible representation by the BIDDER that he has complied with every requirement of this Item 4 and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance of the Work.

5. ADDENDA AND INTERPRETATIONS

5.1 All questions about the meaning or intent of the Contract Documents shall be submitted to ENGINEER in writing. Replies, when considered necessary by the ENGINEER, will be issued by Addenda, mailed or delivered to all parties recorded by ENGINEER as having received the Bidding Documents. Failure of any BIDDER to receive any such Addendum or interpretation shall not relieve BIDDER from any obligation under this BID as submitted.

Questions received less than seven (7) days prior to the date of opening of Bids will not be answered. Only questions answered by formal written Addenda will be binding. Oral and other interpretations or clarifications will be without legal effect.

5.2 Addenda may also be issued to modify the Bidding Documents as deemed advisable by OWNER or ENGINEER.

6. BID SECURITY

6.1 Each BID must be accompanied by Bid Security made payable to OWNER, in an amount of five (5) percent of the BIDDER's maximum BID PRICE in the form of a Bid Bond prepared on the Form of Bid Bond included in the BID, duly executed by the BIDDER as principal and issued by a surety meeting the requirements of the General Provisions and Supplementary Conditions thereto.

6.2 Attorneys-in-fact who sign the Bid Bonds or Contract Bonds must file with each bond a certified and effectively dated copy of their power-of-attorney.

6.3 The Bid Security of the Successful BIDDER will be retained until such BIDDER has executed the Agreement and furnished the required Contract Security and Insurance Certificates, whereupon it will be returned; if the Successful BIDDER fails to execute and deliver the Agreement and furnish the required Contract Security and Insurance Certificates within fifteen (15) days of NOTICE OF AWARD, OWNER may annul the NOTICE OF AWARD and the Bid Security of the BIDDER will be forfeited to OWNER as liquidated damages for such withdrawal, failure or refusal. The Bid Security of any BIDDER whom the OWNER believes to have a reasonable chance of receiving the award may be retained by OWNER until the earlier of the seventh day after the “effective day of the Agreement” by OWNER to CONTRACTOR and the required Contract Security and Insurance Certificates are furnished, or sixty-one (61) days after the Bid Opening. Bid Security of other BIDDERS may be released within seven (7) days of the Bid Opening.

7. CONTRACT TIME

7.1 Time for completion of the Project is as stated in Section 01010 and as set forth in the BID and included in the Agreement.

8. LIQUIDATED DAMAGES

8.1 Provisions for Liquidated Damages are set forth in the Contract Form and the General Requirements.

9. SUBSTITUTE OR "OR-EQUAL" MATERIAL AND EQUIPMENT

9.1 The Contract, if awarded, will be on the basis of material and equipment described in the Drawings or specified in the Specifications. Whenever it is indicated on the Drawings or specified in the Specifications that a substitute or “or equal” item of material or equipment may be furnished or used if acceptable to ENGINEER, application for its acceptance must be submitted in accordance with requirements of Section 01600.

9.2 Substitutions and Product Options: BIDDERS are directed to read the statements contained under Section 01600, for substitutions or product options, which specify the conditions under which the material, devices, or equipment to be furnished by the CONTRACTOR are equal to

those designated.

10. SUBCONTRACTORS, ETC.

10.1 All BIDDERS shall submit as part of their BID on the prescribed schedules a list of all subcontractors and other persons and organizations (including those who are to furnish principle items of material and equipment) proposed for those portions of the Work as to which such identification is required. If requested by OWNER, the low BIDDER shall submit an experience statement with pertinent information as to similar projects and other evidence of qualification for each subcontractor, other person or organization. If OWNER, after due investigation, has reasonable objection to any proposed subcontractor, other person or organization, the OWNER may before giving the NOTICE OF AWARD require the apparent Successful BIDDER to submit an acceptable substitute without an increase in Bid Price.

If the apparent Successful BIDDER declines to make any such substitution, the Contract shall not be awarded to such BIDDER, but his declining to make any such substitution will not constitute grounds for sacrificing his Bid Security. Any subcontractor, other person, or organization so listed and to whom the OWNER does not make written objection prior to giving the NOTICE OF AWARD will be deemed acceptable to OWNER.

10.2 No CONTRACTOR shall be required to employ any subcontractor, other person, or organization against whom he has reasonable objection.

11. BID FORM AND SCHEDULES

11.1 One bound copy of the Bid Form and Schedules is included herein. One additional unbound copy is provided for use in preparing BIDS. DO NOT USE THE BID FORM BOUND IN THE PROJECT MANUAL FOR SUBMISSION OF BIDS.

11.2 Bid Forms and Schedules must be completed in ink or by typewriter. Each BID must be submitted on the prescribed form. All blank spaces and Bid Prices must be filled in. The Bid Price must be stated in words and numerals or as indicated in the BID Forms.

11.3. The firm, corporation, or individual name of the BIDDER must be signed in ink in the space provided for the signatures on the Bid Form. BIDS by corporation must be executed in the corporate name by the president or a vice-president (or other corporate officer accompanied by evidence of authority to sign) and the corporate seal must be affixed and attested by the secretary or assistant secretary of the corporation. The corporate address and state of incorporation shall be shown in the space provided.

11.4 BIDS by partnerships must be executed in the partnership name and signed by a partner, whose title must appear under the signature and the official address of the partnership must be shown below the signature.

11.5 BIDS by individuals must be signed by the individual owner and the terms “doing business” or “sole owner” must appear under the signature.

11.6 The BIDDER must state in his BID the name and address of each person or corporation interested therein.

11.7 The numbers of all addenda and the date each was received shall be filled in on the Bid Form.

11.8 The address to which communications regarding the BID are to be directed must be shown on the Bid Form.

11.9 Affidavits: Each BIDDER is required to duly execute the BIDDER's and Non-Collusion Affidavits at the end of the BID.

11.10 All names must be typed or printed below the signature.

11.11 The only markings by the BIDDER which will be considered by the OWNER in evaluating the BID are those made on the bid form itself. No markings on the exterior of the envelope or other extraneous marks will be considered as part of the BID.

12. SUBMISSION OF BIDS

12.1 BIDS shall be submitted at the time and place indicated in the Advertisement in a sealed envelope if by mail or hand delivered. Each BID shall be marked and addressed as required in the Advertisement. Bidders shall include the following documents as part of their Bid submitted on the Bid Date:

a. **Louisiana Uniform Public Work Bid Form.**
b. **Bid Schedule (Unit Price Form) when utilized.**
c. **Bid Security or Bid Bond.**
d. **Bidder's Affidavit (Corporate Resolution)**

If the BID is sent through the mail or other delivery system, the sealed envelope shall be enclosed in a separate envelope with the notation **"BID ENCLOSED, Runway 18-36/13-31 Intersection Reconstruction, Hammond Northshore Regional Airport"** on the face thereof. Do not submit the project manual or drawings with Bid.

Submit sealed Bids addressed to:

Hammond Northshore Regional Airport
600 Judge Leon Ford Drive
Hammond, Louisiana 70401

12.2 Licensure in the State of **Louisiana** is a requirement for submission of a bid. Bidders are required to obtain all proper license(s) to do business in the state of Louisiana prior to the submission of a bid or the bid will be considered nonresponsive.

13. MODIFICATIONS AND WITHDRAWAL OF BIDS

13.1 BIDS may be modified or withdrawn by an appropriate document duly executed (in the manner that a BID must be executed) and delivered to the place where BIDS are to be submitted at any time prior to the opening of BIDS.

14. OPENING OF BIDS

14.1 BIDS will be downloaded or opened and read aloud publicly. An abstract of the amounts of the bids will be made available after award is made by OWNER.

15. BIDS TO REMAIN OPEN SUBJECT TO ACCEPTANCE

15.1 The BID shall remain open for **Sixty (60)** days after the day of the opening, but OWNER may, in

his sole discretion, release any BID and return the Bid Security prior to that date.

16. AWARD OF CONTRACT

16.1 OWNER reserves the right to reject any and all BIDS, to waive any and all informalities not involving price, time, or changes in the work, and to negotiate contract terms with the successful BIDDER, and the right to disregard all nonconforming, nonresponsive, unbalanced, or conditional BIDS. Also, OWNER reserves the right to reject the Bid of any BIDDER if OWNER believes that it would not be in the best interest of the Project to make an award to that BIDDER, whether because the Bid is not responsive, or the BIDDER is unqualified or of doubtful financial ability or fails to meet any other pertinent standard or criteria established by OWNER. Discrepancies between words and figures for unit prices will be resolved in favor of words. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

16.1.1 The following are examples of factors which, among others, will determine the responsiveness of bids:

a. The completeness and regularity of Bid Form;
b. A Bid Form without excisions or special conditions;
c. A Bid Form having no alternative bias for any items unless requested in the Specifications;
d. A Bid Form without obviously unbalanced unit prices;
e. Submission of a properly executed Bid Bond; and
f. A Bid responsive to the requirements of Part 152 of Federal Aviation Regulations.

16.2 In evaluation of BIDS, OWNER shall consider qualifications of the BIDDERS and whether or not the BIDS comply with the prescribed requirements in the Bid Forms.

16.2.1 If, a BIDDER submits a BID which lists DBE compliance at a percentage lower than the goal stated in the Bid Documents, that BIDDER shall within 48 hours of the bid opening submit written evidence to the Owner and Engineer, of BIDDER's good faith efforts to comply with the goal. The burden for coming forward with evidence of good faith efforts shall be on the BIDDER, not upon the OWNER or any of its representatives or consultants. Failure to come forward with such evidence shall remove the BIDDER's Bid from further consideration.

16.3 OWNER may consider the qualifications and experience of subcontractors, other persons or organizations (including those who are to furnish the principle items of materials and equipment) proposed for those portions of the work as to which the identity of subcontractors and other persons and organizations must be submitted as provided in the General Conditions. Maintenance considerations, performance data and guarantees of materials may also be considered by OWNER. OWNER will consider DBE participation and whether or not BIDDER made an effort to meet specified DBE goals.

16.4 OWNER may conduct such investigations as he deems necessary to assist in the evaluation of any BID and to establish the responsibility, qualifications and other persons and organizations to do the work in accordance with the contract documents to OWNER's satisfaction within the prescribed time.

16.4.1 Responsibility shall be based on whether the BIDDER:

a. Maintains a permanent place of business;

b. Has adequate equipment and staff to do the Work properly and within the time limit that is established; and
c. Has adequate financial status to meet his obligations contingent to doing the Work.
d. Otherwise demonstrates that he is clearly capable, both financially and in terms of past experience, to carry out the work of the contract in a competent and timely fashion.

16.5 OWNER reserves the right to reject the BID of any BIDDER who does not pass any evaluation to OWNER's satisfaction.

16.6 If a contract is to be awarded, it will be awarded pursuant to the OWNER's procurement policy and to the lowest BIDDER whose evaluation by OWNER indicates to OWNER that the award will be in the best interests of the Project. It is the OWNER's intentions to award a Bid scenario depending upon the availability of funds and the BIDDER being responsible and submitting a responsive BID for the project.

16.7 If a contract is to be awarded, OWNER will give the Successful BIDDER a NOTICE OF AWARD within sixty (60) days after the day of Bid Opening.

16.8 After bids are opened all communications between the BIDDER and the OWNER or his representatives upon which the BIDDER intends to rely must be in writing. No oral statements by the OWNER or its representatives will modify or waive any of the requirements of these instructions or other contract documents.

17. BONDS, CONTRACT SECURITY AND INSURANCE

17.1 Supplementary Contract Conditions set forth OWNER's requirements as to Bonds and Insurance. When the Successful BIDDER delivers the executed Agreement to OWNER it shall be accompanied by the required Contract Security and Insurance Certificates and Policies.

17.2 All Bonds (Bid, Payment and Performance) must be signed or countersigned by the Surety Company's proper resident agent, authorized to do business in the **State of Louisiana,** on whom service can be made in the event of litigation.

18. SIGNING OF AGREEMENT

18.1 When OWNER gives a NOTICE OF AWARD to the Successful BIDDER, it will be accompanied by the required number of unsigned counterparts of the Agreement and all other required Contract Documents. Within fifteen (15) days following the effective date of "Award" CONTRACTOR shall sign and deliver all executed counterparts of the Agreement to the OWNER with all other Contract Documents including insurance certificates and executed bonds attached thereto. ENGINEER will identify those portions of the Contract Documents not fully signed by the OWNER and CONTRACTOR and such identification shall be binding on all parties.

19. SPECIAL REQUIREMENTS

19.1 Laws and Regulations: The BIDDER's attention is directed to the fact that applicable state laws, municipal ordinances and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though therein written out in full.

19.2 Estimated Quantities: Where quantities of work are given in the BID these are approximate and

are assumed solely for comparison of the BIDS. They are not guaranteed to be accurate statements or estimates of quantities of work that are to be performed under the Contract, it being presumed that the BIDDER has verified the quantities necessary to complete the Work of the Contract as intended, and any departure there from will not be accepted as valid grounds for any claim for damages, for extension of time or for loss of profits; nor will any additional payment, be made regardless of the actual quantities required or ordered to complete the Work.

20. PREBID CONFERENCE

20.1 A **Non**-Mandatory Pre-Bid conference will be held at the time indicated in the Notice to Bidders, at the **Hammond Northshore Regional Airport Conference Room.** Representatives of OWNER and ENGINEER will be present to discuss the Project. All prospective BIDDERS may attend and participate in the conference. The ENGINEER will transmit to all prospective BIDDERS of record any such Addenda as ENGINEER considers necessary in response to questions arising at the conference.

21. SALES TAX

21.1 Unit prices bid shall include all sales taxes, and other applicable taxes and fees.

22. PREVAILING WAGE RATES

22.1 The construction wage rates have been certified by the US Department of Labor to be wages prevailing for construction of the contract. In accordance with the terms of the Proposal, the Contractor agrees to pay to each employee of the corresponding craft at least the wage rate listed.

In addition to the basic hourly rates shown, certain crafts, trades or industries indicate health, welfare, pension, and other fringe benefits which are given employees pursuant to a bonafide Collective Bargaining Agreement for the respective craft, trade, or industry. In the absence of any such Agreement, the basic hourly rates plus the monetary equivalent for the fringe benefit payments indicated, less any legal deductions, shall be paid directly to the employees.

The wage rate determination of the US Department of Labor incorporated on the following pages does not include rates or the requested classification listed below. The BIDDER is responsible for ascertaining the rates payable for such classification and whether area practice requires their use in accomplishing the work. No inference concerning area practice is to be drawn from their omissions. Further, the omission will not, per se, establish any liability for increased labor costs resulting from the use of such classification.

23. FUNDING AGENCY REQUIREMENTS

23.1 BIDDERS are advised that the Work under this Contract will be financed in part by a grant of the Federal Government under the Department of Transportation, Federal Aviation Administration, Airport and Airway Safety and Capacity Expansion Act of 1987.

23.2 To receive funds under the applicable Federal Programs, the OWNER must comply with the requirements of the administering agencies which are imposed as conditions under which the grants of funds are made.

23.3 It is a condition of the grant of Federal funds that certain provisions be included and be made a part of the Contract Documents for the Work in which these funds are to be used. These

provisions are as provided in the Supplementary Conditions.

23.4 The CONTRACTOR is notified hereby that he must meet all of the terms and conditions related to this Project imposed by the administrating agencies named herein, including, but not limited, to the following:

23.4.1 WAGES AND SALARIES: Attention of BIDDER is called to the requirements concerning the payment of not less than the prevailing wage and salary rates determined by Secretary of Labor specified in the Contract Documents and the conditions of employment with respect to certain categories and classifications of employees.

23.4.2 The rates of pay set forth under GENERAL PROVISIONS are the minimums to be paid during the life of the Contract. It is therefore the responsibility of BIDDERS to inform themselves as to local labor conditions, such as the length of work day and work week, overtime compensation, health and welfare contributions, labor supply and prospective changes or adjustments of rates.

23.4.3 EMPLOYMENT PRACTICES: (1) Contractor shall, to the greatest extent practicable, follow hiring and employment practices for work on the project which will provide new job opportunities for the unemployed and underemployed, and (2) insert or cause to be inserted the same provision in each construction subcontract.

23.4.4 AFFIRMATIVE ACTION REQUIREMENTS: The BIDDER's attention is called to the Notice of Requirement for Affirmative Action to Insure Equal Employment Opportunity.

23.4.5 All chemicals used during project construction or furnished for project operation, whether herbicide, pesticide, disinfectant, polymer, reactant or of other classification, must show approval of either EPA or USDA. Use of all such chemicals and disposal of residues shall be in strict conformance with manufacturer's instructions.

23.4.6 BIDDERS must comply with the requirement that siltation and erosion are to be held to the absolute minimum during construction.

23.4.7 Equal Employment Opportunity Requirements:

a) BIDDERS must comply with the President's Executive Order No. 11246 which prohibits discrimination in employment regarding race, creed, color, sex or national origin.

b) Each BIDDER shall complete, sign and include in his bid proposal the Equal Opportunity Report Statement. When a determination has been made to award a contract to a specific Contractor, such Contractor shall, prior to award, after award or both, furnish such other pertinent information regarding his own employment policies and practices as well as those of his proposed subcontractors as the OWNER, or the Secretary of Labor may require. All such information required of a subcontractor shall be furnished by the Contractor.

c) Notice of Affirmative Action: Specific goals for minority and female participation expressed in percentage terms are specified in the General Provisions.

~~d) Disadvantaged Business Enterprise Program: The OWNER has established goals for DBE participation on this Project. The BIDDER's attention is directed to the Notice to Bidders, General Provisions and Bid Forms for the specific goals.~~

23.4.8 BUY AMERICAN - STEEL AND MANUFACTURED PRODUCTS FOR CONSTRUCTION CONTRACTS

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. The following terms apply:

i. Steel and Manufactured Products. As used in this clause, steel and manufactured products include (1) steel produced in the United States or (2) a manufactured product produced in the United States, if the cost of its components mined, produced or manufactured in the United States exceeds 60 percent of the cost of all its components and final assembly has taken place in the United States. Components of foreign origin of the same class or kind as the products referred to in subparagraphs (b) (1) or (2) shall be treated as domestic.

ii. Components. As used in this clause, components mean those articles, materials, and supplies incorporated directly into steel and manufactured products.

iii. Cost of Components. This means the costs for production of the components, exclusive of final assembly labor costs.

b) The successful BIDDER will be required to assure that only domestic steel and manufactured products will be used by the Contractor, subcontractors, materialmen, and suppliers in the performance of this contract, except those-

i. that the U.S. Department of Transportation 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 and of a satisfactory quality;

ii. that the U.S. Department of Transportation has determined, under the Aviation Safety and Capacity Expansion Act of 1990, that domestic preference would be inconsistent with the public interest; or

iii. that inclusion of domestic material will increase the cost of the overall project contract by more than 25 percent.

23.4.9 PRECONSTRUCTION CONFERENCE: Attention of BIDDERS is called to a **mandatory** preconstruction conference to be held with the successful BIDDER and all known subcontractors, prior to the issuance of a NOTICE TO PROCEED. This conference will be held to acquaint the Successful BIDDER with the contract provisions concerning the Labor Standards, Equal Employment Opportunity obligations, and other items related to the contract. Payroll Form WH-347, or an equivalent form, is required to be used on this project. The date of the preconstruction conference will be established after the Contract is awarded to the successful BIDDER.

END OF INSTRUCTIONS TO BIDDERS

FEDERAL CONTRACT PROVISIONS

PART 1-PROVISIONS FOR ALL CONSTRUCTION CONTRACTS

1.1 Access To Records And Reports

The Contractor shall 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.

Reference
49 CFR PART 18.36(i)
FAA Order 5100.38

1.2 Buy American Preferences

By submitting a bid/proposal under this solicitation, except for those items listed by the offeror below or on a separate and clearly identified attachment to this bid/proposal, the offeror certifies that steel and each manufactured product, are produced in the United States, as defined in the clause Buy American - Steel and Manufactured Products for Construction Contracts) and that components of unknown origin are considered to have been produced or manufactured outside the United States.

Offerors may obtain from the owner a listing of articles, materials and supplies excepted from this provision.

Reference
Section 9129 of the Aviation Safety and Capacity Expansion Act of 1990
Title 49 U.S.C. Chapter 501
AIP Program Guidance Letter 91-3

1.3 Airport and Airway Improvement Act Of 1982, Section 520 - General Civil Rights Provisions

The contractor assures that it will comply with pertinent statutes, Executive orders and such rules as are promulgated to assure that no person shall, on the grounds of race, creed, color, national origin, sex, age, or handicap be excluded from participating in any activity conducted with or benefiting from Federal assistance. This provision obligates the tenant/concessionaire/lessee or its transferee for the period during which Federal assistance is extended to the airport a program, except where Federal assistance is to provide, or is in the form of personal property or real property or interest therein or structures or improvements thereon. In these cases the provision obligates the party or any transferee for the longer of the following periods: (a) the period during which the property is used by the airport sponsor or any transferee for a purpose for which Federal assistance is extended, or for another purpose involving the provision of similar services or benefits or (b) the period during which the airport sponsor or any transferee retains ownership or possession of the property. In the case of contractors, this provision binds the 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.

Reference
Airport and Airway Improvement Act of 1982, Section 520
Title 49 47123
AC 150/5100-15, Para. 10.c.

1.4 Civil Rights Act Of 1964, Title Vi – Contractor Contractual 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:

A. Compliance with Regulations. The contractor shall comply with the Regulations relative to nondiscrimination in federally assisted programs of the Department of Transportation (hereinafter, "DOT") Title 49, Code of Federal Regulations, Part 21, as they may be amended from time to time (hereinafter referred to as the Regulations), which are herein incorporated by reference and made a part of this contract.

B. Nondiscrimination. The contractor, with regard to the work performed by it during the contract, shall 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 shall not participate either directly or indirectly in the discrimination prohibited by section 21.5 of the Regulations, including employment practices when the contract covers a program set forth in Appendix B of the Regulations.

C. 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 shall be notified by the contractor of the contractor's obligations under this contract and the Regulations relative to nondiscrimination on the grounds of race, color, or national origin.

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

E. Sanctions for Noncompliance. In the event of the contractor's noncompliance with the nondiscrimination provisions of this contract, the sponsor shall impose such contract sanctions as it or the FAA may determine to be appropriate, including, but not limited to:

1. Withholding of payments to the contractor under the contract until the contractor complies, and/or
2. Cancellation, termination, or suspension of the contract, in whole or in part.

F. Incorporation of Provisions. The contractor shall include the provisions of paragraphs A through E in every subcontract, including procurements of materials and leases of equipment, unless exempt by the Regulations or directives issued pursuant thereto. The contractor shall take such action with respect to any subcontract or procurement as the sponsor or the FAA may direct as a means of enforcing such provisions including sanctions for noncompliance. Provided, however, that in the

event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or supplier as a result of such direction, the contractor may request the Sponsor to enter into such litigation to protect the interests of the sponsor and, in addition, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

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).

Reference
49 CFR PART 21
AC 150/5100-15

1.5 Disadvantaged Business Enterprises

Contract Assurance - The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR PART 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate.

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

Reference
49 CFR PART 26

1.6 Energy Conservation Requirements

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

Reference
49 CFR PART 18.36
Public Law 94-163

1.7 Federal Fair Labor Standards Act

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 and consultant* have 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

1.8 Occupational Safety and Health Act of 1970

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.

1.9 Rights To Inventions

All rights to inventions and materials generated under this contract are subject to regulations issued by the FAA and the Sponsor of the Federal grant under which this contract is executed.

Reference
49 CFR PART 18.36(i)(8)
FAA Order 5100.38

1.10 Trade Restriction Clause

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.

Reference
49 CFR PART 30.13
FAA Order 5100.38

1.11 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.

Reference
Title 49 U.S.C. 47112(c)
Advisory Circular 150/5100-6d

END OF PART 1

PART 2-PROVISIONS FOR CONSTRUCTION CONTRACTS EXCEEDING $2,000

2.1 Copeland "Anit-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.

2.2 Davis Bacon Requirements

A. Minimum Wages

1. 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 (A)(2) 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.

2. 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:

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

a.2 The classification is utilized in the area by the construction industry; and

a.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 (A)(2) (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.

3. 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.

4. 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.

B. 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 David-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.

C. Payrolls and basic records.

1. 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.

2. 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:

b.1 That the payroll for the payroll period contains the information required to be maintained under paragraph (C)(1) above and that such information is correct and complete;

b.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;

b.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 (C)(2)(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.

3. The contractor or subcontractor shall make the records required under paragraph (C)(1) 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.

D. Apprentices and Trainees.

1. 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.

2. 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 who 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.

3. 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.

E. 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.

F. 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.

G. Contract Termination: Debarment.

A breach of the contract clauses in paragraphs A through J 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.

H. 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.

I. 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.

J. Certification of Eligibility.

1. 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).

2. 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).

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

Reference
29 CFR PART 5.5
Advisory Circular 150/5100-6d

END OF PART 2

PART 3-PROVISIONS FOR CONSTRUCTION CONTRACTS EXCEEDING $3,000

3.1 Distracted Driving

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.

END OF PART 3

PART 4-PROVISIONS FOR CONSTRUCTION CONTRACTS EXCEEDING $10,000

4.1 Notice of Requirement for Affirmative Action – 41 CFR PART 60-2

A. 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.

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

Timetables	
Goals for minority participation for each trade:	(27.7%)
Goals for female participation in each trade:	(6.9%)

These goals are applicable to all 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 shall 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.

C. The contractor shall provide written notification to the Director, 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 subcontract; and the geographical area in which the subcontract is to be performed.

D. As used in this notice and in the contract resulting from this solicitation, the "covered area" is the City of Hammond, Tangipahoa Parish, Louisiana.

Reference
Executive Order 11246
41 CFR Parts 60 - 4
AC 150/5100-15, Para. 22.c.

4.2 Equal Employment Opportunity - 41 CFR PART 60-1.4(b)

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

A. 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, 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.

B. 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.

C. The contractor will send to each labor union or representative of workers with which s/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.

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

E. 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.

F. 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 procedure 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.

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

Reference
Executive Order 11246
41 CFR PART 60 -1.4
AC 150/5100-15, Para. 22.a.

4.3 Standard Federal Equal Employment Opportunity Construction Contract Specifications - 41 CFR PART 60-4.3

A. As used in these specifications:

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

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

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

4. "Minority" includes:

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

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

c. 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

d. 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).

B. 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.

C. 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.

D. The contractor shall implement the specific affirmative action standards provided in paragraphs G.1 through G.16 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.

E. 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.

F. 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.

G. 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:

1. 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.

2. 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.

3. 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.

4. 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.

5. 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 G.2 above.

6. 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.

7. 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.

8. 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.

9. 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.

10. 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.

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

12. 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.

13. 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.

14. 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.

15. 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.

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

H. Contractors are encouraged to participate in voluntary associations, which assist in fulfilling one or more of their affirmative action obligations (G.1 through G.16). 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 G.1 through G.16 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.

I. 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.

J. 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.

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

L. 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.

M. 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 18.7 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.

N. 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.

O. 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).

Reference
Executive Order 11246
41 CFR PARTs 60 – 4.3
AC 150/5100-15, Para. 22.c.

4.4 Certification of Nonsegregated Facilities

The federally-assisted construction contractor certifies that she or he does not maintain or provide, for his employees, any segregated facilities at any of his establishments and that she or he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally-assisted construction contractor certifies that she or he will not maintain or provide, for his employees, segregated facilities at any of his establishments and that she or he will not permit his employees to perform their services at any location under his control where segregated facilities are maintained. The federally-assisted construction contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this contract.

As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms, and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directives or are, in fact, segregated on the basis of race, color, religion, or national origin because of habit, local custom, or any other reason. The federally-assisted construction contractor agrees that (except where she or he has obtained identical certifications from proposed subcontractors for specific time periods) she or he will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause and that she or he will retain such certifications in his files.

Reference
Executive Order 11246
41 CFR PART 60 -1.8
AC 150/5100-15, Para. 22.b.

4.5 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.

4.6 Termination of Contract

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;

b) 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;

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

d) reasonable and substantiated expenses to the contractor directly attributable to Owner's termination action

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

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

Termination for Default (Construction)

Section 80-09 of this document establishes conditions, rights and remedies associated with Owner termination of this contract due default of the Contractor.

Termination for Default (Equipment)

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

1. Fails to commence the Work under the Contract within the time specified in the Notice- to-Proceed;

2. Fails to make adequate progress as to endanger performance of this Contract in accordance with its terms;

Required Contact Provisions Issued on January 29, 2016 Page 61 AIP Grants and Obligated Sponsors Airports (ARP)

3. Fails to make delivery of the equipment within the time specified in the Contract, including any Owner approved extensions;

4. Fails to comply with material provisions of the Contract;

5. Submits certifications made under the Contract and as part of their proposal that include false or fraudulent statements;

6. Becomes insolvent or declares bankruptcy;

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

If within [10] days of the receipt of notice, the Contractor or Surety fails to remedy the breach or default to the satisfaction of the Owner, the Owner has authority to acquire equipment by other

procurement action. The Contractor will be liable to the Owner for any excess costs the Owner incurs for acquiring such similar equipment.

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

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

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

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

Reference
49 CFR PART 18.36(i) (2)
FAA Order 5100.38

END OF PART 4

PART 5-PROVISIONS FOR CONSTRUCTION CONTRACTS EXCEEDING $25,000

5.1 Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion

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

Reference
49 CFR PART 29
FAA Order 5100.38

END OF PART 5

PART 6-PROVISIONS FOR CONSTRUCTION CONTRACTS EXCEEDING $100,000

6.1 Contract Workhours and Safety Standards Act Requirements 29 CFR PART 5

A. 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.

B. Violation; Liability for Unpaid Wages; Liquidated Damages.
In the event of any violation of the clause set forth in paragraph (A) above, the contractor and any subcontractor responsible therefore 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 (A) above, 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 (A) above.

C. Withholding for Unpaid Wages and Liquidated Damages.
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 any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (B) above.

D. Subcontractors.
The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraphs (A) through (D) 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 (A) through (D) of this section.

Reference
29 CFR PART 5.5
Advisory Circular 150/5100-6d

6.2 Lobbying and Influencing Federal Employees

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.

Reference
49 CFR PART 20, Appendix A

END OF PART 6

PART 7-PROVISIONS FOR CONSTRUCTION CONTRACTS EXCEEDING $150,000

7.1 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 *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.

Reference
49 CFR PART 18.36

7.2 Clean Air and Water Pollution Control

Contractors and subcontractors agree:

Contractor and subcontractors agree 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.

Reference
49 CFR PART 18.36(i) (12)
Section 306 of the Clean Air Act
Section 508 of the Clean Water Act

Reference
49 CFR PART 18.36(i) (12)
Section 306 of the Clean Air Act
Section 508 of the Clean Water Act

END OF PART 7

Federal Wage Rates

General Decision Number: LA160018 01/08/2016 LA18

Superseded General Decision Number: LA20150018

State: Louisiana

Construction Type: Highway

Counties: Acadia, Allen, Assumption, Avoyelles, Beauregard, Evangeline, Iberia, Jefferson Davis, St James, St Landry, St Mary, Tangipahoa, Vermilion, Vernon and Washington Counties in Louisiana.

HIGHWAY CONSTRUCTION PROJECTS

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

Modification Number	Publication Date
0	01/08/2016

* SULA2011-006 08/17/2011

	Rates	Fringes
Carpenter:		
Includes Form Work		
Acadia, Allen, Assumption, Avoyelles, Beauregard, Evangeline, Jefferson Davis, St. James, St. Landry, St. Mary, Tagipahoa, Vermillion, Vernon, Washington	$ 13.56	1.85
Iberia	$ 11.55	1.85
CEMENT MASON/CONCRETE FINISHER	$ 13.52	
IRONWORKER, REINFORCING	$ 13.58	
LABORER:		
Common or General		

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      Acadia.....................$  9.68
      Allen, Assumption,
      Avoyelles, Beauregard,
      Evangeline, Jefferson
      Davis, St. James, St.
      Landry, St. Mary,
      Tangipahoa, Vermillion,
      Washington.................$ 10.60
      Iberia.....................$ 10.86
      Vernon.....................$ 10.44
     Pipelayer...................$ 12.69
     Traffic Control/Flagger.....$  9.00

PILEDRIVERMAN...................$ 13.07

Power Equipment Operator
     Asphalt Paver...............$ 14.52
     Asphalt Spreader............$ 16.50
     Backhoe/Excavator/Trackhoe
      Acadia, Allen,
      Assumption, Avoyelles,
      Beauregard, Evangeline,
      Jefferson Davis, St.
      James, St. Landry, St.
      Mary, Tangipahoa,
      Vermillion, Washington.....$ 14.15
      Iberia.....................$ 13.09
      Vernon.....................$ 14.24
     Broom.......................$ 13.00
     Bulldozer
      Acadia, Allen,
      Assumption, Avoyelles,
      Beaurgard, Evangeline,
      Iberia, Jefferson Davis,
      St. James, St. Landry,
      St. Mary, Tangipahoa,
      Vermillion, Washington.....$ 14.74
      Vernon.....................$ 14.63
     Crane.......................$ 17.72
     Grader/Blade
      Acadia.....................$ 19.67
      Allen, Assumption,
      Avoyelles, Beauregard,
      Evangeline, Iberia,
      Jefferson Davis, St.
      James, St. Landry, St.
      Mary, Tangipahoa,
      Vermillion, Washington.....$ 17.19
      Vernon.....................$ 15.66
     Loader (Front End).........$ 13.68
     Mechanic...................$ 15.15
     Milling Machine............$ 13.31
     Roller (Dirt and Grade
     Compaction)
      Acadia.....................$ 13.42
      Allen, Assumption,
      Avoyelles, Beauregard,
      Evangeline, Iberia,
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      Jefferson Davis, St.
      James, St. Landry, St.
      Mary, Tangipahoa,
      Vermillion, Washington.....$ 11.94
      Vernon.....$ 11.49
     Screed.....$ 15.13
     Shuttle Buggy.....$ 14.21
     Soil Stabilizer
      Acadia, Allen,
      Assumption, Avoyelles,
      Beauregard, Evangeline,
      Iberia, Jefferson Davis,
      St. James, St. Landry,
      St. Mary, Tangipahoa,
      Vermillion, Washington.....$ 12.34
      Vernon.....$ 13.08
     Tractor.....$ 10.36

Truck drivers:
     Dump Truck
      Acadia, Allen,
      Assumption, Avoyelles,
      Beauregard, Evangeline,
      Jefferson Davis, St.
      James, St. Landry, St.
      Mary, Tangipahoa,
      Vermillion, Vernon,
      Washington.....$ 12.22
      Iberia.....$ 12.00
     Lowboy Truck.....$ 13.93
     Tack Truck.....$ 16.13
     Water Truck
      Acadia.....$ 11.95
      Allen, Assumption,
      Avoyelles, Beauregard,
      Evangeline, Iberia,
      Jefferson Davis, St.
      James, St. Landry, St.
      Mary, Tangipahoa,
      Vermillion, Washington.....$ 12.41
      Vernon.....$ 12.69
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WELDERS - Receive rate prescribed for craft performing
operation to which welding is incidental.

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Unlisted classifications needed for work not included within
the scope of the classifications listed may be added after
award only as provided in the labor standards contract clauses
(29CFR 5.5 (a) (1) (ii)).


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

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage

determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current negotiated/CBA rate of the union locals from which the rate is based.

WAGE DETERMINATION APPEALS PROCESS

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

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

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

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

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

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative

Review Board (formerly the Wage Appeals Board). Write to:

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

4.) All decisions by the Administrative Review Board are final.

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END OF GENERAL DECISION

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GENERAL PROVISIONS

SECTION 10 - Definition of Terms

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

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

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

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

10-04 Airport Improvement Program (AIP). A grant-in-aid program, administered by the Federal Aviation Administration (FAA).

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

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

10-07 ASTM International (ASTM). Formerly known as the American Society for Testing and Materials (ASTM).

10-08 Award. The Owner's notice to the successful bidder of the acceptance of the submitted bid.

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

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

10-11 Calendar day. Every day shown on the calendar.

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

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

10-14 Contract item (pay item). A specific unit of work for which a price is provided in the contract.

10-15 Contract time. The number of calendar days or working days, stated in the proposal, allowed for completion of the contract, including authorized time extensions. If a calendar date of

completion is stated in the proposal, in lieu of a number of calendar or working days, the contract shall be completed by that date.

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

10-17 Contractor's laboratory. The Contractor's quality control organization in accordance with the Contractor Quality Control Program.

10-18 Construction Safety and Phasing Plan (CSPP). The overall plan for safety and phasing of a construction project developed by the airport operator, or developed by the airport operator's consultant and approved by the airport operator. It is included in the invitation for bids and becomes part of the project specifications.

10-19 Drainage system. The system of pipes, ditches, and structures by which surface or subsurface waters are collected and conducted from the airport area.

10-20 Engineer. The individual, partnership, firm, or corporation duly authorized by the Owner to be responsible for engineering observation of the contract work and acting directly or through an authorized representative.

10-21 Equipment. All machinery, together with the necessary supplies for upkeep and maintenance, and also all tools and apparatus necessary for the proper construction and acceptable completion of the work.

10-22 Extra work. An item of work not provided for in the awarded contract as previously modified by change order or supplemental agreement, but which is found by the Engineer to be necessary to complete the work within the intended scope of the contract as previously modified.

10-23 FAA. The Federal Aviation Administration of the U.S. Department of Transportation. When used to designate a person, FAA shall mean the Administrator or his or her duly authorized representative.

10-24 Federal specifications. The Federal Specifications and Standards, Commercial Item Descriptions, and supplements, amendments, and indices thereto are prepared and issued by the General Services Administration of the Federal Government.

10-25 Force account. Force account work is planning, engineering, or construction work done by the Sponsor's employees.

10-26 Inspector. An authorized representative of the Engineer assigned to make all necessary observations and/or observation of tests of the work performed or being performed, or of the materials furnished or being furnished by the Contractor.

10-27 Intention of terms. Whenever, in these specifications or on the plans, the words "directed," "required," "permitted," "ordered," "designated," "prescribed," or words of like import are used, it shall be understood that the direction, requirement, permission, order, designation, or prescription of the Engineer is intended; and similarly, the words "approved," "acceptable," "satisfactory," or words of like import, shall mean approved by, or acceptable to, or satisfactory to the Engineer, subject in each case to the final determination of the Owner.

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

10-28 Laboratory. The official testing laboratories of the Owner or such other laboratories as may be designated by the Engineer. Also referred to as "Engineer's Laboratory" or "quality assurance laboratory."

10-29 Lighting. A system of fixtures providing or controlling the light sources used on or near the airport or within the airport buildings. The field lighting includes all luminous signals, markers, floodlights, and illuminating devices used on or near the airport or to aid in the operation of aircraft landing at, taking off from, or taxiing on the airport surface.

10-30 Major and minor contract items. A major contract item shall be any item that is listed in the proposal, the total cost of which is equal to or greater than 20% of the total amount of the award contract. All other items shall be considered minor contract items.

10-31 Materials. Any substance specified for use in the construction of the contract work.

10-32 Notice to Proceed (NTP). A written notice to the Contractor to begin the actual contract work on a previously agreed to date. If applicable, the Notice to Proceed shall state the date on which the contract time begins.

10-33 Owner. The term "Owner" shall mean the party of the first part or the contracting agency signatory to the contract. Where the term "Owner" is capitalized in this document, it shall mean airport Sponsor only.

10-34 Passenger Facility Charge (PFC). Per 14 CFR Part 158 and 49 USC § 40117, a PFC is a charge imposed by a public agency on passengers enplaned at a commercial service airport it controls."

10-35 Pavement. The combined surface course, base course, and subbase course, if any, considered as a single unit.

10-36 Payment bond. The approved form of security furnished by the Contractor and his or her surety as a guaranty that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the work.

10-37 Performance bond. The approved form of security furnished by the Contractor and his or her surety as a guaranty that the Contractor will complete the work in accordance with the terms of the contract.

10-38 Plans. The official drawings or exact reproductions which show the location, character, dimensions and details of the airport and the work to be done and which are to be considered as a part of the contract, supplementary to the specifications.

10-39 Project. The agreed scope of work for accomplishing specific airport development with respect to a particular airport.

10-40 Proposal. The written offer of the bidder (when submitted on the approved proposal form) to perform the contemplated work and furnish the necessary materials in accordance with the provisions of the plans and specifications.

10-41 Proposal guaranty. The security furnished with a proposal to guarantee that the bidder will enter into a contract if his or her proposal is accepted by the Owner.

10-42 Runway. The area on the airport prepared for the landing and takeoff of aircraft.

10-43 Specifications. A part of the contract containing the written directions and requirements for completing the contract work. Standards for specifying materials or testing which are cited in the contract specifications by reference shall have the same force and effect as if included in the contract physically.

10-44 Sponsor. A Sponsor is defined in 49 USC § 47102(24) as a public agency that submits to the FAA for an AIP grant; or a private Owner of a public-use airport that submits to the FAA an application for an AIP grant for the airport.

10-45 Structures. Airport facilities such as bridges; culverts; catch basins, inlets, retaining walls, cribbing; storm and sanitary sewer lines; water lines; underdrains; electrical ducts, manholes,

handholes, lighting fixtures and bases; transformers; flexible and rigid pavements; navigational aids; buildings; vaults; and, other manmade features of the airport that may be encountered in the work and not otherwise classified herein.

10-46 Subgrade. The soil that forms the pavement foundation.

10-47 Superintendent. The Contractor's executive representative who is present on the work during progress, authorized to receive and fulfill instructions from the Engineer, and who shall supervise and direct the construction.

10-48 Supplemental agreement. A written agreement between the Contractor and the Owner covering (1) work that would increase or decrease the total amount of the awarded contract, or any major contract item, by more than 25%, such increased or decreased work being within the scope of the originally awarded contract; or (2) work that is not within the scope of the originally awarded contract.

10-49 Surety. The corporation, partnership, or individual, other than the Contractor, executing payment or performance bonds that are furnished to the Owner by the Contractor.

10-50 Taxiway. For the purpose of this document, the term taxiway means the portion of the air operations area of an airport that has been designated by competent airport authority for movement of aircraft to and from the airport's runways, aircraft parking areas, and terminal areas.

10-51 Work. The furnishing of all labor, materials, tools, equipment, and incidentals necessary or convenient to the Contractor's performance of all duties and obligations imposed by the contract, plans, and specifications.

10-52 Working day. A working day shall be any day other than a legal holiday, Saturday, or Sunday on which the normal working forces of the Contractor may proceed with regular work for at least six (6) hours toward completion of the contract. When work is suspended for causes beyond the Contractor's control, it will not be counted as a working day. Saturdays, Sundays and holidays on which the Contractor's forces engage in regular work will be considered as working days.

END OF SECTION 10

SECTION 20 – Proposal Requirements and Conditions

20-01 Advertisement (Notice to Bidders). See Page 5

20-02 Qualification of bidders. Each bidder shall furnish the Owner satisfactory evidence of his or her competency to perform the proposed work. Such evidence of competency, unless otherwise specified, shall consist of statements covering the bidder's past experience on similar work, a list of equipment that would be available for the work, and a list of key personnel that would be available. In addition, each bidder shall furnish the Owner satisfactory evidence of his or her financial responsibility. Such evidence of financial responsibility, unless otherwise specified, shall consist of a confidential statement or report of the bidder's financial resources and liabilities as of the last calendar year or the bidder's last fiscal year. Such statements or reports shall be certified by a public accountant. At the time of submitting such financial statements or reports, the bidder shall further certify whether his or her financial responsibility is approximately the same as stated or reported by the public accountant. If the bidder's financial responsibility has changed, the bidder shall qualify the public accountant's statement or report to reflect the bidder's true financial condition at the time such qualified statement or report is submitted to the Owner.

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

Each bidder shall submit "evidence of competency" and "evidence of financial responsibility" to the Owner at the time of bid opening.

20-03 Contents of proposal forms. The Owner shall furnish bidders with proposal forms. All papers bound with or attached to the proposal forms are necessary parts and must not be detached.

The plans, specifications, and other documents designated in the proposal form shall be considered a part of the proposal whether attached or not.

20-04 Issuance of proposal forms. The Owner reserves the right to refuse to issue a proposal form to a prospective bidder should such bidder be in default for any of the following reasons:

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

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

c. Documented record of Contractor default under previous contracts with the Owner.

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

20-05 Interpretation of estimated proposal quantities. An estimate of quantities of work to be done and materials to be furnished under these specifications is given in the proposal. It is the result of careful calculations and is believed to be correct. It is given only as a basis for comparison of proposals and the award of the contract. The Owner does not expressly, or by implication, agree that the actual quantities involved will correspond exactly therewith; nor shall the bidder plead misunderstanding or deception because of such estimates of quantities, or of the character, location, or other conditions pertaining to the work. Payment to the Contractor will be made only for the actual quantities of work performed or materials furnished in accordance with the plans and specifications. It is understood that the quantities may be increased or

decreased as hereinafter provided in the subsection 40-02 titled ALTERATION OF WORK AND QUANTITIES of Section 40 without in any way invalidating the unit bid prices.

20-06 Examination of plans, specifications, and site. The bidder is expected to carefully examine the site of the proposed work, the proposal, plans, specifications, and contract forms. Bidders shall satisfy themselves as to the character, quality, and quantities of work to be performed, materials to be furnished, and as to the requirements of the proposed contract. The submission of a proposal shall be prima facie evidence that the bidder has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the proposed contract, plans, and specifications.

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

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

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

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

A responsible bidder has the ability to perform successfully under the terms and conditions of a proposed procurement, as defined in 49 CFR § 18.36(b) (8). This includes such matters as Contractor integrity, compliance with public policy, record of past performance, and financial and technical resources.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

c. If the bidder is considered to be in "default" for any reason specified in the subsection 20-04 titled ISSUANCE OF PROPOSAL FORMS of this section.

END OF SECTION 20

SECTION 30 - Award and Execution of Contract

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

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

a. If the proposal is irregular as specified in the subsection 20-09 titled IRREGULAR PROPOSALS of Section 20.

b. If the bidder is disqualified for any of the reasons specified in the subsection 20-14 titled DISQUALIFICATION OF BIDDERS of Section 20.

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

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

Award of the contract shall be made by the Owner to the lowest, qualified bidder whose proposal conforms to the cited requirements of the Owner.

30-03 Cancellation of award. The Owner reserves the right to cancel the award without liability to the bidder, except return of proposal guaranty, at any time before a contract has been fully executed by all parties and is approved by the Owner in accordance with the subsection 30-07 titled APPROVAL OF CONTRACT of this section.

30-04 Return of proposal guaranty. All proposal guaranties, except those of the two lowest bidders, will be returned immediately after the Owner has made a comparison of bids as specified in the subsection 30-01 titled CONSIDERATION OF PROPOSALS of this section. Proposal guaranties of the two lowest bidders will be retained by the Owner until such time as an award is made, at which time, the unsuccessful bidder's proposal guaranty will be returned. The successful bidder's proposal guaranty will be returned as soon as the Owner receives the contract bonds as specified in the subsection 30-05 titled REQUIREMENTS OF CONTRACT BONDS of this section.

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

30-06 Execution of contract. The successful bidder shall sign (execute) the necessary agreements for entering into the contract and return the signed contract to the Owner, along with the fully executed surety bond or bonds specified in the subsection 30-05 titled REQUIREMENTS OF

CONTRACT BONDS of this section, within 15 calendar days from the date mailed or otherwise delivered to the successful bidder.

30-07 Approval of contract. Upon receipt of the contract and contract bond or bonds that have been executed by the successful bidder, the Owner shall complete the execution of the contract in accordance with local laws or ordinances, and return the fully executed contract to the Contractor. Delivery of the fully executed contract to the Contractor shall constitute the Owner's approval to be bound by the successful bidder's proposal and the terms of the contract.

30-08 Failure to execute contract. Failure of the successful bidder to execute the contract and furnish an acceptable surety bond or bonds within the 15 calendar day period specified in the subsection 30-06 titled EXECUTION OF CONTRACT of this section shall be just cause for cancellation of the award and forfeiture of the proposal guaranty, not as a penalty, but as liquidation of damages to the Owner.

END OF SECTION 30

SECTION 40 - Scope of Work

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

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

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

Supplemental agreements shall be approved by the FAA and shall include all applicable Federal contract provisions for procurement and contracting required under AIP. Supplemental agreements shall also require consent of the Contractor's surety and separate performance and payment bonds.

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

Should a contract item be omitted or otherwise ordered to be non-performed, the Contractor shall be paid for all work performed toward completion of such item prior to the date of the order to omit such item. Payment for work performed shall be in accordance with the subsection 90-04 titled PAYMENT FOR OMITTED ITEMS of Section 90.

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

When determined by the Engineer to be in the Owner's best interest, the Engineer may order the Contractor to proceed with Extra Work as provided in the subsection 90-05 titled PAYMENT FOR EXTRA WORK of Section 90. Extra Work that is necessary for acceptable

completion of the project, but is not within the general scope of the work covered by the original contract shall be covered by a Supplemental Agreement as defined in the subsection 10-48 titled SUPPLEMENTAL AGREEMENT of Section 10.

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

40-05 Maintenance of traffic. It is the explicit intention of the contract that the safety of aircraft, as well as the Contractor's equipment and personnel, is the most important consideration.

a. It is understood and agreed that the Contractor shall provide for the free and unobstructed movement of aircraft in the air operations areas (AOAs) of the airport with respect to his or her own operations and the operations of all subcontractors as specified in the subsection 80-04 titled LIMITATION OF OPERATIONS of Section 80. It is further understood and agreed that the Contractor shall provide for the uninterrupted operation of visual and electronic signals (including power supplies thereto) used in the guidance of aircraft while operating to, from, and upon the airport as specified in the subsection 70-15 titled CONTRACTOR'S RESPONSIBILITY FOR UTILITY SERVICE AND FACILITIES OF OTHERS in Section 70.

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

c. When the contract requires the maintenance of vehicular traffic on an existing road, street, or highway during the Contractor's performance of work that is otherwise provided for in the contract, plans, and specifications, the Contractor shall keep such road, street, or highway open to all traffic and shall provide such maintenance as may be required to accommodate traffic. The Contractor shall be responsible for the repair of any damage caused by the Contractor's equipment and personnel. The Contractor shall furnish, erect, and maintain barricades, warning signs, flag person, and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices (MUTCD) (http://mutcd.fhwa.dot.gov/), unless otherwise specified. The Contractor shall also construct and maintain in a safe condition any temporary connections necessary for ingress to and egress from abutting property or intersecting roads, streets or highways. ~~Unless otherwise specified herein, the Contractor will not be required to furnish snow removal for such existing road, street, or highway.~~

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

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

Except as provided in the subsection 40-07 titled RIGHTS IN AND USE OF MATERIALS FOUND IN THE WORK of this section, it is intended that all existing materials or structures that may be encountered (within the lines, grades, or grading sections established for

completion of the work) shall be used in the work as otherwise provided for in the contract and shall remain the property of the Owner when so used in the work.

40-07 Rights in and use of materials found in the work. Should the Contractor encounter any material such as (but not restricted to) sand, stone, gravel, slag, or concrete slabs within the established lines, grades, or grading sections, the use of which is intended by the terms of the contract to be either embankment or waste, the Contractor may at his or her option either:

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

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

c. Use such material for the Contractor's own temporary construction on site; or,

d. Use such material as intended by the terms of the contract.

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

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

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

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

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

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

END OF SECTION 40

SECTION 50 - Control of Work

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

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

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

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

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

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

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

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

50-03 Coordination of contract, plans, and specifications. The contract, plans, specifications, and all referenced standards cited are essential parts of the contract requirements. A requirement

occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete work. In case of discrepancy, calculated dimensions will govern over scaled dimensions; contract technical specifications shall govern over contract general provisions, plans, cited standards for materials or testing, and cited advisory circulars (ACs); contract general provisions shall govern over plans, cited standards for materials or testing, and cited ACs; plans shall govern over cited standards for materials or testing and cited ACs. If any paragraphs contained in the Special Provisions conflict with General Provisions or Technical Specifications, the Special Provisions shall govern.

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

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

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

50-05 Cooperation between contractors. The Owner reserves the right to contract for and perform other or additional work on or near the work covered by this contract.

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

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

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

50-06 Construction layout and stakes. The Engineer shall establish horizontal and vertical control only. The Contractor must establish all layout required for the construction of the work. Such stakes and markings as the Engineer may set for either their own or the Contractor's guidance shall be preserved by the Contractor. In case of negligence on the part of the Contractor, or their employees, resulting in the destruction of such stakes or markings, an amount equal to the cost of replacing the same may be deducted from subsequent estimates due the Contractor at the discretion of the Engineer.

The Contractor will be required to furnish all lines, grades and measurements from the control points necessary for the proper execution and control of the work contracted for under these specifications.

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

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

Construction Staking and Layout includes but is not limited to:

a. Clearing and Grubbing perimeter staking

b. Rough Grade slope stakes at 100-foot (30-m) stations

c. Drainage Swales slope stakes and flow line blue tops at 50-foot (15-m) stations

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

a. Runway – minimum five (5) per station

b. Taxiways – minimum three (3) per station

c. Holding apron areas – minimum three (3) per station

d. Roadways – minimum three (3) per station

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

a. Runway – minimum five (5) per station

b. Taxiways – minimum three (3) per station

c. Holding apron areas – minimum three (3) per station

Pavement areas:

a. Edge of Pavement hubs and tacks (for stringline by Contractor) at 100-foot (30-m) stations.

b. Between Lifts at 25-foot (7.5-m) stations for the following section locations:

(1) Runways – each paving lane width

(2) Taxiways – each paving lane width

(3) Holding areas – each paving lane width

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Should the contract work include relocation, adjustment, or any other modification to existing facilities, not the property of the (contract) Owner, authorized representatives of the Owners of

such facilities shall have the right to inspect such work. Such inspection shall in no sense make any facility owner a party to the contract, and shall in no way interfere with the rights of the parties to this contract.

50-10 Removal of unacceptable and unauthorized work. All work that does not conform to the requirements of the contract, plans, and specifications will be considered unacceptable, unless otherwise determined acceptable by the Engineer as provided in the subsection 50-02 titled CONFORMITY WITH PLANS AND SPECIFICATIONS of this section.

Unacceptable work, whether the result of poor workmanship, use of defective materials, damage through carelessness, or any other cause found to exist prior to the final acceptance of the work, shall be removed immediately and replaced in an acceptable manner in accordance with the provisions of the subsection 70-14 titled CONTRACTOR'S RESPONSIBILITY FOR WORK of Section 70.

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

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

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

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

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

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

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

50-13 Failure to maintain the work. Should the Contractor at any time fail to maintain the work as provided in the subsection 50-12 titled MAINTENANCE DURING CONSTRUCTION of this section, the Engineer shall immediately notify the Contractor of such noncompliance. Such notification shall specify a reasonable time within which the Contractor shall be required to remedy such unsatisfactory maintenance condition. The time specified will give due consideration to the exigency that exists.

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

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

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

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

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

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

50-17 Cost reduction incentive. NOT USED

END OF SECTION 50

SECTION 60 - Control of Materials

60-01 Source of supply and quality requirements. The materials used in the work shall conform to the requirements of the contract, plans, and specifications. Unless otherwise specified, such materials that are manufactured or processed shall be new (as compared to used or reprocessed).

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

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

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

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

b. Produced by the manufacturer as listed in the Addendum cited above for the certified equipment part number.

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

- Advisory Circular 150/5340-30, Design and Installation Details for Airport Visual Aids

- Advisory Circular 150/5345-53, Airport Lighting Equipment Certification Program AND, AC 150/5345-53, Appendix 1 Addendum, Third Party Certification Bodies

  • L-823 Connectors, Cable
  • L-824 Underground Electrical Cable for Airport Lighting Circuits
  • L-861 Lights, Runway Edge, Taxiway Edge and Runway Threshold, Medium Intensity

60-02 Samples, tests, and cited specifications. Unless otherwise designated, all materials used in the work shall be inspected, tested, and approved by the Engineer before incorporation in the work. Any work in which untested materials are used without approval or written permission of the Engineer shall be performed at the Contractor's risk. Materials found to be unacceptable and unauthorized will not be paid for and, if directed by the Engineer, shall be removed at the Contractor's expense.

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

The testing organizations performing on-site quality assurance field tests shall have copies of all referenced standards on the construction site for use by all technicians and other personnel, including the Contractor's representative at his or her request. Unless otherwise designated, samples for quality assurance will be taken by a qualified representative of the Engineer. All materials being used are subject to inspection, test, or rejection at any time prior to or during incorporation into the work. Copies of all tests will be furnished to the Contractor's representative at their request after review and approval of the Engineer.

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

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

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

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

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

a. Conformance to the specified performance, testing, quality or dimensional requirements; and,

b. Suitability of the material or assembly for the use intended in the contract work.

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

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

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

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

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

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

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

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

60-05 Engineer's field office. The Contractor shall furnish for the duration of the project all reasonable facilities to enable the engineer to inspect the workmanship and materials used in the work.

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

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

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

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

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

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

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

the Owner in making good such loss due to the Contractor's handling, storage, or use of Owner-furnished materials.

END OF SECTION 60

SECTION 70 - Legal Regulations and Responsibility to Public

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

70-02 Permits, licenses, and taxes. The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes, and give all notices necessary and incidental to the due and lawful execution of the work.

70-03 Patented devices, materials, and processes. If the Contractor is required or desires to use any design, device, material, or process covered by letters of patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the Patentee or Owner. The Contractor and the surety shall indemnify and hold harmless the Owner, any third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the Owner for any costs, expenses, and damages which it may be obliged to pay by reason of an infringement, at any time during the execution or after the completion of the work.

70-04 Restoration of surfaces disturbed by others. The Owner reserves the right to authorize the construction, reconstruction, or maintenance of any public or private utility service, FAA or National Oceanic and Atmospheric Administration (NOAA) facility, or a utility service of another government agency at any time during the progress of the work. To the extent that such construction, reconstruction, or maintenance has been coordinated with the Owner, such authorized work (by others) is indicated on the plans.

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

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

70-05 Federal aid participation. For Airport Improvement Program (AIP) contracts, the United States Government has agreed to reimburse the Owner for some portion of the contract costs. Such reimbursement is made from time to time upon the Owner's request to the FAA. In consideration of the United States Government's (FAA's) agreement with the Owner, the Owner has included provisions in this contract pursuant to the requirements of Title 49 of the USC and the Rules and Regulations of the FAA that pertain to the work.

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

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

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

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

70-07 Public convenience and safety. The Contractor shall control his or her operations and those of his or her subcontractors and all suppliers, to assure the least inconvenience to the traveling public. Under all circumstances, safety shall be the most important consideration.

The Contractor shall maintain the free and unobstructed movement of aircraft and vehicular traffic with respect to his or her own operations and those of his or her subcontractors and all suppliers in accordance with the subsection 40-05 titled MAINTENANCE OF TRAFFIC of Section 40 hereinbefore specified and shall limit such operations for the convenience and safety of the traveling public as specified in the subsection 80-04 titled LIMITATION OF OPERATIONS of Section 80 hereinafter.

70-08 Barricades, warning signs, and hazard markings. The Contractor shall furnish, erect, and maintain all barricades, warning signs, and markings for hazards necessary to protect the public and the work. When used during periods of darkness, such barricades, warning signs, and hazard markings shall be suitably illuminated. Unless otherwise specified, barricades, warning signs, and markings for hazards that are in the air operations area (AOAs) shall be a maximum of 18 inches (0.5 m) high. Unless otherwise specified, barricades shall be spaced not more than 4 feet (1.2 m) apart. Barricades, warning signs, and markings shall be paid for under subsection 40-05.

For vehicular and pedestrian traffic, the Contractor shall furnish, erect, and maintain barricades, warning signs, lights and other traffic control devices in reasonable conformity with the Manual on Uniform Traffic Control Devices.

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

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

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

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

Open-flame type lights shall not be permitted.

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

~~All explosives shall be stored in a secure manner in compliance with all laws and ordinances, and all such storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided satisfactory to the Engineer and, in general, not closer than 1,000 feet (300 m) from the work or from any building, road, or other place of human occupancy.~~

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

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

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

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

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

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

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

70-13 Opening sections of the work to traffic. Should it be necessary for the Contractor to complete portions of the contract work for the beneficial occupancy of the Owner prior to completion of the entire contract, such "phasing" of the work shall be specified herein and indicated on the plans. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified. The Contractor shall make his or her own estimate of the difficulties involved in arranging the work to permit such beneficial occupancy by the Owner. Phasing is described in the drawings and in the Construction Safety and Phasing Plan (CSPP).

Upon completion of any portion of the work listed above, such portion shall be accepted by the Owner in accordance with the subsection 50-14 titled PARTIAL ACCEPTANCE of Section 50.

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

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

Contractor shall be required to conform to safety standards contained AC 150/5370-2 (see Special Provisions).

Contractor shall refer to the approved Construction Safety Phasing Plan (CSPP) to identify barricade requirements and other safety requirements prior to opening up sections of work to traffic.

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

If the work is suspended for any cause whatever, the Contractor shall be responsible for the work and shall take such precautions necessary to prevent damage to the work. The Contractor shall provide for normal drainage and shall erect necessary temporary structures,

signs, or other facilities at his or her expense. During such period of suspension of work, the Contractor shall properly and continuously maintain in an acceptable growing condition all living material in newly established planting, seeding, and sodding furnished under the contract, and shall take adequate precautions to protect new tree growth and other important vegetative growth against injury.

70-15 Contractor's responsibility for utility service and facilities of others. As provided in the subsection 70-04 titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this section, the Contractor shall cooperate with the Owner of any public or private utility service, FAA or NOAA, or a utility service of another government agency that may be authorized by the Owner to construct, reconstruct or maintain such utility services or facilities during the progress of the work. In addition, the Contractor shall control their operations to prevent the unscheduled interruption of such utility services and facilities.

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

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

It is further understood and agreed that the Contractor shall, upon execution of the contract, notify the Owners of all utility services or other facilities of his or her plan of operations. Such notification shall be in writing addressed to THE PERSON TO CONTACT as provided in this subsection and subsection 70-04 titled RESTORATION OF SURFACES DISTURBED BY OTHERS of this section. A copy of each notification shall be given to the Engineer.

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

Prior to beginning the work in the general vicinity of an existing utility service or facility, the Contractor shall again notify each such Owner of their plan of operation. If, in the Contractor's opinion, the Owner's assistance is needed to locate the utility service or facility or the presence of a representative of the Owner is desirable to observe the work, such advice should be included in the notification. Such notification shall be given by the most expeditious means to reach the utility owner's PERSON TO CONTACT no later than two normal business days prior to the Contractor's commencement of operations in such general vicinity. The Contractor shall furnish a written summary of the notification to the Engineer.

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

Where the outside limits of an underground utility service have been located and staked on the ground, the Contractor shall be required to use hand excavation methods within 3 feet (1 m) of such outside limits at such points as may be required to ensure protection from damage due to the Contractor's operations.

Should the Contractor damage or interrupt the operation of a utility service or facility by accident or otherwise, the Contractor shall immediately notify the proper authority and the Engineer and shall take all reasonable measures to prevent further damage or interruption of service. The Contractor, in such events, shall cooperate with the utility service or facility owner

and the Engineer continuously until such damage has been repaired and service restored to the satisfaction of the utility or facility owner.

The Contractor shall bear all costs of damage and restoration of service to any utility service or facility due to their operations whether due to negligence or accident. The Owner reserves the right to deduct such costs from any monies due or which may become due the Contractor, or his or her surety.

70-15.1 FAA facilities and cable runs. The Contractor is hereby advised that the construction limits of the project include existing facilities and buried cable runs that are owned, operated and maintained by the FAA. The Contractor, during the execution of the project work, shall comply with the following:

a. The Contractor shall permit FAA maintenance personnel the right of access to the project work site for purposes of inspecting and maintaining all existing FAA owned facilities.

b. The Contractor shall provide notice to the FAA Air Traffic Organization (ATO)/Technical Operations/System Support Center (SSC) Point-of-Contact through the airport management a minimum of seven (7) calendar days prior to commencement of construction activities in order to permit sufficient time to locate and mark existing buried cables and to schedule any required facility outages.

c. If execution of the project work requires a facility outage, the Contractor shall contact the FAA Point-of-Contact a minimum of 72 hours prior to the time of the required outage.

d. Any damage to FAA cables, access roads, or FAA facilities during construction caused by the Contractor's equipment or personnel whether by negligence or accident will require the Contractor to repair or replace the damaged cables, access road, or FAA facilities to FAA requirements. The Contractor shall not bear the cost to repair damage to underground facilities or utilities improperly located by the FAA.

e. If the project work requires the cutting or splicing of FAA owned cables, the FAA Point-of-Contact shall be contacted a minimum of 72 hours prior to the time the cable work commences. The FAA reserves the right to have a FAA representative on site to observe the splicing of the cables as a condition of acceptance. All cable splices are to be accomplished in accordance with FAA specifications and require approval by the FAA Point-of-Contact as a condition of acceptance by the Owner. The Contractor is hereby advised that FAA restricts the location of where splices may be installed. If a cable splice is required in a location that is not permitted by FAA, the Contractor shall furnish and install a sufficient length of new cable that eliminates the need for any splice.

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

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

70-18 No waiver of legal rights. Upon completion of the work, the Owner will expeditiously make final inspection and notify the Contractor of final acceptance. Such final acceptance, however, shall not preclude or stop the Owner from correcting any measurement, estimate, or certificate made before or after completion of the work, nor shall the Owner be precluded or stopped

from recovering from the Contractor or his or her surety, or both, such overpayment as may be sustained, or by failure on the part of the Contractor to fulfill his or her obligations under the contract. A waiver on the part of the Owner of any breach of any part of the contract shall not be held to be a waiver of any other or subsequent breach.

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

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

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

Should the Contractor encounter, during his or her operations, any building, part of a building, structure, or object that is incongruous with its surroundings, the Contractor shall immediately cease operations in that location and notify the Engineer. The Engineer will immediately investigate the Contractor's finding and the Owner will direct the Contractor to either resume operations or to suspend operations as directed.

Should the Owner order suspension of the Contractor's operations in order to protect an archaeological or historical finding, or order the Contractor to perform extra work, such shall be covered by an appropriate contract change order or supplemental agreement as provided in the subsection 40-04 titled EXTRA WORK of Section 40 and the subsection 90-05 titled PAYMENT FOR EXTRA WORK of Section 90. If appropriate, the contract change order or supplemental agreement shall include an extension of contract time in accordance with the subsection 80-07 titled DETERMINATION AND EXTENSION OF CONTRACT TIME of Section 80.

END OF SECTION 70

SECTION 80 - Execution and Progress

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

The Contractor shall provide copies of all subcontracts to the Engineer. The Contractor shall perform, with his organization, an amount of work equal to at least 25 percent of the total contract cost.

Should the Contractor elect to assign his or her contract, said assignment shall be concurred in by the surety, shall be presented for the consideration and approval of the Owner, and shall be consummated only on the written approval of the Owner.

80-02 Notice to proceed. The notice to proceed shall state the date on which it is expected the Contractor will begin the construction and from which date contract time will be charged. The Contractor shall begin the work to be performed under the contract within 10 days of the date set by the Engineer in the written notice to proceed, but in any event, the Contractor shall notify the Engineer at least 24 hours in advance of the time actual construction operations will begin. The Contractor shall not commence any actual construction prior to the date on which the notice to proceed is issued by the Owner.

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

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

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

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

When the work requires the Contractor to conduct his or her operations within an AOA of the airport, the work shall be coordinated with airport operations (through the Engineer) at least 48 hours prior to commencement of such work. The Contractor shall not close an AOA until so authorized by the Engineer and until the necessary temporary marking and associated lighting is in place as provided in the subsection 70-08 titled BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS of Section 70.

When the contract work requires the Contractor to work within an AOA of the airport on an intermittent basis (intermittent opening and closing of the AOA), the Contractor shall maintain

constant communications as specified; immediately obey all instructions to vacate the AOA; immediately obey all instructions to resume work in such AOA. Failure to maintain the specified communications or to obey instructions shall be cause for suspension of the Contractor's operations in the AOA until the satisfactory conditions are provided. The following AOA cannot be closed to operating aircraft to permit the Contractor's operations on a continuous basis and will therefore be closed to aircraft operations intermittently are indicated on the drawings and/or Construction Safety and Phasing Plan (CSPP).

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

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

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

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

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

80-05 Character of workers, methods, and equipment. The Contractor shall, at all times, employ sufficient labor and equipment for prosecuting the work to full completion in the manner and time required by the contract, plans, and specifications.

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

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

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

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

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

When the contract specifies the use of certain methods and equipment, such methods and equipment shall be used unless others are authorized by the Engineer. If the Contractor desires to use a method or type of equipment other than specified in the contract, the Contractor may request authority from the Engineer to do so. The request shall be in writing and shall include a full description of the methods and equipment proposed and of the reasons for desiring to make the change. If approval is given, it will be on the condition that the Contractor will be fully responsible for producing work in conformity with contract requirements. If, after trial use of the substituted methods or equipment, the Engineer determines that the work produced does not meet contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining work with the specified methods and equipment. The Contractor shall remove any deficient work and replace it with work of specified quality, or take such other corrective action as the Engineer may direct. No change will be made in basis of payment for the contract items involved nor in contract time as a result of authorizing a change in methods or equipment under this subsection.

80-06 Temporary suspension of the work. The Owner shall have the authority to suspend the work wholly, or in part, for such period or periods as the Owner may deem necessary, due to unsuitable weather, or such other conditions as are considered unfavorable for the execution of the work, or for such time as is necessary due to the failure on the part of the Contractor to carry out orders given or perform any or all provisions of the contract.

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

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

80-07 Determination and extension of contract time. The number of calendar or working days allowed for completion of the work shall be stated in the proposal and contract and shall be known as the CONTRACT TIME.

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

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

included in approved CHANGE ORDERS or SUPPLEMENTAL AGREEMENTS covering EXTRA WORK).

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

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

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

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

(4) The Engineer will not make charges against the contract time after the date of final acceptance as defined in the subsection 50-15 titled FINAL ACCEPTANCE of Section 50.

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

The contract time (stated in the proposal) is based on the originally estimated quantities as described in the subsection 20-05 titled INTERPRETATION OF ESTIMATED PROPOSAL QUANTITIES of Section 20. Should the satisfactory completion of the contract require performance of work in greater quantities than those estimated in the proposal, the contract time shall be increased in the same proportion as the cost of the actually completed quantities bears to the cost of the originally estimated quantities in the proposal. Such increase in contract time shall not consider either the cost of work or the extension of contract time that has been covered by change order or supplemental agreement and shall be made at the time of final payment.

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

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

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

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

80-08 Failure to complete on time. For each calendar day or working day, as specified in the contract, that any work remains uncompleted after the contract time (including all extensions and adjustments as provided in the subsection 80-07 titled DETERMINATION AND EXTENSION OF CONTRACT TIME of this Section) the sum specified in the contract and proposal as liquidated damages will be deducted from any money due or to become due the Contractor or his or her surety. Such deducted sums shall not be deducted as a penalty but shall be considered as liquidation of a reasonable portion of damages including but not limited to additional engineering services that will be incurred by the Owner should the Contractor fail to complete the work in the time provided in their contract.

Schedule	Liquidated Damages Cost	Allowed Construction Time
Base Bid – Phase 1	$2,500.00/day	18 Days
Base Bid – Phase 2	$2,500.00/day	17 Days
Additive Alternate 1 – Phase 3	$2,500.00/day	Additional 20 Days
Additive Alternate 2 – Phase 4	$2,500.00/day	Additional 5 Days
Additive Alternate 3 – Phase 5	$2,500.00/day	Additional 20 Days

The maximum construction time allowed for Schedules [Base Bid] will be the sum of the time allowed for individual schedules but not more than [35 calendar] days. The maximum construction time allowed for Schedules [Additive alternate 1] will be the sum of the time allowed for individual schedules but not more than [20 calendar] days. The maximum construction time allowed for Schedules [Additive Alternate 2] will be the sum of the time allowed for individual schedules but not more than [5 calendar] days. The maximum construction time allowed for Schedules [Additive Alternate 3] will be the sum of the time allowed for individual schedules but not more than [20 calendar] days. Permitting the Contractor to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a wavier on the part of the Owner of any of its rights under the contract.

80-09 Default and termination of contract. The Contractor shall be considered in default of his or her contract and such default will be considered as cause for the Owner to terminate the contract for any of the following reasons if the Contractor:

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

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

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

d. Discontinues the execution of the work, or

e. Fails to resume work which has been discontinued within a reasonable time after notice to do so, or

f. Becomes insolvent or is declared bankrupt, or commits any act of bankruptcy or insolvency, or

g. Allows any final judgment to stand against the Contractor unsatisfied for a period of 10 days, or

h. Makes an assignment for the benefit of creditors, or

i. For any other cause whatsoever, fails to carry on the work in an acceptable manner.

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

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

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

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

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

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

Acceptable materials, obtained or ordered by the Contractor for the work and that are not incorporated in the work shall, at the option of the Contractor, be purchased from the

Contractor at actual cost as shown by receipted bills and actual cost records at such points of delivery as may be designated by the Engineer.

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

80-11 Work area, storage area and sequence of operations. The Contractor shall obtain approval from the Engineer prior to beginning any work in all areas of the airport. No operating runway, taxiway, or air operations area (AOA) shall be crossed, entered, or obstructed while it is operational. The Contractor shall plan and coordinate his or her work in such a manner as to ensure safety and a minimum of hindrance to flight operations. All Contractor equipment and material stockpiles shall be stored a minimum or 400 feet from the centerline of an active runway. No equipment will be allowed to park within the approach area of an active runway at any time. No equipment shall be within 400 feet of an active runway at any time.

END OF SECTION 80

SECTION 90 - Measurement and Payment

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

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

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

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

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

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

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

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

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

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

Bituminous materials will be measured by the gallon (liter) or ton (kg). When measured by volume, such volumes will be measured at 60°F (16°C) or will be corrected to the volume at 60°F (16°C) using ASTM D1250 for asphalts or ASTM D633 for tars.

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

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

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

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

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

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

Rental of equipment will be measured by time in hours of actual working time and necessary traveling time of the equipment within the limits of the work. Special equipment ordered by the Engineer in connection with force account work will be measured as agreed in the change order or supplemental agreement authorizing such force account work as provided in the subsection 90-05 titled PAYMENT FOR EXTRA WORK of this section.

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

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

Scales shall be accurate within 1/2% of the correct weight throughout the range of use. The Contractor shall have the scales checked under the observation of the inspector before beginning work and at such other times as requested. The intervals shall be uniform in spacing throughout the graduated or marked length of the beam or dial and shall not exceed one-tenth of 1% of the nominal rated capacity of the scale, but not less than 1 pound (454 grams). The use of spring balances will not be permitted.

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

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

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

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

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

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

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

90-02 Scope of payment. The Contractor shall receive and accept compensation provided for in the contract as full payment for furnishing all materials, for performing all work under the contract in a complete and acceptable manner, and for all risk, loss, damage, or expense of whatever character arising out of the nature of the work or the execution thereof, subject to the provisions of the subsection 70-18 titled NO WAIVER OF LEGAL RIGHTS of Section 70.

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

90-03 Compensation for altered quantities. When the accepted quantities of work vary from the quantities in the proposal, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract price for the accepted quantities of work actually completed and accepted. No allowance, except as provided for in the subsection 40-02 titled ALTERATION OF WORK AND QUANTITIES of Section 40 will be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor which results directly from such alterations or indirectly from his or her unbalanced allocation of overhead and profit among the contract items, or from any other cause.

90-04 Payment for omitted items. As specified in the subsection 40-03 titled OMITTED ITEMS of Section 40, the Engineer shall have the right to omit from the work (order nonperformance) any contract item, except major contract items, in the best interest of the Owner.

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

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

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

90-05 Payment for extra work. Extra work, performed in accordance with the subsection 40-04 titled EXTRA WORK of Section 40, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work.

90-06 Partial payments. Partial payments will be made to the Contractor at least once each month as the work progresses. Said payments will be based upon estimates, prepared by the 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 subsection 90-07 titled PAYMENT FOR MATERIALS ON HAND of this section. No partial payment will be made when the amount due to the Contractor since the last estimate amounts to less than five hundred dollars.

The Contractor is required to pay all subcontractors for satisfactory performance of their contracts no later than 30 days after the Contractor has received a partial payment. The Owner must ensure prompt and full payment of retainage from the prime Contractor to the subcontractor within 30 days after the subcontractor's work is satisfactorily completed. A subcontractor's work is satisfactorily completed when all the tasks called for in the subcontract have been accomplished and documented as required by the Owner. When the Owner has made an incremental acceptance of a portion of a prime contract, the work of a subcontractor covered by that acceptance is deemed to be satisfactorily completed.

From the total of the amount determined to be payable on a partial payment, five percent (5%) of such total amount will be deducted and retained by the Owner until the final payment is made, except as may be provided (at the Contractor's option) in the subsection 90-08 titled PAYMENT OF WITHHELD FUNDS of this section. The balance of the amount payable, less all previous payments, shall be certified for payment. Should the Contractor exercise his or her option, as provided in the subsection 90-08 titled PAYMENT OF WITHHELD FUNDS of this section, no such percent retainage shall be deducted.

When at least 95% of the work has been completed, the Engineer shall, at the Owner's discretion and with the consent of the surety, prepare estimates of both the contract value and the cost of the remaining work to be done.

The Owner may retain an amount not less than twice the contract value or estimated cost, whichever is greater, of the work remaining to be done. The remainder, less all previous payments and deductions, will then be certified for payment to the Contractor.

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

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

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

90-07 Payment for materials on hand. Partial payments may be made to the extent of the delivered cost of materials to be incorporated in the work, provided that such materials meet the requirements of the contract, plans, and specifications and are delivered to acceptable sites on the airport property or at other sites in the vicinity that are acceptable to the Owner. Such

delivered costs of stored or stockpiled materials may be included in the next partial payment after the following conditions are met:

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

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

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

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

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

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

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

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

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

90-08 Payment of withheld funds. At the Contractor's option, if an Owner withholds retainage in accordance with the methods described in subsection 90-06 PARTIAL PAYMENTS, the Contractor may request that the Owner deposit the retainage into an escrow account. The Owner's deposit of retainage into an escrow account is subject to the following conditions:

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

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

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

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

90-09 Acceptance and final payment. When the contract work has been accepted in accordance with the requirements of the subsection 50-15 titled FINAL ACCEPTANCE of Section 50, the Engineer will prepare the final estimate of the items of work actually performed. The Contractor shall approve the Engineer's final estimate or advise the Engineer of the Contractor's objections to the final estimate which are based on disputes in measurements or computations of the final quantities to be paid under the contract as amended by change order or supplemental agreement. The Contractor and the Engineer shall resolve all disputes (if any) in the measurement and computation of final quantities to be paid within 30 calendar days of the Contractor's receipt of the Engineer's final estimate. If, after such 30-day period, a dispute still exists, the Contractor may approve the Engineer's estimate under protest of the quantities in dispute, and such disputed quantities shall be considered by the Owner as a claim in

accordance with the subsection 50-16 titled CLAIMS FOR ADJUSTMENT AND DISPUTES of Section 50.

After the Contractor has approved, or approved under protest, the Engineer's final estimate, and after the Engineer's receipt of the project closeout documentation required in subsection 90-11 Project Closeout, final payment will be processed based on the entire sum, or the undisputed sum in case of approval under protest, determined to be due the Contractor less all previous payments and all amounts to be deducted under the provisions of the contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment.

If the Contractor has filed a claim for additional compensation under the provisions of the subsection 50-16 titled CLAIMS FOR ADJUSTMENTS AND DISPUTES of Section 50 or under the provisions of this subsection, such claims will be considered by the Owner in accordance with local laws or ordinances. Upon final adjudication of such claims, any additional payment determined to be due the Contractor will be paid pursuant to a supplemental final estimate.

90-10 Construction warranty.

a. In addition to any other warranties in this contract, the Contractor warrants that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, workmanship, or design furnished, or performed by the Contractor or any subcontractor or supplier at any tier.

b. This warranty shall continue for a period of one year from the date of final acceptance of the work. If the Owner takes possession of any part of the work before final acceptance, this warranty shall continue for a period of one year from the date the Owner takes possession. However, this will not relieve the Contractor from corrective items required by the final acceptance of the project work.

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

   (1) The Contractor's failure to conform to contract requirements; or

   (2) Any defect of equipment, material, workmanship, or design furnished by the Contractor.

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

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

f. If the Contractor fails to remedy any failure, defect, or damage within 14 days after receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.

g. With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall: (1) Obtain all warranties that would be given in normal commercial practice; (2) Require all warranties to be executed, in writing, for the benefit of the Owner, as directed by the Owner, and (3) Enforce all warranties for the benefit of the Owner.

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

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

a. Provide two (2) copies of all manufacturers warranties specified for materials, equipment, and installations.

b. Provide weekly payroll records (not previously received) from the general Contractor and all subcontractors.

c. Complete final cleanup in accordance with subsection 40-08, FINAL CLEANUP.

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

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

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

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

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

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

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

k. Security for Construction Warranty.

l. Equipment commissioning documentation submitted, if required.

m. Contractor shall complete and submit the forms in the General Requirements

END OF SECTION 90

SECTION 100 - Contractor Quality Control Program

100-01 General. When the specification requires a Contractor Quality Control Program, the Contractor shall establish, provide, and maintain an effective Quality Control Program that details the methods and procedures that will be taken to assure that all materials and completed construction required by this contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified here and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The intent of this section is to enable the Contractor to establish a necessary level of control that will:

a. Adequately provide for the production of acceptable quality materials.

b. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements can be met.

c. Allow the Contractor as much latitude as possible to develop his or her own standard of control.

The Contractor shall be prepared to discuss and present, at the preconstruction conference, their understanding of the quality control requirements. The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the Quality Control Program has been reviewed and accepted by the Engineer. No partial payment will be made for materials subject to specific quality control requirements until the Quality Control Program has been reviewed.

The quality control requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the acceptance testing requirements. Acceptance testing requirements are the responsibility of the Engineer.

Paving projects over $500,000 shall have a Quality Control (QC)/Quality Assurance (QA) workshop with the Engineer, Contractor, subcontractors, testing laboratories, and Owner's representative at start of construction. The workshop shall address QC and QA requirements of the project specifications. The Contractor shall coordinate with the Airport and the Engineer on time and location of the QC/QA workshop.

100-02 Description of program.

a. General description. The Contractor shall establish a Quality Control Program to perform quality control inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. This Quality Control Program shall ensure conformance to applicable specifications and plans with respect to materials, workmanship, construction, finish, and functional performance. The Quality Control Program shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of quality control.

b. Quality Control Program. The Contractor shall describe the Quality Control Program in a written document that shall be reviewed and approved by the Engineer prior to the start of any production, construction, or off-site fabrication. The written Quality Control Program shall be submitted to the Engineer for review and approval at least 7 calendar days before the start of work. The Contractor's Quality Control Plan and Quality Control testing

laboratory must be approved in writing by the Engineer prior to the Notice to Proceed (NTP).

The Quality Control Program shall be organized to address, as a minimum, the following items:

a. Quality control organization

b. Project progress schedule

c. Submittals schedule

d. Inspection requirements

e. Quality control testing plan

f. Documentation of quality control activities

g. Requirements for corrective action when quality control and/or acceptance criteria are not met

The Contractor is encouraged to add any additional elements to the Quality Control Program that is deemed necessary to adequately control all production and/or construction processes required by this contract.

100-03 Quality control organization. The Contractor Quality Control Program shall be implemented by the establishment of a separate quality control organization. An organizational chart shall be developed to show all quality control personnel and how these personnel integrate with other management/production and construction functions and personnel.

The organizational chart shall identify all quality control staff by name and function, and shall indicate the total staff required to implement all elements of the Quality Control Program, including inspection and testing for each item of work. If necessary, different technicians can be used for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the Quality Control Program, the personnel assigned shall be subject to the qualification requirements of paragraph 100-03a and 100-03b. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

The quality control organization shall, as a minimum, consist of the following personnel:

a. Program Administrator. The Program Administrator shall be a full-time on-site employee of the Contractor, or a consultant engaged by the Contractor. The Program Administrator shall have a minimum of five (5) years of experience in airport and/or highway construction and shall have had prior quality control experience on a project of comparable size and scope as the contract.

Additional qualifications for the Program Administrator shall include at least one of the following requirements:

(1) Professional Engineer with one (1) year of airport paving experience.

(2) Engineer-in-training with two (2) years of airport paving experience.

(3) An individual with three (3) years of highway and/or airport paving experience, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.

(4) Construction materials technician certified at Level III by the National Institute for Certification in Engineering Technologies (NICET).

(5) Highway materials technician certified at Level III by NICET.

(6) Highway construction technician certified at Level III by NICET.

(7) A NICET certified engineering technician in Civil Engineering Technology with five (5) years of highway and/or airport paving experience.

The Program Administrator shall have full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to ensure compliance with the contract plans and technical specifications. The Program Administrator shall report directly to a responsible officer of the construction firm. The Program Administrator may supervise the Quality Control Program on more than one project provided that person can be at the job site within two (2) hours after being notified of a problem.

b. Quality control technicians. A sufficient number of quality control technicians necessary to adequately implement the Quality Control Program shall be provided. These personnel shall be either Engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II or higher construction materials technician or highway construction technician and shall have a minimum of two (2) years of experience in their area of expertise.

The quality control technicians shall report directly to the Program Administrator and shall perform the following functions:

(1) Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by subsection 100-06.

(2) Performance of all quality control tests as required by the technical specifications and subsection 100-07.

(3) Performance of density tests for the Engineer when required by the technical specifications.

Certification at an equivalent level, by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

c. Staffing levels. The Contractor shall provide sufficient qualified quality control personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The Quality Control Program shall state where different technicians will be required for different work elements.

100-04 Project progress schedule. The Contractor shall submit a coordinated construction schedule for all work activities. The schedule shall be prepared as a network diagram in Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), or other format, or as otherwise specified in the contract. As a minimum, it shall provide information on the sequence of work activities, milestone dates, and activity duration.

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

100-05 Submittals schedule. The Contractor shall submit a detailed listing of all submittals (for example, mix designs, material certifications) and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include:

a. Specification item number

b. Item description

c. Description of submittal

d. Specification paragraph requiring submittal

e. Scheduled date of submittal

100-06 Inspection requirements. Quality control inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified by subsection 100-07.

Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of work. These shall include the following minimum requirements:

a. During plant operation for material production, quality control test results and periodic inspections shall be used to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment used in proportioning and mixing shall be inspected to ensure its proper operating condition. The Quality Control Program shall detail how these and other quality control functions will be accomplished and used.

b. During field operations, quality control test results and periodic inspections shall be used to ensure the quality of all materials and workmanship. All equipment used in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The Program shall document how these and other quality control functions will be accomplished and used.

100-07 Quality control testing plan. As a part of the overall Quality Control Program, the Contractor shall implement a quality control testing plan, as required by the technical specifications. The testing plan shall include the minimum tests and test frequencies required by each technical specification Item, as well as any additional quality control tests that the Contractor deems necessary to adequately control production and/or construction processes.

The testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:

a. Specification item number (for example, P-401)

b. Item description (for example, Plant Mix Bituminous Pavements)

c. Test type (for example, gradation, grade, asphalt content)

d. Test standard (for example, ASTM or American Association of State Highway and Transportation Officials (AASHTO) test number, as applicable)

e. Test frequency (for example, as required by technical specifications or minimum frequency when requirements are not stated)

f. Responsibility (for example, plant technician)

g. Control requirements (for example, target, permissible deviations)

The testing plan shall contain a statistically-based procedure of random sampling for acquiring test samples in accordance with ASTM D3665. The Engineer shall be provided the opportunity to witness quality control sampling and testing.

All quality control test results shall be documented by the Contractor as required by subsection 100-08.

100-08 Documentation. The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the Engineer daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the Contractor's Program Administrator.

Specific Contractor quality control records required for the contract shall include, but are not necessarily limited to, the following records:

a. Daily inspection reports. Each Contractor quality control technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations. These technician's daily reports shall provide factual evidence that continuous quality control inspections have been performed and shall, as a minimum, include the following:

   (1) Technical specification item number and description
   (2) Compliance with approved submittals
   (3) Proper storage of materials and equipment
   (4) Proper operation of all equipment
   (5) Adherence to plans and technical specifications
   (6) Review of quality control tests
   (7) Safety inspection.

The daily inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

The daily inspection reports shall be signed by the responsible quality control technician and the Program Administrator. The Engineer shall be provided at least one copy of each daily inspection report on the work day following the day of record.

b. Daily test reports. The Contractor shall be responsible for establishing a system that will record all quality control test results. Daily test reports shall document the following information:

   (1) Technical specification item number and description
   (2) Test designation
   (3) Location
   (4) Date of test
   (5) Control requirements
   (6) Test results
   (7) Causes for rejection
   (8) Recommended remedial actions
   (9) Retests

Test results from each day's work period shall be submitted to the Engineer prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical quality control charts. The daily test reports shall be signed by the responsible quality control technician and the Program Administrator.

100-09 Corrective action requirements. The Quality Control Program shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the Quality Control Program as a whole, and for individual items of work contained in the technical specifications.

The Quality Control Program shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

When applicable or required by the technical specifications, the Contractor shall establish and use statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

100-10 Surveillance by the Engineer. All items of material and equipment shall be subject to surveillance by the Engineer at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate quality control system in conformance with the requirements detailed here and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to surveillance by the Engineer at the site for the same purpose.

Surveillance by the Engineer does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor's or subcontractor's work.

100-11 Noncompliance.

a. The Engineer will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or his or her authorized representative to the Contractor or his or her authorized representative at the site of the work, shall be considered sufficient notice.

b. In cases where quality control activities do not comply with either the Contractor Quality Control Program or the contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer, the Engineer may:

   (1) Order the Contractor to replace ineffective or unqualified quality control personnel or subcontractors.

   (2) Order the Contractor to stop operations until appropriate corrective actions are taken.

END OF SECTION 100

SECTION 105 - Mobilization

105-1 Description. This item shall consist of work and operations, but is not limited to, work and operations necessary for the movement of personnel, equipment, material and supplies to and from the project site for work on the project except as provided in the contract as separate pay items.

105-1.1 Posted notices. Prior to commencement of construction activities the Contractor must post the following documents in a prominent and accessible place where they may be easily viewed by all employees of the prime Contractor and by all employees of subcontractors engaged by the prime Contractor: Equal Employment Opportunity (EEO) Poster "Equal Employment Opportunity is the Law" in accordance with the Office of Federal Contract Compliance Programs Executive Order 11246, as amended; Davis Bacon Wage Poster (WH 1321) - DOL "Notice to All Employees" Poster; and Applicable Davis-Bacon Wage Rate Determination. These notices must remain posted until final acceptance of the work by the Owner.

105-2 Basis of measurement and payment. Based upon the contract lump sum price for "Mobilization" partial payments will be allowed as follows:

a. With first pay request, 25%.

b. When 25% or more of the original contract is earned, an additional 25%.

c. When 50% or more of the original contract is earned, an additional 40%.

d. After Final Inspection, Staging area clean-up and delivery of all Project Closeout materials as required by 90-11, the final 10%.

END OF SECTION 105

SECTION 110 - Method of Estimating Percentage of Material Within Specification Limits (PWL)

110-01 General. When the specifications provide for acceptance of material based on the method of estimating percentage of material within specification limits (PWL), the PWL will be determined in accordance with this section. All test results for a lot will be analyzed statistically to determine the total estimated percent of the lot that is within specification limits. The PWL is computed using the sample average (X) and sample standard deviation (S_n) of the specified number (n) of sublots for the lot and the specification tolerance limits, L for lower and U for upper, for the particular acceptance parameter. From these values, the respective Quality index, Q_L for Lower Quality Index and/or Q_U for Upper Quality Index, is computed and the PWL for the lot for the specified n is determined from Table 1. All specification limits specified in the technical sections shall be absolute values. Test results used in the calculations shall be to the significant figure given in the test procedure.

There is some degree of uncertainty (risk) in the measurement for acceptance because only a small fraction of production material (the population) is sampled and tested. This uncertainty exists because all portions of the production material have the same probability to be randomly sampled. The Contractor's risk is the probability that material produced at the acceptable quality level is rejected or subjected to a pay adjustment. The Owner's risk is the probability that material produced at the rejectable quality level is accepted.

It is the intent of this section to inform the Contractor that, in order to consistently offset the Contractor's risk for material evaluated, production quality (using population average and population standard deviation) must be maintained at the acceptable quality specified or higher. In all cases, it is the responsibility of the Contractor to produce at quality levels that will meet the specified acceptance criteria when sampled and tested at the frequencies specified.

110-02 Method for computing PWL. The computational sequence for computing PWL is as follows:

a. Divide the lot into n sublots in accordance with the acceptance requirements of the specification.

b. Locate the random sampling position within the sublot in accordance with the requirements of the specification.

c. Make a measurement at each location, or take a test portion and make the measurement on the test portion in accordance with the testing requirements of the specification.

d. Find the sample average (X) for all sublot values within the lot by using the following formula:

$$X = (x_1 + x_2 + x_3 + \ldots x_n) / n$$

Where: X = Sample average of all sublot values within a lot
x_1, x_2 = Individual sublot values
n = Number of sublots

e. Find the sample standard deviation (S_n) by use of the following formula:

$$S_n = [(d_1^2 + d_2^2 + d_3^2 + \ldots d_n^2)/(n-1)]^{1/2}$$

Where: S_n = Sample standard deviation of the number of sublot values in the set
d_1, d_2 = Deviations of the individual sublot values x_1, x_2, … from the average value X
that is: $d_1 = (x_1 - X)$, $d_2 = (x_2 - X)$ … $d_n = (x_n - X)$
n = Number of sublots

f. For single sided specification limits (that is, L only), compute the Lower Quality Index Q_L by use of the following formula:

$$Q_L = (X - L) / S_n$$

Where: L = specification lower tolerance limit

Estimate the percentage of material within limits (PWL) by entering Table 1 with Q_L, using the column appropriate to the total number (n) of measurements. If the value of Q_L falls between values shown on the table, use the next higher value of PWL.

g. For double-sided specification limits (that is, L and U), compute the Quality Indexes Q_L and Q_U by use of the following formulas:

$$Q_L = (X - L) / S_n$$
and
$$Q_U = (U - X) / S_n$$

Where: L and U = specification lower and upper tolerance limits

Estimate the percentage of material between the lower (L) and upper (U) tolerance limits (PWL) by entering Table 1 separately with Q_L and Q_U, using the column appropriate to the total number (n) of measurements, and determining the percent of material above P_L and percent of material below P_U for each tolerance limit. If the values of Q_L fall between values shown on the table, use the next higher value of P_L or P_U. Determine the PWL by use of the following formula:

$$PWL = (P_U + P_L) - 100$$

Where: P_L = percent within lower specification limit
P_U = percent within upper specification limit

EXAMPLE OF PWL CALCULATION

Project: Example Project

Test Item: Item P-401, Lot A.

A. PWL Determination for Mat Density.

1. Density of four random cores taken from Lot A.
   A-1 = 96.60
   A-2 = 97.55
   A-3 = 99.30
   A-4 = 98.35
   n = 4

2. Calculate average density for the lot.
   $X = (x_1 + x_2 + x_3 + . . . x_n) / n$
   $X = (96.60 + 97.55 + 99.30 + 98.35) / 4$
   $X = 97.95\%$ density

3. Calculate the standard deviation for the lot.
   $S_n = [((96.60 - 97.95)^2 + (97.55 - 97.95)^2 + (99.30 - 97.95)^2 + (98.35 - 97.95)^2)) / (4 - 1)]^{1/2}$
   $S_n = [(1.82 + 0.16 + 1.82 + 0.16) / 3]^{1/2}$
   $S_n = 1.15$

4. Calculate the Lower Quality Index Q_L for the lot. (L=96.3)
   $Q_L = (X - L) / S_n$
   $Q_L = (97.95 - 96.30) / 1.15$
   $Q_L = 1.4348$

5. Determine PWL by entering Table 1 with $Q_L = 1.44$ and n= 4.
   PWL = 98

B. PWL Determination for Air Voids.

1. Air Voids of four random samples taken from Lot A.
   A-1 = 5.00
   A-2 = 3.74
   A-3 = 2.30
   A-4 = 3.25

2. Calculate the average air voids for the lot.
   $X = (x_1 + x_2 + x_3 . . . n) / n$
   $X = (5.00 + 3.74 + 2.30 + 3.25) / 4$
   $X = 3.57\%$

3. Calculate the standard deviation S_n for the lot.
   $S_n = [((3.57 - 5.00)^2 + (3.57 - 3.74)^2 + (3.57 - 2.30)^2 + (3.57 - 3.25)^2) / (4 - 1)]^{1/2}$
   $S_n = [(2.04 + 0.03 + 1.62 + 0.10) / 3]^{1/2}$
   $S_n = 1.12$

4. Calculate the Lower Quality Index Q_L for the lot. (L= 2.0)
   $Q_L = (X - L) / S_n$
   $Q_L = (3.57 - 2.00) / 1.12$
   $Q_L = 1.3992$

5. Determine P_L by entering Table 1 with $Q_L = 1.41$ and n = 4.
   $P_L = 97$

6. Calculate the Upper Quality Index Q_U for the lot. (U= 5.0)
   $Q_U = (U - X) / S_n$
   $Q_U = (5.00 - 3.57) / 1.12$
   $Q_U = 1.2702$

7. Determine P_U by entering Table 1 with $Q_U = 1.29$ and n = 4.
   $P_U = 93$

8. Calculate Air Voids PWL
   PWL = (P_L + P_U) - 100
   PWL = (97 + 93) - 100 = 90

Example of Outlier Calculation (Reference ASTM E178)

Project: Example Project

Test Item: Item P-401, Lot A.

A. Outlier Determination for Mat Density.

1. Density of four random cores taken from Lot A arranged in descending order.
   A-3 = 99.30
   A-4 = 98.35
   A-2 = 97.55
   A-1 = 96.60

2. Use n=4 and upper 5% significance level of to find the critical value for test criterion = 1.463.

3. Use average density, standard deviation, and test criterion value to evaluate density measurements.

a. For measurements greater than the average:
   If (measurement - average)/(standard deviation) is less than test criterion,
   then the measurement is not considered an outlier
For A-3, check if (99.30 - 97.95) / 1.15 is greater than 1.463.
   Since 1.174 is less than 1.463, the value is not an outlier.

b. For measurements less than the average:
   If (average - measurement)/(standard deviation) is less than test criterion, then the measurement is not considered an outlier.

For A-1, check if (97.95 - 96.60) / 1.15 is greater than 1.463.
   Since 1.435 is less than 1.463, the value is not an outlier.

Note: In this example, a measurement would be considered an outlier if the density were:

Greater than (97.95 + 1.463 × 1.15) = 99.63%
   OR
less than (97.95 - 1.463 × 1.15) = 96.27%.

Table 1. Table for Estimating Percent of Lot Within Limits (PWL)

Percent Within Limits (P_L and P_U)	Positive Values of Q (Q_L and Q_U)							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
99	1.1541	1.4700	1.6714	1.8008	1.8888	1.9520	1.9994	2.0362
98	1.1524	1.4400	1.6016	1.6982	1.7612	1.8053	1.8379	1.8630
97	1.1496	1.4100	1.5427	1.6181	1.6661	1.6993	1.7235	1.7420
96	1.1456	1.3800	1.4897	1.5497	1.5871	1.6127	1.6313	1.6454
95	1.1405	1.3500	1.4407	1.4887	1.5181	1.5381	1.5525	1.5635
94	1.1342	1.3200	1.3946	1.4329	1.4561	1.4717	1.4829	1.4914
93	1.1269	1.2900	1.3508	1.3810	1.3991	1.4112	1.4199	1.4265
92	1.1184	1.2600	1.3088	1.3323	1.3461	1.3554	1.3620	1.3670
91	1.1089	1.2300	1.2683	1.2860	1.2964	1.3032	1.3081	1.3118
90	1.0982	1.2000	1.2290	1.2419	1.2492	1.2541	1.2576	1.2602
89	1.0864	1.1700	1.1909	1.1995	1.2043	1.2075	1.2098	1.2115
88	1.0736	1.1400	1.1537	1.1587	1.1613	1.1630	1.1643	1.1653
87	1.0597	1.1100	1.1173	1.1192	1.1199	1.1204	1.1208	1.1212
86	1.0448	1.0800	1.0817	1.0808	1.0800	1.0794	1.0791	1.0789
85	1.0288	1.0500	1.0467	1.0435	1.0413	1.0399	1.0389	1.0382
84	1.0119	1.0200	1.0124	1.0071	1.0037	1.0015	1.0000	0.9990
83	0.9939	0.9900	0.9785	0.9715	0.9671	0.9643	0.9624	0.9610
82	0.9749	0.9600	0.9452	0.9367	0.9315	0.9281	0.9258	0.9241
81	0.9550	0.9300	0.9123	0.9025	0.8966	0.8928	0.8901	0.8882
80	0.9342	0.9000	0.8799	0.8690	0.8625	0.8583	0.8554	0.8533
79	0.9124	0.8700	0.8478	0.8360	0.8291	0.8245	0.8214	0.8192
78	0.8897	0.8400	0.8160	0.8036	0.7962	0.7915	0.7882	0.7858
77	0.8662	0.8100	0.7846	0.7716	0.7640	0.7590	0.7556	0.7531
76	0.8417	0.7800	0.7535	0.7401	0.7322	0.7271	0.7236	0.7211
75	0.8165	0.7500	0.7226	0.7089	0.7009	0.6958	0.6922	0.6896
74	0.7904	0.7200	0.6921	0.6781	0.6701	0.6649	0.6613	0.6587
73	0.7636	0.6900	0.6617	0.6477	0.6396	0.6344	0.6308	0.6282
72	0.7360	0.6600	0.6316	0.6176	0.6095	0.6044	0.6008	0.5982
71	0.7077	0.6300	0.6016	0.5878	0.5798	0.5747	0.5712	0.5686
70	0.6787	0.6000	0.5719	0.5582	0.5504	0.5454	0.5419	0.5394
69	0.6490	0.5700	0.5423	0.5290	0.5213	0.5164	0.5130	0.5105
68	0.6187	0.5400	0.5129	0.4999	0.4924	0.4877	0.4844	0.4820
67	0.5878	0.5100	0.4836	0.4710	0.4638	0.4592	0.4560	0.4537
66	0.5563	0.4800	0.4545	0.4424	0.4355	0.4310	0.4280	0.4257
65	0.5242	0.4500	0.4255	0.4139	0.4073	0.4030	0.4001	0.3980
64	0.4916	0.4200	0.3967	0.3856	0.3793	0.3753	0.3725	0.3705
63	0.4586	0.3900	0.3679	0.3575	0.3515	0.3477	0.3451	0.3432
62	0.4251	0.3600	0.3392	0.3295	0.3239	0.3203	0.3179	0.3161
61	0.3911	0.3300	0.3107	0.3016	0.2964	0.2931	0.2908	0.2892
60	0.3568	0.3000	0.2822	0.2738	0.2691	0.2660	0.2639	0.2624
59	0.3222	0.2700	0.2537	0.2461	0.2418	0.2391	0.2372	0.2358
58	0.2872	0.2400	0.2254	0.2186	0.2147	0.2122	0.2105	0.2093
57	0.2519	0.2100	0.1971	0.1911	0.1877	0.1855	0.1840	0.1829
56	0.2164	0.1800	0.1688	0.1636	0.1607	0.1588	0.1575	0.1566

Percent Within Limits (P_L and P_U)	Positive Values of Q (Q_L and Q_U)							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
55	0.1806	0.1500	0.1406	0.1363	0.1338	0.1322	0.1312	0.1304
54	0.1447	0.1200	0.1125	0.1090	0.1070	0.1057	0.1049	0.1042
53	0.1087	0.0900	0.0843	0.0817	0.0802	0.0793	0.0786	0.0781
52	0.0725	0.0600	0.0562	0.0544	0.0534	0.0528	0.0524	0.0521
51	0.0363	0.0300	0.0281	0.0272	0.0267	0.0264	0.0262	0.0260
50	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Percent Within Limits (P_L and P_U)	Negative Values of Q (Q_L and Q_U)							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
49	-0.0363	-0.0300	-0.0281	-0.0272	-0.0267	-0.0264	-0.0262	-0.0260
48	-0.0725	-0.0600	-0.0562	-0.0544	-0.0534	-0.0528	-0.0524	-0.0521
47	-0.1087	-0.0900	-0.0843	-0.0817	-0.0802	-0.0793	-0.0786	-0.0781
46	-0.1447	-0.1200	-0.1125	-0.1090	-0.1070	-0.1057	-0.1049	-0.1042
45	-0.1806	-0.1500	-0.1406	-0.1363	-0.1338	-0.1322	-0.1312	-0.1304
44	-0.2164	-0.1800	-0.1688	-0.1636	-0.1607	-0.1588	-0.1575	-0.1566
43	-0.2519	-0.2100	-0.1971	-0.1911	-0.1877	-0.1855	-0.1840	-0.1829
42	-0.2872	-0.2400	-0.2254	-0.2186	-0.2147	-0.2122	-0.2105	-0.2093
41	-0.3222	-0.2700	-0.2537	-0.2461	-0.2418	-0.2391	-0.2372	-0.2358
40	-0.3568	-0.3000	-0.2822	-0.2738	-0.2691	-0.2660	-0.2639	-0.2624
39	-0.3911	-0.3300	-0.3107	-0.3016	-0.2964	-0.2931	-0.2908	-0.2892
38	-0.4251	-0.3600	-0.3392	-0.3295	-0.3239	-0.3203	-0.3179	-0.3161
37	-0.4586	-0.3900	-0.3679	-0.3575	-0.3515	-0.3477	-0.3451	-0.3432
36	-0.4916	-0.4200	-0.3967	-0.3856	-0.3793	-0.3753	-0.3725	-0.3705
35	-0.5242	-0.4500	-0.4255	-0.4139	-0.4073	-0.4030	-0.4001	-0.3980
34	-0.5563	-0.4800	-0.4545	-0.4424	-0.4355	-0.4310	-0.4280	-0.4257
33	-0.5878	-0.5100	-0.4836	-0.4710	-0.4638	-0.4592	-0.4560	-0.4537
32	-0.6187	-0.5400	-0.5129	-0.4999	-0.4924	-0.4877	-0.4844	-0.4820
31	-0.6490	-0.5700	-0.5423	-0.5290	-0.5213	-0.5164	-0.5130	-0.5105
30	-0.6787	-0.6000	-0.5719	-0.5582	-0.5504	-0.5454	-0.5419	-0.5394
29	-0.7077	-0.6300	-0.6016	-0.5878	-0.5798	-0.5747	-0.5712	-0.5686
28	-0.7360	-0.6600	-0.6316	-0.6176	-0.6095	-0.6044	-0.6008	-0.5982
27	-0.7636	-0.6900	-0.6617	-0.6477	-0.6396	-0.6344	-0.6308	-0.6282
26	-0.7904	-0.7200	-0.6921	-0.6781	-0.6701	-0.6649	-0.6613	-0.6587
25	-0.8165	-0.7500	-0.7226	-0.7089	-0.7009	-0.6958	-0.6922	-0.6896
24	-0.8417	-0.7800	-0.7535	-0.7401	-0.7322	-0.7271	-0.7236	-0.7211
23	-0.8662	-0.8100	-0.7846	-0.7716	-0.7640	-0.7590	-0.7556	-0.7531
22	-0.8897	-0.8400	-0.8160	-0.8036	-0.7962	-0.7915	-0.7882	-0.7858
21	-0.9124	-0.8700	-0.8478	-0.8360	-0.8291	-0.8245	-0.8214	-0.8192
20	-0.9342	-0.9000	-0.8799	-0.8690	-0.8625	-0.8583	-0.8554	-0.8533
19	-0.9550	-0.9300	-0.9123	-0.9025	-0.8966	-0.8928	-0.8901	-0.8882
18	-0.9749	-0.9600	-0.9452	-0.9367	-0.9315	-0.9281	-0.9258	-0.9241
17	-0.9939	-0.9900	-0.9785	-0.9715	-0.9671	-0.9643	-0.9624	-0.9610
16	-1.0119	-1.0200	-1.0124	-1.0071	-1.0037	-1.0015	-1.0000	-0.9990
15	-1.0288	-1.0500	-1.0467	-1.0435	-1.0413	-1.0399	-1.0389	-1.0382
14	-1.0448	-1.0800	-1.0817	-1.0808	-1.0800	-1.0794	-1.0791	-1.0789
13	-1.0597	-1.1100	-1.1173	-1.1192	-1.1199	-1.1204	-1.1208	-1.1212
12	-1.0736	-1.1400	-1.1537	-1.1587	-1.1613	-1.1630	-1.1643	-1.1653
11	-1.0864	-1.1700	-1.1909	-1.1995	-1.2043	-1.2075	-1.2098	-1.2115
10	-1.0982	-1.2000	-1.2290	-1.2419	-1.2492	-1.2541	-1.2576	-1.2602
9	-1.1089	-1.2300	-1.2683	-1.2860	-1.2964	-1.3032	-1.3081	-1.3118
8	-1.1184	-1.2600	-1.3088	-1.3323	-1.3461	-1.3554	-1.3620	-1.3670
7	-1.1269	-1.2900	-1.3508	-1.3810	-1.3991	-1.4112	-1.4199	-1.4265
6	-1.1342	-1.3200	-1.3946	-1.4329	-1.4561	-1.4717	-1.4829	-1.4914
5	-1.1405	-1.3500	-1.4407	-1.4887	-1.5181	-1.5381	-1.5525	-1.5635

Percent Within Limits (P_L and P_U)	Negative Values of Q (Q_L and Q_U)							
	n=3	n=4	n=5	n=6	n=7	n=8	n=9	n=10
4	-1.1456	-1.3800	-1.4897	-1.5497	-1.5871	-1.6127	-1.6313	-1.6454
3	-1.1496	-1.4100	-1.5427	-1.6181	-1.6661	-1.6993	-1.7235	-1.7420
2	-1.1524	-1.4400	-1.6016	-1.6982	-1.7612	-1.8053	-1.8379	-1.8630
1	-1.1541	-1.4700	-1.6714	-1.8008	-1.8888	-1.9520	-1.9994	-2.0362

END OF SECTION 110

SUPPLEMENTARY CONDITIONS

The following conditions amend or supplement the referenced General Provisions and the Mandatory Federal Contract Provisions. All provisions which are not so amended or supplemented remain in full force and effect.

SECTION 10 - Definition of Terms

AFTER THE LAST DEFINITION OF SECTION 10, ADD THE FOLLOWING NEW DEFINITIONS:

SC-10-53 10-53 ADVISORY CIRCULAR. A document issued by the FAA containing informational material and guidance. When referred to in the plans and specifications, advisory circulars shall have the same force as supplemental specifications.

SC-10-54 10-54 AGREEMENT. The document designated in the Instructions to Bidders as the Contract Form, once it has been executed by both Contractor and Owner.

SC10-55 10-55 MIL SPECIFICATION. The Military Specifications and Standards, and indices thereto, prepared and issued by the Department of Defense. Military Specifications may be obtained from Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, Pennsylvania 19111-5094, Telephone (215) 697-1187, Facsimile (215) 697-2978.

SC-10-56 10-56 PRODUCTS. The materials, systems and equipment to be incorporated into the work.

SC-10-57 10-57 PROJECT MANUAL. The bound documents comprising Bidding Requirements, Bid Forms, Contract Forms, General Conditions, Supplementary Conditions, Specifications, Addenda and modifications.

SC-10-58 10-58 SPONSOR. A public agency or a political subdivision of a State in whom rests the title to the airport at which the construction under this contract is to be performed. Political subdivision refers to a County, City, Village, Township, or any combination or authority thereof as provided by law for the construction and operation of airports. The sponsor may also be referred to as the Owner in several parts of the contract.

SC-10-59 10-59 SUBCONTRACTOR. The prequalified (where required) individual, partnership or corporation, or a combination thereof, undertaking the execution of a part of the work under the terms of the contract, by virtue of an agreement with the Contractor approved by the Owner.

SC-10-60 10-60 SUBSTANTIAL COMPLETION. The point at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer as evidenced by Engineer's definitive certificate of Substantial Completion, it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part) can be utilized practically and efficiently for the purposes for which it is intended; or if there be no such certificate issued, when final payment is due in accordance with Section 90. The terms "substantially complete" and "substantially completed" as applied to any Work refer to "Substantial Completion thereof."

SC-10-61 10-61 SUPPLEMENTARY CONDITIONS. The part of the Contract Documents which amends or supplements the General Provisions.

SECTION 40 - Scope of Work

SC-40-09 ADD THE FOLLOWING SUBSECTION TO THE END OF SECTION 40 "SCOPE OF WORK":

40-09 ACCESS TO THE WORK. Access to the work will be via the access routes shown on the plans or as directed by the Engineer. The Contractor shall identify access routes with suitable signs, barricades and similar equipment.

The entire access route and construction site shall be kept free and clean of all debris at all times and maintained in good repair by the Contractor. All damage to the access route caused by the actions of the Contractor or his agents shall be immediately repaired to the satisfaction of the Owner.

No additional payment will be made to the Contractor for complying with the requirements of this subsection.

No other access to the work sites will be permitted without written approval by the Engineer. Contractor's vehicles and equipment, including vehicles and equipment of subcontractors and others coming under the Contractor's control, will not be permitted to traverse other airfield areas or pavements without written approval of the Engineer.

Contractor's vehicles, equipment, and materials may be stored in the area designated on the Plans, or by the Engineer. Upon completion of the work, the storage area shall be cleaned up and returned to its original condition to the satisfaction of the Engineer. No special payment will be made for clean-up and restoration of the storage area.

Space will be allotted by the Engineer for the use of employees of the Contractor and his subcontractor(s) for the daily parking of their automobiles during the construction period. Personal vehicles of employees and vehicles operated by vendors of goods or services will not be permitted beyond the Contractor's parking area. Drivers of vehicles being operated beyond this area shall be subject to loss of permission to enter the construction site.

SECTION 50 - Control of Work

SC-50-03 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 50-03 "COORDINATION OF CONTRACT, PLANS, AND SPECIFICATIONS"

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

SC-50-16 ADD THE FOLLOWING PARAGRAPHS TO THE END OF SUBSECTION 50-16 "CLAIMS FOR ADJUSTMENT AND DISPUTES":

The following documentation and information must be presented in order for the Engineer to properly evaluate such claim:

a. Definition of the basis of the claim, including a detailed identification of which materials and what work is considered to represent a change to the original contract, an explanation of why the work or material is different than what was called for by the original contract, and an identification of the contract provisions and anything else which the Contract relied upon;

b. An explanation of how and why the work which is considered a change resulted in any additional cost or performance time for the Contractor;

c. An identification of the categories of additional costs which were incurred, an estimate of the dollar magnitude of each, and a statement of the impact this work will have on the construction schedule, including the contract completion dates;

d. An indication of how the additional costs which is believed that were incurred can be, and are to be, quantified;

e. Documentation of any actual additional costs and any actual impact to the construction schedule due to this work;

f. Documentation of the cost of performing all similar "unchanged" work, to provide the Engineer a basis for comparison;

g. All backup and other documentation which are believed to support or relate to the claim;

h. Documentation quantifying the amount of work which is believed to constitute this "changed" work, and the time period and the areas where such work was performed.

The giving of a timely notice of a potential claim prior to undertaking the work which is the subject of the claim, and the submittal of the above listed information for claim evaluation within ten days after the work is completed, are conditions precedent to the making of the claim, to recovery thereon, and to the bringing of a legal action for the resolution thereof.

ADD THE FOLLOWING SUBSECTIONS TO THE END OF SECTION 50 "CONTROL OF WORK":

SC-50-18 50-18 RETEST OF WORK. When as provided for in the contract documents, the Owner performs sampling and tests of the work and the tests show a failure to meet the requirements of the contract documents, the expense of retesting, after reworking or substitution by the Contractor will be at the expense of the Contractor and such costs will be deducted from the payments otherwise due to the Contractor.

SC-50-19 50-19 CORRECTION OF WORK AFTER FINAL PAYMENT. Neither the final certificate nor payment, nor any provision in the contract documents shall relieve the Contractor of responsibility for faulty materials or workmanship and, unless otherwise specified, he shall remedy any defect due thereto and pay for any damage to other work resulting therefrom, which shall appear within a period of one year from date of final acceptance. Wherever the word "acceptance" occurs, it shall be understood to mean final acceptance.

The Owner shall give notice of observed defects with reasonable promptness. If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after the receipt of notice, the Owner shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense. With respect to all warranties, expressed or implied, from subcontractors, manufacturer, or suppliers for work performed and materials furnished under this Contract, the Contractor shall:

a. Obtain all warranties that would be given in normal commercial practice;

b. Require all warranties to be executed, in writing, for the benefit of the Owner.

SC-50-20 50-20 VENUE. This contract has been executed by, delivered to and accepted by the Owner in the state where the Airport is located, and the provisions hereof shall be governed by the laws of that state. Any disputes arising out of or related to this contract shall be resolved in accordance with said laws.

The parties agree that any action or legal proceeding arising out of or related to this contract shall be brought in the state courts of the county in which the Airport lies, or in the federal court in the district where the Airport is located; and the parties hereby consent to and waive any objection to jurisdiction or venue in said courts.

SECTION 60 - Control of Materials

SC-60-02 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 60-02 "SAMPLES, TESTS, AND CITED SPECIFICATIONS":

In the event that any tests show a failure to meet the requirements of the contract documents, the expense of retesting, after substitution or modification by the Contractor, will be at the expense of the Contractor and such costs will be deducted from the payments otherwise due to the Contractor. The Contractor shall give sufficient notification of the placing of orders for materials to permit testing.

SECTION 70 - Legal Regulations and Responsibility to Public

SC-70-01 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 70-01 "LAWS TO BE OBSERVED":

If the Contractor observes that the drawings and specifications are at variance with any laws, codes, ordinances, and regulations, he shall promptly notify the Engineer in writing, and any necessary changes shall be adjusted as provided in the contract for changes in the work. If the Contractor performs any work contrary to such laws, codes, ordinances, and regulations, and without such notice to the Engineer, he shall bear all costs arising therefrom.

SC-70-05 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 70-05 "FEDERAL AID PARTICIPATION":

The attention of the Contractor is also invited to the fact that the State in which this project is located may pay a portion of the cost of this improvement. In accordance with said State's rules and regulations, work will be subject to such inspection of the State, or its representative,

as deemed necessary to protect the interests of the people of the State. The Contractor shall furnish the inspecting party with every reasonable assistance to ascertain whether or not the requirements and intent of the contract are being met. Such inspections will in no way infer that the State is party to the contract, except for those contracts wherein the State is a signatory.

SC-70-07 ADD THE FOLLOWING PARAGRAPHS TO THE END OF SUBSECTION 70-07 "PUBLIC CONVENIENCE AND SAFETY":

The Contractor shall provide initial and continuing instructions to all supervisors, employees, subcontractors, and suppliers to enable them to conduct their work in a manner that will provide the maximum safety with the least hindrance to air and ground traffic, the general public, airport employees, and to the workmen employed on the site.

All safety provisions specified by the plans and documents or received from the Engineer, and those required by laws, codes and ordinances, shall be thoroughly disseminated and rigidly enforced.

SC-70-08 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 70-08 "BARRICADES, WARNING SIGNS, AND HAZARD MARKINGS":

This work, including required materials and equipment, and labor, etc., shall be incidental to the various items of work and all costs hereto are to be included in the various unit bid items, except as otherwise provided for in the contract documents.

SC-70-10 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 70-10 "PROTECTION AND RESTORATION OF PROPERTY AND LANDSCAPE."

Work that is to remain in place which is damaged or defaced by reasons of work performed under this contract, shall be restored at no additional cost to the Owner.

Items removed, indicated to be salvaged for Owner or reused in new work, which are damaged beyond repair, shall be replaced with equal new materials under this contract at no additional cost to the Owner.

Existing pavement or other existing work not specified for removal which is temporarily removed, damaged, exposed, or in any way disturbed or altered by work under this contract shall be repaired, patched, or replaced to the complete satisfaction of the Engineer at no additional cost to the Owner.

Where it is necessary to cut, alter, remove, or temporarily remove and replace existing property or equipment, the cost shall be included in the contract price for the item creating such work.

SC-70-11 DELETE SUBSECTION 70-11 "RESPONSIBILITY FOR DAMAGE CLAIMS" IN ITS ENTIRETY AND INSERT THE FOLLOWING:

<u>70-11 RESPONSIBILITY FOR DAMAGE CLAIMS.</u>

a. <u>INSURANCE:</u> Contractor shall purchase and maintain such comprehensive general liability, comprehensive automobile liability and other insurance as is appropriate for the Work being performed and furnished and as will provide protection from claims

set forth below which may arise out of or result from Contractor's performance and furnishing of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed or furnished by Contractor, by any Subcontractor, by anyone directly or indirectly employed by any of them to perform or furnish any of the Work, or by anyone for whose acts any of them may be liable:

(1) Claims under workers' or workmen's compensation, disability benefits and other similar employee benefit acts;

(2) Claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

(3) Claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

(4) Claims for damages insured by personal injury liability coverage which are sustained (a) by any person as a result of an offense directly or indirectly related to the employment of such person by Contractor, or (b) by any other person for any other reason;

(5) Claims for damages because of injury to or destruction of tangible property wherever located, including loss of use of resulting therefrom;

(6) Claims arising out of operation of Laws or Regulations for damages because of bodily injury or death of any person or for damage to property; and

(7) Claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

The insurance required by this paragraph 70-11.a shall include the specific coverages and be written for no less than the limits of liability and coverages specified in paragraph 70-11.c or required by law, whichever is greater. The comprehensive general liability insurance shall include completed operations insurance. All of the policies of insurance so required to be purchased and maintained (or the certificates or other evidence thereof) shall contain a provision or endorsement that the coverage afforded will not be canceled, materially changed or renewal refused until at least thirty days prior written notice has been given to Owner and Engineer by certified mail. All such insurance shall remain in effect until final payment and at all times thereafter when Contractor may be correcting, removing or replacing defective Work in accordance with subsection 50-18. In addition, contractor shall maintain such completed operations insurance for at least two years after final payment and furnish Owner with evidence of continuation of such insurance at final payment and one year thereafter, with the exception of Owner's Protective Liability coverage.

b. <u>INDEMNIFICATION:</u>

(1) The Contractor shall indemnify and hold harmless Owner and Engineer and their consultants, agents and employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs), provided that any such claim, damage, loss or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or

destruction of tangible property (other than the Work itself) including the loss of use resulting therefrom and (b) is caused in whole or in part by any negligent act or omission of Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any or them may be liable, regardless of whether or not it is caused by a party indemnified hereunder or arises by or is imposed by Law or Regulations regardless of the negligence of any such party.

(2) In any and all claims against Owner or Engineer or any of their consultants, agents or employees by any employee of Contractor, any Subcontractor, any person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 70-11.b(1) above shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for Contractor or any such Subcontractor or other person or organization under workers' or workmen's compensation acts, disability benefit acts or other employee benefit acts.

c. COVERAGES: The limits of liability for the insurance required by, Paragraph 70-11.a shall provide coverage for not less than the following amounts or greater where required by law:

(1) Workers' Compensation, etc.:

(a) State: Statutory

(b) Applicable Federal Statutory (e.g. Longshoreman's)

(c) Employer's Liability $1,000,000

(2) Comprehensive General Liability:

(a) Bodily Injury and Property Damage:
$1,000,000 Combined Single Limit (Per Occurrence)

(b) The Contractor's General Liability insurance shall provide coverage for the following: (1) Premises - Operations, (2) Independent Contractors, (3) Products/Completed Operations Hazard, (4) Underground Hazard, (5) Broad Form Property Damage, (6) Where applicable, Explosion and Collapse Hazard, and (7) Personal Injury.

The Owner, its officials and staff; and The Engineer, its staff and consultants shall be named as additional insureds by endorsement to the policy.

(3) Comprehensive Automobile Liability:

(a) Bodily Injury and Property Damage:
$1,000,000 Combined Single Limit
(Per Occurrence)

(b) The Contractor's Comprehensive Automobile Liability Insurance shall provide coverage for Bodily Injury ad Property Damage Per Occurrence for owned, hired and non-owned vehicles.

d. The Contractor shall obtain in the name of the Owner, Owner's Protective Liability Insurance which will have the same limits of coverage for the same period as that required in paragraph 70-11.c(2) above for the Contractor's general liability coverage, including liability for acts of Subcontractors and Subordinate Contractors.

e. Contractor shall purchase and maintain such Protective and Contractual Bodily Injury Liability Insurance and such Protective and Contractual Property Damage Liability Insurance as shall be required by any public bodies or utility companies whose property, facilities, or right-of-way may be affected by the Work to be done under this Contract.

f. Contractor will provide such additional information in respect of insurance provided by him as the Owner may reasonably request. Failure by Owner to give any such notice of objection within the time provided shall constitute an acceptance of such insurance purchased by Contractor as complying with the Contract Documents.

g. Certificates in triplicate from the insurance carrier stating the limits of liability and expiration date shall be filed with Owner before operations are begun. Certificates shall not merely name the types of policy provided but shall specifically refer to this Contract and shall contain a separate express statement of compliance with each of the requirements as set forth in this subsection. The certificates shall, in addition to the information relative to the insurance required, contain the following:

(1) Inception and expiration dates of insurance policy.
(2) Limits of liability provided (Public Liability and Property Damage).
(3) Coverage provided, including special hazards if required.
(4) Name of insurance company.
(5) Policy Number.
(6) Additional insureds' interests covered.
(7) Statement that the Explosion, Collapse, and Underground exclusions do not apply.
(8) Certificate shall reflect self-insured retention applicable to any contract of insurance.
(9) Excess liability certified contracts must state underlying insurance requirements.
(10) Project number and nature of work.

No certificate will be accepted which exculpates the issuer or reduces any rights conferred on the Owner by the above certificates, nor will they be accepted unless the certificates bear a live signature of a direct representative of a company authorized to do business in the state where the work is located.

No certificate will be accepted unless the person signing the certificate certifies, in a separate letter, his exact relationship with the insurance carrier or carriers indicated in the certificate.

In addition to the required certificates, Contractor will file with the Owner prior to commencement of the work original endorsements, or copies of any blanket endorsement in the Contractor's GCL policy, confirming the status of the Owner and Engineer, their agents

and employees, as additional insureds, both as to premises operations coverage and completed operations.

The Owner may, at his discretion, modify or waive any of the foregoing requirements.

No contract of insurance containing a "claims made" insuring agreement will be acceptable.

SECTION 80 - Execution and Progress

SC-80-06 AFTER THE LAST PARAGRAPH OF ARTICLE 80-06 "TEMPORARY SUSPENSION OF WORK", ADD THE FOLLOWING NEW SENTENCES:

If the Contractor requests a suspension of the work in whole or part for such period or periods as he may need, due to unsuitable weather or such other conditions as Contractor considers unfavorable for the prosecution of the work, or if ordered by Owner or Engineer due to inclement weather or the failure on the part of the Contractor to carry out orders given, or to perform any or all provisions of the Contractor shall perform the following without additional compensations:

1. Suitably store all materials.

2. Implement measures to protect existing work from damage or deterioration.

3. Erect such temporary structures and barricades as Engineer may require to provide for traffic on, to, or from the airport and air operations area.

4. Periodically inspect and maintain the work and temporary measures during the suspension period. Repair any damage to the work during the suspension period.

5. Pay all cost of Owner associated with the suspension including but not limited to cost of Engineer, inspection and Owner's testing laboratory to perform their contractual requirements with respect to the project during the work suspension.

6. Maintain all insurance and bond coverage’s.

7. Perform such other work as required by the Contract Documents with respect to the Project.

SC-80-07 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 80-07 "DETERMINATION AND EXTENSION OF CONTRACT TIME":

In all cases where the Contractor is delayed, obstructed, or hindered in the execution of the work, or any part thereof, for any reason whatsoever, the Contractor shall not be entitled to claim or recover any damages or additional payment from the Owner or Engineer. However, it is the intent of this Contract that in all cases where the Contractor is substantially delayed, obstructed, or hindered in the execution of the work through no fault of the Contractor and because of conditions beyond the Contractor's control, the Engineer may recommend an extension on the contract time under Subsection 80-07 by such amount as conditions, in the judgment of the Engineer, justify, and such extension of the contract time shall be the exclusive remedy of the Contractor for delay, hindrance or obstruction occurring through no fault of the Contractor and because of conditions beyond the Contractor's control.

SC-80-10 ADD THE FOLLOWING PARAGRAPH TO THE END OF SUBSECTION 80-10 "TERMINATION FOR NATIONAL EMERGENCIES":

The Engineer and the Owner shall be given full access to all books, cost records, correspondence and papers of the Contractor relating to the contract in order to determine amounts to be paid the Contractor due to any termination of the contract.

SECTION 90 - Measurement and Payment

SC-90-05 DELETE SUBSECTION 90-05 "PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK" IN ITS ENTIRETY AND INSERT THE FOLLOWING:

90-05 PAYMENT FOR EXTRA AND FORCE ACCOUNT WORK. Extra work, performed in accordance with subsection 40-04 EXTRA WORK of Section 40, will be paid for at the contract prices or agreed prices specified in the change order or supplemental agreement authorizing the extra work. When the change order or supplemental agreement authorizing the extra work requires that it be done by force account, such force account shall be measured and paid for as follows (THE FOLLOWING PAYMENT PROVISIONS APPLY ONLY WHERE THE NATURE OF THE EXTRA WORK IS SUCH THAT IT CANNOT BE MEASURED AND PAID FOR ACCORDING TO THE CONTRACT UNIT PRICES) :

a. Labor. For all labor (skilled and unskilled) and foremen in direct charge of a specific force account item, the Contractor shall receive the rate of wage (or scale) for every hour that such labor or foreman is actually engaged in the specified force account work. Such wage (or scale) shall be agreed upon in writing before the beginning of the work.

   The Contractor shall receive the actual costs paid to, or in behalf of, workers by reason of subsistence and travel allowances, health and welfare benefits, pension fund benefits or other benefits, when such amounts are required by collective bargaining agreement or other employment contract generally applicable to the classes of labor employed on the work.

   An amount equal to 15 percent of the sum of the above items will also be paid to the Contractor.

b. Insurance and Taxes. For property damage, liability, and workmen's compensation insurance premiums, unemployment insurance contributions, and social security taxes on the force account work the Contractor shall receive the actual cost, to which cost (sum) 5 percent will be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such insurance and taxes.

c. Materials. For materials accepted by the Engineer and then used, the Contractor shall receive the actual cost of such material delivered on the work, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth), to which cost (sum) 15 percent will be added.

d. Equipment. For any machinery or special equipment (other than small tools) including fuel and lubricants, plus transportation costs, the use of which has been authorized by the Engineer, the Contractor shall receive the rental rates agreed upon in writing before

such work is begun for the actual time that such equipment is committed to the work, to which rental sum 15 percent will be added.

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

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

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

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

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

(3) Quantities of materials.

(4) Transportation of materials.

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

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

The additional payment, based on the percentages specified above, shall constitute full compensation for all items of expense not specifically provided for the force account work. The total payment made as provided above shall constitute full compensation for such work.

SC-90-07 IN SUBSECTION 90-07 "PAYMENT FOR MATERIALS ON HAND", AFTER PARAGRAPH e., INSERT THE FOLLOWING:

f. The value of the delivered material is to be used in one item of work exceeds $3,000 and is not scheduled to be incorporated into the work within 60 days after delivery.

ADD THE FOLLOWING SUBSECTION TO THE END OF SECTION 90 "MEASUREMENT AND PAYMENT"

SC-90-12 90-10 LIENS. Neither the final payment nor any part of the retained percentage shall become due until the Contractor delivers to the Owner: (a) an affidavit stating, if that be in fact, that all subcontractors and suppliers have been paid in full, or if the fact be otherwise, showing the name of each subcontractor and supplier who has not been paid in full and the amount due or to become due each for labor, service or material furnished; (b) consent of

surety, if any, to final payment; and (c) if required by Owner, other data establishing payment for satisfaction of all obligations, such as receipt, releases, and waivers of lien arising out of the Contract to the extent and in such form as designated by the Owner.

MEASUREMENT AND PAYMENT

No measurement and payment for Supplementary Conditions will be made except as described below. All provisions of this section other than that listed below shall be included in Item 01000, Mobilization

GENERAL REQUIREMENTS

SECTION 01010 - SCOPE OF WORK

PART 1 GENERAL

1.01 RELATED DOCUMENTS: Contract Drawings, General Provisions, Supplementary Conditions, General Requirements, and other Special Provisions and Specifications apply to work of this section.

1.02 PROJECT IDENTIFICATION: Project name is: Hammond Northshore Regional Airport: Runway 18-36/13-31 Intersection Reconstruction Project as shown on Contract Documents prepared by Michael Baker International, Inc. Drawings and Specifications are dated July, 2016.

1.03 SCOPE OF WORK: The work generally consists of full depth pavement removal, new pavement construction, edge drain installation, edge light replacement, and pavement markings.

1.04 CONTRACT DOCUMENTS: Indicate the work of the Contract and related requirements and conditions that have an impact on the project. Related requirements and conditions that are indicated on the Contract Documents include, but are not necessarily limited to the following:

A. Existing site conditions and restrictions on use of the site.

B. Mandatory access and staging area, staging and construction phasing.

1.05 SUMMARY BY REFERENCES: Work of the Contract can be summarized by references to the Contract, General Provisions, Supplementary Conditions, Specifications, Drawings, and Addenda and Modifications to the contract documents issued subsequent to the initial printing of this Project Manual, including but not necessarily limited to printed material referenced by any of these. It is recognized that work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions, and other forces outside the contract documents.

1.06 CONSTRUCTION TIME AND PHASING:

Time Schedule: The work as described by the contract specifications and as shown on the plans shall be completed and ready for use by the Owner within:

35 calendar days for work; after the date of Notice-to-Proceed. The time schedule for completion of this project is critical and liquidated damages as prescribed in the Contract will be enforced. Additional calendar days will be added for each additive alternate as shown in the table for Liquidated Damages.

B. In order to minimize the impact to airport operations and to maintain safety the contract will be completed in phases. Each phase shall be completed within the stipulated contract time and work areas as described on the drawings and as specified herein.

C. Material Delivery: Upon approval of the bid and securing the necessary funding by Owner, the Engineer will issue a Notice-of-Award. The Contractor shall then immediately order all

the airfield lighting materials including but not limited to lights, signs, regulator, etc. The Contractor shall furnish documentations confirming order date and material delivery date.

1.07 LIQUIDATED DAMAGES:

A. Owner and Contractor recognize that time is of the essence and that Owner will suffer financial loss if the work is not substantially complete in accordance with the time(s) specified herein. They also recognize the delays, expenses and difficulties involved in proving in a legal or arbitration preceding the actual loss suffered by Owner if the work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty) Contractor shall pay Owner the amounts stipulated herein below.

B. Contractor further understands and hereby expressly agrees that in addition to liquidated damages specified herein below, to pay the Owner the actual costs to Owner for any inspector or inspectors necessarily employed by Owner on the work and the actual costs to Owner for the Engineer's observation of construction and project representative services including all travel and subsistence expenses after the date specified for Project completion until the work is completed and ready for final payment. Further, the Contractor agrees that the sums to be paid the Owner may be deducted from the sum due the Contractor for work performed as provided in Section 90 of the General Provisions.

LIQUIDATED DAMAGES SCHEDULE

Schedule	Days From Notice-to-Proceed Date		No. of Days	Liquidated Damages
	Begin	End		
Base Bid	1	35	35	$2,500 per Day
Additive Alternate 1	36	55	20	$2,500 per Day
Additive Alternate 2	56	60	5	$2,500 per Day
Additive Alternate 3	61	80	20	$2,500 per Day
Overall Project Completion			80 (if all alternates are awarded)	$2,500 per Day

C. The Contractor shall complete all punch list items determined by the Owner and the Engineer within 30 consecutive calendar days from the date of the Final Inspection. Failure to do so will result in liquidated damages of $2,500 per day beyond the 30th day period.

1.08 CONCURRENT WORK BY OWNER:

A. Overlapping Work: The work to be performed may overlap work by others to be performed concurrently. Each Contractor shall coordinate and schedule his work with the knowledge that each may be working the same area simultaneously. Each Contractor will be expected to cooperate with the Engineer, Owner, and other Contractors in the completion of the work.

B. Disputes: Any disputes arising between the Contractors will be decided by the Engineer, whose decision will be final.

C. Coordination: Contractors shall coordinate their schedules and work activities very closely, including holding weekly meetings in the presence of the Engineer's onsite representative. Contractors must cooperate with each other, including working around each other's work activities. Potential delays as a result of lack of coordination will not be considered grounds for claim for additional time extensions and/or additional compensations.

1.09 CONTRACTOR USE OF PREMISES:

A. Use of the Site: The Contractor shall confine his operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction.

B. Open Passage: Keep existing drives, entrances, and air operations areas designated to remain open, clear and available to the Owner, his employees and the public at all times. Do not use these areas for parking or storage of materials.

C. Storage: Do not unreasonably encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds to the areas indicated. If additional storage is necessary, obtain Engineer's approval.

D. Vehicle/Equipment Security: Lock automotive type vehicles, such as passenger cars and trucks, and other mechanized or motorized construction equipment, when parked and unattended, so as to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place.

1.10 WORK RESTRICTION:

A. NAVAID Areas: During the time of construction, the Contractor may be restricted from working in or around certain essential electronic navigational aids necessary to the safe operation of the airport. The Contractor is hereby notified that the Engineer may restrict construction operations in those areas closest to the active runway and taxiways.

B. Radio Communication: Contractor shall maintain two-way radio communication with the Airport air operations personnel, on their frequency, at all times during construction. Contractor shall have a working radio on site at all times during construction and shall assign responsible personnel, including flagmen, to continuously monitor the radio. All radios shall be as specified in Section 01510.

C. Notice to Airmen (NOTAMS): The Contractor shall provide the necessary information on construction conditions so that the Owner can advise the Flight Service Station to issue a NOTAM in accordance with established criteria. All requests for NOTAMS for taxiway closures shall be made at least 48 hours in advance (not including weekends) by the Contractor to the Engineer. All requests for closure of a runway or for moving into a phase that requires the closure of a Navaid shall be made at least 7 days in advance (not including weekends) by the Contractor to the Engineer.

D. Turf Restoration: All non-paved areas that are disturbed by the Contractor's work, staging area, haul roads, etc. shall be reseeded and restored to original condition by the Contractor. Except where otherwise specified, there will be no separate pay item for this work; it will be considered incidental to and included in the price bid for Section 01000, Mobilization.

E. Security: Contractor shall provide security within his construction area and shall keep all unauthorized personnel out.

F. Haul Route on Airfield Pavement: Contractor will not be allowed to use any of the existing runways, taxiways, or aprons as part of the haul road unless authorized in writing by the Engineer.

G. Access Points: All construction traffic shall enter and exit the project area only through the project access point(s) shown on the plans or approved by the Engineer. Contractor will be responsible for security of entrance gates under use by him/her.

H. Construction Stake-Out: The Contractor shall perform construction stake-out in accordance with Article 50-06 of the General Provisions.

I. Haul Route: The Contractor shall be responsible for establishing haul routes suitable for supporting all necessary transportation and construction equipment for the duration of the project. Any existing roads or other areas that are used as part of the haul route shall be restored to their original condition after completion of the project. The Contractor will be responsible for all clean-up operations of debris that may be on the haul route and for watering and/or other dust preventive measures to preclude fugitive dust from affecting buildings, occupants, or airfield operations. No separate payment will be made for seeding or mulching, or pavement restoration; such costs will be incidental to and included in the price bid for Section 01000, Mobilization.

J. Airfield Safety Devices: Contractor shall maintain all airfield safety devices such as staked limit lines for the duration of the project as required. Damaged stakes or flagging shall be replaced immediately.

K. Vehicular Markings and Lighting: All vehicles and equipment used on the airfield shall meet airport requirements for marking and lighting.

L. Contracts During Non-Working Hours: For the duration of the project, the Contractor shall designate a list of authorized individuals in a prioritized order, to be on 24 hour call, and these individuals shall be equipped with a beeper and cellular phone. These individuals shall be able to respond to any situation arising out of the performance of the work on this project, particularly during nighttime hours, and shall respond and be on the project site within one hour after the phone call or beep.

M. Airfield Pavement Cleanup: The Contractor shall promptly clean any and all debris arising from the project work that are left on operational airfield pavement. Any debris attributable to the Contractor found to be a hazard to aircraft, may be removed by the Owner. A fee of $250/hour will be assessed to the Contractor for all such cleaning and will be deducted on the next Contractor pay request.

1.11 COORDINATION: The work of this Contract includes coordination by the Contractor of the entire work of the project, including preparation of general coordination drawings, diagrams

and schedules, and control of site utilization, from beginning of construction activity through project close-out and warranty periods.

1.12 PARTIAL OWNER OCCUPANCY OR USE: The Owner reserves the right to use completed and accepted work provided such use does not interfere with completion of other work. Such use will not affect warranty stipulations addressed elsewhere in the contract documents.

PART 2. PRODUCTS (Not Used.)

PART 3. EXECUTION

3.01 MEASUREMENT AND PAYMENT: Except as otherwise specified, no separate measurement or payment will be made for work set forth in this section; such costs will be considered as incidental to and included in the price for Section 01000, Mobilization, or other items as appropriate.

END OF SECTION 01010

SECTION 01030 - AIRPORT PROJECT PROCEDURES

(Construction Safety Plan)

PART 1 GENERAL

1.01 INTRODUCTION: This project will include Contractor operations within or near active Air Operations Areas (AOA). The Airport will conduct normal aircraft operations during the course of this project, subject to certain restrictions called out in this section or elsewhere in the specifications. Therefore, to provide for the security and safety of Airport users and the Contractor's forces, as well as to minimize interruptions to aircraft operations, the Contractor shall limit his work within the areas designated and conduct his operations as specified.

Any fines or assessments levied against the Sponsor as a result of unauthorized intrusions in the AOA or other violations by the Contractor's personnel or those of his subcontractors will be passed on to the Contractor. In addition, the Contractor will be subject to a fine of $1,000.00 per incident, assessed by the Sponsor.

1.02 AIR OPERATION AREA (AOA) SAFETY REQUIREMENTS:

A. Barricades: Existing runways, taxiways and aprons outside the limits of construction shall be separated from construction areas with barricades as shown on the plans and described in Section 01530.

B. Radio Communication: ~~The Contractor shall maintain radio communication with Air Traffic Control (ATC) at all times during construction, and shall immediately obey all instructions to vacate areas when directed.~~ Contractor shall have a working radio as specified in Section 01510 on site at all times during construction and shall assign responsible personnel to continuously monitor the radio.

C. Taxiway Closures ~~and Runway Relocated Threshold~~: Closures of taxiways ~~and runway threshold relocation~~ will be made only by the Owner. The Owner shall contact the appropriate FAA Flight Service Station prior to issuing the Notice-to-Proceed so that a Notice-to-Airmen (NOTAM) for taxiway closure can be issued in accordance with established criteria. Construction operations within the runway or taxiway safety zone shall not begin until the Contractor receives clearance from the Owner and Engineer assuring that the adjoining taxiway has been closed.

D. Navigational Aid Equipment: The project will be phased to permit work outside of and around certain FAA navigational aid (NAVAID) equipment such as approach light systems, localizer antenna, glide slope antenna, RVR projectors, middle and inner markers, etc. The Contractor shall notify the Engineer at least 7 days prior to disassembling or working around any NAVAID equipment so that a NOTAM can be issued indicating that the affected NAVAID will be impacted.

1.03 CONSTRUCTION SAFETY REQUIREMENTS:

A. General:

1. Safety Officer: The Contractor is required to employ a Safety Officer who will be the liaison between the Contractor, the Engineer and the Owner in all safety related

matters for the duration of the project. The Safety Officer shall be on call 24 hours per day for emergency maintenance of airport hazard lighting, barricades, and other safety features.

2. Protection of Utilities: The Contractor shall be responsible for field marking and protecting all utilities within the construction limits.

3. Storage of Equipment, Vehicles, and Materials: All equipment, vehicles, and materials must be stored in the designated storage or staging area or in areas acceptable to the Engineer.

4. Vehicular Markings: Contractor vehicles and equipment shall be marked with checkered flags and lighted with flashing beacons to comply with requirements of FAA AC 150/5210-5D. All vehicles and equipment shall display 3' x 3' flags, orange and white "checkerboard" pattern, with the squares being 1' x 1' each. All vehicles and construction equipment working during the night shall be equipped with an amber colored rotating beacon light.

5. Construction Methods Limitation:

   a. No open flames or burning will be allowed on Airport property except as specifically authorized by the Engineer in writing.

   b. Stockpiled material shall be constrained in a manner to prevent displacement by jet blast, prop blast, or wind, and shall be kept to a height that will not penetrate FAR Part 77 imaginary air space.

6. Safety and Accident Protection:

   a. The Contractor shall comply with all applicable federal, state, and local laws, ordinances, and regulations governing safety, health, and sanitation; shall provide barricades; and shall take any other needed actions, on his own responsibility, that are reasonably necessary to protect the life and health of employees on the job, the safety of airport users, the safety of moving and parked aircraft, and other property during the performance of the work.

   b. The Safety Officer's duties shall include accident prevention.

7. Navigational Aids: Airport navigational aid critical areas are shown on the drawings or will be indicated by the Engineer. The Contractor shall not enter these areas without the Engineer's approval.

8. FAA Advisory Circular: Except as otherwise specified, FAA AC 150/5370-2F and all its references shall be used in maintaining airport operational safety during construction.

B. Runway and Taxiway Safety Zones:

1. Limitations: When necessary to accomplish construction in areas adjacent to runways and taxiways, the construction equipment, vehicles, and men are authorized to operate without interruption within the project limits, except within the following areas and as specified otherwise:

~~Distance from runway centerline or runway end~~
~~- within 125 feet.~~
~~Distance from active taxiway centerline~~
~~- within 59 feet.~~
~~Runway approach areas~~
~~- within 20:1 approach~~

2. Request for Facility Closures: Construction activities on runways or taxiways or within the above restricted areas shall only be performed at times when the runway or taxiways are closed to aircraft. Closure of a runway or taxiway or any portion thereof must be requested in writing by the Contractor through the Engineer. This request must indicate the areas needed and a schedule of operations and time(s) required for operations within the area. The Owner reserves the right, however, to shift any approved closure periods to alleviate aircraft congestion or when inclement weather conditions dictate.

3. Equipment Operation Restrictions: Contractor may be permitted to operate trenching machines and other equipment in the Taxiway Safety Zones provided all of the following conditions are satisfied:

~~a. The equipment operator and/or crew foreman monitors the ATC ground frequency continuously, using a two way radio transceiver.~~

~~b. All equipment shall be cleared from the Taxiway Safety Zones during aircraft operations (landings, take-offs, and taxiing).~~

~~c. All equipment within the Taxiway Safety Zones is manned and being used. No unnecessary or parked equipment will be allowed within the Taxiway Safety Zones.~~

~~d. All excavated trenches and holes shall be backfilled, tamped and leveled to match existing grades before workmen leave the site at the end of each work day.~~

4. Stockpiles: Stockpiled materials shall not be permitted within the runway or taxiway safety zones.

5. Grading Requirements: All construction within a restricted area shall be performed in such a manner that, at the end of the closure period, it will leave the safety area with no abrupt grade changes or grades in excess of 5 percent, and with no trenches with depth or width greater than 3 inches.

C. Obstructions to Navigation:

1. Violation of Safety Zone Surfaces: Penetration of equipment, vehicles, materials, or men into the safety zones and approach surfaces requires the preparation and distribution of Notices to Airmen (NOTAM) in advance to the actual penetration.

2. Scheduling: When part of the work in this project is in violation of FAR Part 77, the clearance distance requirements from runway and taxiway edges shall be incorporated into the construction sequence schedule. At no time shall the

construction limits of the area under construction violate the safety zones without prior notification to and approval by the Engineer.

3. Coordination and Communication: Work within and adjacent to active AOAs shall be coordinated with the Engineer prior to commencement of the activity. Work crews in these areas shall be accompanied by the construction superintendent and the resident inspector, both of which shall be in constant radio contact with ATC.

1.04 SAFETY PLANNING: The Contractor shall integrate and maintain requirements of airport operational safety into each planning and work schedule. The Contractor's Safety Officer shall continuously monitor all planning schedules and work underway for compliance to AC 150/5370-2F; and shall maintain vigilance to detect areas needing attention due to oversight or altered construction activities. Airport operational safety during construction will be on the agenda at the preconstruction conference and each coordination and progress meeting.

1.05 SECURITY REQUIREMENTS: The Contractor has the responsibility for maintaining control of the access gates or any other entrance to the AOA. The Contractor may utilize a gate guard or install an automatic operated gate controller with limited access with numeric key pad. The Contractor may be required to erect temporary fencing to protect the AOA during construction. The Contractor's method of maintaining security shall be set forth in his Security Plan and shall comply with the airport's rules and regulations concerning work in the airport restricted areas. There will be no separate measurement or payment for gate guards or temporary fencing required to maintain the integrity of the AOA.

~~1.06 TEMPORARY RELOCATED AND DISPLACED THRESHOLDS: Prior to initiating work in any area or phase of the project where a temporary relocated runway threshold is required, the Contractor shall provide the relocated runway threshold as indicated and scheduled. The relocated threshold shall remain in effect until all work in the area or phase is complete and accepted by the Engineer.~~

1.07 BARRICADES: Contractor shall provide barricades along active taxiway pavement areas and elsewhere as shown on the plans or directed by the Engineer while work is proceeding in the runway, taxiway, and apron areas. Barricades shall be sited and relocated during the course of the work to clearly identify areas closed to aircraft operations.

1.08 TAXIWAY CLOSURES:

A. At least one taxiway serving the apron must remain open for this purpose at all times. The Contractor shall schedule his work to provide continuous access as described above. Barricades and/or closed taxiway markers shall be placed as directed by the Engineer.

B. The Contractor shall coordinate and schedule taxiway closures and temporary relocation of any runway threshold with Owner through Engineer before closure is required so that Owner can issue appropriate NOTAMs.

C. Taxiway closures shall be scheduled in advance. Contractor shall identify taxiway closures with barricades and by covering taxiway lights within the closure limits. Remove barricades and covers when no longer needed or as directed by Engineer.

PART 2 PRODUCTS

2.01 BARRICADES: Barricades, when required, shall be constructed as specified in Section 01530.

~~2.02 TEMPORARY RELOCATED THRESHOLD:~~

~~A. Paint materials and application rate for temporary marking shall conform to the requirements of Item P-620.~~

~~B. Runway Markings: The temporary relocated runway threshold markings and covers for existing runway numbers shall be placed as indicated on the plans. Upon satisfactory completion of work in the phase, all temporary relocated runway threshold markings and number covers shall be removed by methods approved by the Engineer.~~

~~2.03 RUNWAY NUMBER COVERS: Runway number covers shall be constructed as specified in Section 01530.~~

PART 3 EXECUTION

3.01 LIMITATION OF CLOSURES: Airfield pavement closures will be made only by the Owner. The Contractor shall request the closure through the Engineer from the Owner.

3.02 BARRICADES: Install barricades at locations shown on the drawings and where directed by Engineer. Anchor barricades as specified in Section 01530. Maintain barricades until removal is directed by Engineer. Barricade batteries shall be checked daily to insure adequate operation of the flashers during the night. Replace batteries as required. Upon removal of barricades repair any damage to pavement or surrounding area caused by barricades.

~~3.03 TEMPORARY RELOCATED OR DISPLACED THRESHOLD:~~

~~A. Painted markings shall be applied after the runway has been closed to aircraft operations. Concurrent with the application of paint will be the placement of the barricades as shown on the plans. Edge lighting shall be adjusted as shown on the plans.~~

~~B. The Contractor shall coordinate the temporary relocation of the thresholds with the Owner and Engineer and shall not perform this work until authorized by the Engineer.~~

3.04 MEASUREMENT AND PAYMENT: Except as otherwise specified in Section 01530, no measurement or payment will be made for work in this section; it will be considered as incidental cost to Mobilization and other items of work.

END OF SECTION 01030

SECTION 01040 - PROJECT COORDINATION

PART 1 GENERAL

1.01 RELATED DOCUMENTS: All contract documents and drawings apply to work of this section.

1.02 DESCRIPTION OF WORK: Administrative and supervisory requirements necessary for coordination of work on the project include but are not necessarily limited to the following:

1. Coordination and meetings.
2. Surveys and records or reports.
3. Limitations on use of site.
4. Special reports.
5. General installation provisions.
6. Cleaning and protection.
7. Conservation and salvage.

PART 2 PRODUCTS (Not applicable.)

PART 3 EXECUTION

3.01 COORDINATION AND MEETINGS:

A. General: The Contractor shall prepare a written memorandum on required coordination activities and include such items as required notices, reports and attendance at meetings. Distribute this memorandum to each entity performing work at the Project site. Prepare similar memorandum for separate Contractors where interfacing of their work is required.

B. Preconstruction Conference: A Preconstruction Conference will be scheduled after award of Contract and prior to issuance of a Notice to Proceed. Key Project personnel representing the Prime Contractor and all major Subcontractors will be required to attend this Conference. All other parties involved with this Project, such as the Owner, Engineer, and FAA, will also be represented. The entire Construction Schedule will be reviewed carefully by all affected parties at the Preconstruction Conference. The Contractor shall prepare a detailed Construction Schedule for review prior to and at the Preconstruction Conference.

C. Coordination Meetings: The Contractor shall hold General Project Coordination Meetings at regularly scheduled times convenient for all parties involved. These meetings may be as often as weekly if required. These meetings are in addition to specified meetings held for other purposes, such as regular Project meetings and special Pre-installation Meetings. Request representation at each meeting by every party currently involved in coordination or planning for the work of the entire Project. Conduct meetings in a manner which will resolve coordination problems. Record results of the meeting and distribute copies to everyone in attendance and to others affected by decision or actions resulting from each meeting.

The Contractor shall also conduct daily coordination meetings with the Engineer's representative, FAA and designated Owner's representative to coordinate construction and airport operations.

D. Progress Meetings: Conduct progress meetings by teleconference weekly and at the project site monthly. Notify the Owner and Engineer of scheduled meeting dates. Coordinate dates of meetings with preparation of the payment request.

E. Attendees: In addition to representatives of the Owner and Engineer, each subcontractor, supplier or other entity concerned with current progress or involved in planning, coordination or performance of future activities shall be represented at these meetings by persons familiar with the project and authorized to conclude matters relating to progress.

F. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the current status of the project, and to airport operational safety during construction.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to ensure that current and subsequent activities will be completed within the Contract Time.

2. Other: Review the present and future needs of each entity present, including such items as:

Interface requirements.
Time.
Sequences.
Deliveries.
Off-site fabrication problems.
Access.
Site utilization.
Temporary facilities and services.
Hours of work.
Hazards and risks.
Housekeeping.
Quality and work standards.
Change orders.
Documentation of information for payment requests.

G. Reporting: No later than 3 days after each progress meeting date, distribute copies of minutes of the meeting to each party present and to other parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

H. Schedule Updating: Revise the construction schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

3.02 SURVEYS AND RECORDS/REPORTS:

A. Construction Staking: The Engineer has established survey base lines for the Contractor. The Contractor shall take all necessary precautions to prevent the loss or damage of primary control points. The Contractor will be responsible for staking required for construction. Working from lines and levels established by the design survey, establish and maintain bench marks and other dependable markers required for construction. Establish bench marks and markers to set lines and levels for work at each stage of construction and elsewhere as needed to properly locate each element of the project. Calculate and measure required dimensions as shown within recognized tolerances. Drawings shall not be scaled to determine dimensions. Advise entities performing work of marked lines and levels provided for their use.

B. Survey Procedures: Before proceeding with the layout of actual work, verify the layout information shown on the drawings, in relation to the property survey and existing bench marks. As work proceeds, check every major element for line, level and plumb. Maintain a surveyor's log or record book of such checks; make this log or record book available for the Engineer's reference. Record deviations from required lines and levels, and advise the Engineer promptly upon detection of deviations that exceed indicated or recognized tolerances. Record deviations which are accepted, and not corrected, on record drawings. Survey work shall be performed by and under supervision of a professional (registered) land surveyor in the State where the project is located.

C. Quality of Work: The elevations of permanent and temporary bench marks shall be determined and recorded to the nearest 0.01 foot. Differential leveling and transit traverses shall be of such precision that the error of vertical closure in feet shall not exceed plus or minus 0.1 foot in 5000 feet. The angular error of closure for transit traverses shall not exceed 1.0 minute times the square root of the number of angles turned.

   Slope stakes shall be placed, as a minimum, at 100 foot stations, breaks in the original ground surface, and at any other intermediate stations necessary to insure accurate location for construction layout and measurement. Slope stakes and cross sections shall be perpendicular to the centerline. Significant breaks in grade shall be determined for cross sections. Distances shall be measured horizontally and recorded to the nearest 0.1 foot. Side shots for interim construction stakes may be taken with a hand level.

D. Records: All survey data shall be recorded in fully identified, standard hard-bound engineering survey field notebooks with consecutively numbered pages. All field notes and printed data shall include the purpose or description of the work, the date the work was performed, weather data, sketches and the personnel who performed and checked the work. Electronically generated survey data and computations shall be bound, page numbered and cross referenced in a bound field notebook containing the index for all survey data.

   The construction survey records shall be available at all times during the progress of the work for examination and use by the Engineer and copies shall be made available to the Engineer upon request. The original field notebooks and other records shall be turned over to and become the property of the Owner prior to final acceptance of the work.

E. Quality Assurance Survey Services: Contractor shall furnish surveying services required to establish horizontal and vertical location of soil density tests by Owner's QA testing laboratory.

F. Engineer Services: Engineer will furnish available benchmark and coordinate information at no cost to Contractor.

3.03 LIMITATIONS ON USE OF THE SITE:

A. General: Limitations on site usage as well as specific requirements that impact site utilization are indicated on the drawings and by other contract documents. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

B. Waste Disposal: Waste materials shall be disposed of off airport property except as specified otherwise in Contract Documents.

3.04 MEASUREMENT AND PAYMENT: No measurement or payment will be made for work in this section; it will be considered as incidental cost to Mobilization and other items of work.

END OF SECTION 01040

SECTION 01060 - CONTROL OF EROSION, SILTATION AND POLLUTION

PART 1 GENERAL

1.01 REQUIREMENTS: The Contractor shall take all measures necessary to minimize soil erosion, siltation, water pollution, and air pollution caused by his operations. The Contractor shall comply with the applicable regulations of all legally constituted authorities relating to pollution prevention and control. The Contractor shall keep himself fully informed of all such regulations which in any way affect the conduct of the work, and shall at all times observe and comply with all such regulations. In the event of conflict between such regulations and the requirements of the specifications, the more restrictive requirements shall apply.

The Engineer will limit the area over which clearing, grubbing, excavation, borrow, and embankment operations are performed whenever the Contractor's operations do not make effective use of construction practices and temporary measures which will minimize erosion, or whenever effective erosion control features are not being completed as soon as permitted by construction operations.

1.02 EROSION CONTROL SCHEDULE: Except as otherwise specified, the Contractor shall submit to the Engineer for his approval 3 copies of his erosion control schedule at the time of the preconstruction conference. This schedule shall show the time relationship between phases of the work which must be coordinated to reduce erosion, and shall describe construction practices and temporary erosion control measures which will be used to minimize erosion. The schedule shall also show the Contractor's proposed method of erosion control on haul roads and borrow and material pits, and his plan for disposal of waste materials. No work shall be started until the erosion control schedule and methods of operations have been approved by the Engineer.

PART 2 PRODUCTS (Not used)

PART 3 EXECUTION

3.01 EROSION AND SILTATION CONTROL: The Contractor shall exercise every reasonable precaution throughout the life of the project to prevent the eroding of soil and silting of rivers, streams, lakes, reservoirs, other impoundments, ground surfaces, or other property.

Prior to suspension of operations on the project or any portion thereof, the Contractor shall take all necessary measures to protect the construction area, including but not limited to borrow pits, soil type base courses, and waste areas, from erosion during the period of suspension.

3.02 COORDINATION OF EROSION CONTROL OPERATIONS:

A. Temporary and permanent erosion control measures shall be provided as shown on the plans or as directed by the Engineer. All permanent erosion control work shall be incorporated into the project at the earliest practicable time. Temporary erosion control measures shall be coordinated with permanent erosion control measures and all other work on the project to assure economical, effective, and continuous erosion control throughout the construction and post construction period and to minimize siltation of rivers, streams, lakes, reservoirs, other water impoundments, ground surfaces, or other property.

B. Temporary erosion control measures shall include but not be limited to the use of temporary berms, dikes, dams, silt fences, drainage ditches, silt basins, diversion ditches, slope

drains, structures, vegetation, mulches, mats, netting, gravel, rip rap, or any other methods or devices that are necessary. Temporary erosion control measures may include work outside the construction limits where such work is necessary as a result of construction such as borrow pit operations, haul roads, plant sites, equipment storage sites, and disposal of waste or debris. The Contractor shall be liable for all damages to public or private property caused by silting or slides originating in waste areas furnished by the Contractor.

C. Materials for temporary erosion control measures shall be approved by the Engineer before being used or shall be as directed by the Engineer.

D. Erosion control measures installed by the Contractor shall be acceptably maintained by the Contractor.

3.03 WATER AND AIR POLLUTION:

A. The Contractor shall exercise every reasonable precaution throughout the life of the project to prevent pollution of rivers, streams, and water impoundments. Pollutants such as chemicals, fuels, lubricants, bitumens, raw sewage, and other harmful waste shall not be discharged into or alongside of rivers, streams, or impoundments, or into natural or manmade channels leading thereto.

B. The Contractor shall comply with all Federal, State or local air pollution regulations throughout the life of the project.

3.04 OPEN BURNING OF COMBUSTIBLE WASTES: Where and if burning is permitted by the specifications, the following conditions shall apply:

A. No tires, oils, asphalt, paint, or coated metals are permitted in combustible waste piles.

B. Burning shall not be permitted unless the prevailing wind is away from a nearby town, built-up area, or aircraft operations area.

C. Burning shall not be permitted during a local air inversion or other climatic condition as would result in a pall of smoke over a nearby town, built-up area, or aircraft operations area.

D. Burning shall not be permitted when the danger of brush or forest fires is made known by State, local, or Federal officials.

E. The size and number of fires shall be restricted to avoid the danger of brush or forest fires. Burning shall be done under surveillance of a watchman, who shall have fire-fighting equipment and tools readily available.

3.05 DUST CONTROL:

A. The Contractor shall control dust throughout the life of the project within the project area and at all other areas affected by the construction of the project, including, but not specifically limited to unpaved roads, haul roads, access roads, disposal sites, borrow and material pits, and production sites. Dust control shall not be considered effective where the amount of dust creates a potential or actual unsafe condition, public nuisance, or condition endangering the value, utility, or appearance of any property.

B. The Contractor will not be directly compensated for any dust control measures necessary; this work will be considered incidental to the work covered by the various contract items.

3.06 APPLICATION OF SPECIFICATIONS: The provisions of this section shall apply to all construction operations. Further references and detailed requirements concerning erosion, siltation, and pollution prevention and control, may be given in other sections of the specifications and on the drawings.

3.07 CONTRACTOR'S INSPECTION AND REPORT: The Contractor shall make an inspection of the construction site on a weekly basis and after each potentially damaging rainfall. Note shall be taken of any damage to existing erosion control features and of siltation problems encountered during the inspection. In a report to the Engineer, the Contractor shall outline his corrective measures to be undertaken and the date of implementation.

3.08 TEMPORARY SUSPENSION OF WORK: Failure of the Contractor to fulfill any of the requirements of this section may result in the Engineer ordering the stopping of construction operations in accordance with the following:

A. The Engineer shall have the authority to suspend the work wholly or in part by written order, for such periods as he may deem necessary due to conditions considered unfavorable for the suitable prosecution of the work, or to failure on the part of the Contractor to correct conditions unsafe for workmen or the general public or to carry out orders given or to perform any provisions of the contract. Such suspension of operations will not justify an extension of contract time.

B. Failure on the part of the Contractor to perform the necessary measures to control erosion, siltation, and pollution will result in the Engineer notifying the Contractor to take such measures. Any fine, penalty or other cost assessed by State, local or other governmental agencies for non-performance of erosion, siltation or pollution controls against the Owner shall become the responsibility of the Contractor; such assessments, if not paid by the Contractor, shall be deducted from monies due the Contractor at the completion of the job. In the event that the Contractor fails to perform such measures within 24 hours after receipt of such notice, the Engineer may suspend the work as provided above, or may proceed to have such measures performed by others. The cost of such work performed by others will be deducted from monies due the Contractor on his contract.

3.09 PAYMENT: Except where specified otherwise elsewhere in the specifications, there will be no direct payment for any work in connection with the requirements of this section; the work shall be considered incidental to demolition, clearing, grubbing, grading, excavation, embankment, or other operations.

END OF SECTION 01060

SECTION 01070 - ABBREVIATIONS AND SYMBOLS

PART 1 GENERAL

1.01 DESCRIPTION:

A. Abbreviations that may be used in the Contract Documents including the drawings are listed in this section and have the identifications and meanings shown herein except where otherwise indicated.

B. Symbols are identified on the drawings.

C. Related requirements in other parts of the Contract Documents.

1. Drawing symbols: Contract drawings

2. Drawing abbreviations: Contract drawings.

1.02 ABBREVIATIONS:

A. Agencies, Codes, Standards, etc.:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AF	Air Force
AGC	Associated General Contractors of America
AI	Asphalt Institute
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANG	Air National Guard
ANSI	American National Standard Institute
API	American Petroleum Institute
AREA	American Railway Engineering Association
ASTM	American Society for Testing and Materials
AWPA	American Wood Preservers Association
AWG	American Wire Gage
AWS	American Welding Society
AWWA	American Water Works Association
COE	Corps of Engineers
CRSI	Concrete Reinforcing Steel Institute
FAA	Federal Aviation Administration

FHWA	Federal Highway Administration
FS	Federal Specifications
MUTCD	Manual on Uniform Traffic Control Devices for Streets and Highways
NEMA	National Electrical Manufacturers Association
NEC	National Electrical Code
NWS	National Weather Service
OSHA	Occupational Safety and Health Act
PCA	Portland Cement Association
UL	Underwriter's Laboratories, Inc.
LADOTD	LA Department of Transportation and Development

B. Drawing Abbreviations:

1. The following list is not necessarily all inclusive; additional abbreviations may be used and defined on the drawings.

2. Some abbreviations used on the drawings may not have the same meaning as that identified in the following list; the non-conforming meanings are identified on the drawings when not self-evident.

3. Some variation in use of periods and capitalization may be found on the drawings.

ABBREVIATIONS	MEANING	ABBREVIATIONS	MEANING
A			
AB	Anchor Bolt	ANT.	Antenna
ABT	About	AOA	Air Operational Area
ABV	Above	AP	Airport
AC	Advisory Circular (FAA)	APPROX.	Approximate
AC	Alternating Current	ARCH.	Architecture
AC	Asphaltic Concrete	ARP	Airport Reference Point
ACFT	Aircraft	ADDN.	Addition
ASPH	Asphalt	AF	Air Force
ATC	Air Traffic Control		
AGG.	Aggregate	ATCT	Air Traffic Control Tower
AIP	Airport Improvement Program		
ALIGN	Alignment	AVG	Average
ALP	Airport Layout Plan	AWG	American Wire Gage
ALS	Approach Lighting System		
AWOS	Automatic Weather Observing Systems		
ALT	Alternate		
B			
B to B	Back to Back	BM	Bench Mark
BCN	Beacon	BOT	Bottom
BDY	Boundary	BRL	Building Restriction Line
BET.	Between		
BF	Both Faces	BTW	Between
BIT.or BITUM	Bituminous	BS	Both Sides
BLDG	Building	BRK	Brick
BL	Base Line	BW	Both Ways

C

C	Centigrade	CL	Clear
C to C	Center to Center	C/L	Center Line
CA	Cable	CLR	Clearance
CB	Catch Basin	CMP	Corrugated Metal Pipe
CBM	Construction Bench		
CD	Check Dam	CO	Cleanout
CEM	Cement	CONC	Concrete
CFM	Cubic Feet Per Minute	CONST	Construction
CONT	Continue		
CFS	Cubic Feet Per Second	CORR	Corrugate
CPP	Corrugated Polyethylene Pipe		
CHAM	Chamfer		
CHG	Change	CPS	Cycles Per Second
CHK	Check	CTB	Cement Treated Base Course
CI	Cast Iron		
CIP	Cast Iron Pipe	CULV	Culvert
CJ	Construction Joint	CY. or CU.YD.	Cubic Yard

D

D	Depth	DIA	Diameter
DAT	Datum	DIP	Ductile Iron Pipe
DBL	Double	DIM.	Dimension
DBST	Double Bituminous Surface Treatment		
DIR	Direction	DIST	Distant
DC	Direct Current	DIV	Division
DEF. ANG.	Deflection Angle	DO.	Ditto
DEG	Degree	DSGN	Design
DEMO.	Demolish	DTD	Dated
DI	Drop Inlet	DWG	Drawing

E

EA	Each	EQUIP.	Equipment
EF	Each Face	EQUIV.	Equivalent
EG	For Example	EST	Estimate
EJ or EXP JT	Expansion Joint	EW	Each Way
EL or ELEV	Elevation	EXC	Excavate
ENGR	Engineer	EXIST.	Existing
EOP	Edge of Pavement	EXT	Exterior
EQ	Equal		

F

F	Fahrenheit	FIN.	Finish
F to F	Face to Face	FLD	Field
FAB	Fabricate	FOD	Foreign Object Debris
FAR	Federal Aviation Regulation		
FPM	Feet Per Minute		
FBO	Fixed Base Operator	FPS	Feet Per Second
FDN	Foundation	FS	Federal Specification

FF	Finish Floor	FT	Foot or Feet
FG	Finish Grade	FTG	Footing
FH	Fire Hydrant	FW	Fresh Water
FIG.	Figure	FWD	Forward

G

GA	Gage or Gauge	GPM	Gallons Per Minute
GAL	Gallon	GPS	Gallons Per Second
GALV	Galvanize	GRD	Ground or Grade
GEN	General	GV	Gate Valve
GFE	Government-Furnished Equipment		
GVGI	Generic Visual Glideslope Indicator		
GOVT	Government		

H

HGR	Hangar	HMAC	Hot Mix Asphaltic Concrete
HGT	Height	HH	Handhole
HOR or HORIZ	Horizontal		
HIRL	High Intensity Runway Lights		
HP	High Point	HWY	Highway

I

ID	Inside Diameter	INCL	Include
IDENT	Identification	INT	Intersect
IFR	Instrument Flight Rule	INV	Invert
ILS	Instrument Landing System	IP	Inlet Protection
IN.	Inch	IP	Iron Pipe

J

JB	Junction Box	JMF	Job Mix Formula
JFR	Jet Fuel Resistant	JT	Joint

K

K	Kip (1,000 lb)	KWY	Keyway

L

L	Left	LOA	Length Over-All
LAT	Latitude	LOC	Localizer
LB	Pound	LONG.	Longitudinal
LC	Length of Curve	LP	Low Point
LF	Linear Feet	LS	Lump Sum
LG	Length or Long	LT	Light
LIN	Linear	LVC	Length of Vertical Curve
LIRL	Low Intensity Runway Lights		
LITL	Low Intensity Taxiway Lights		

M

MAINT	Maintenance	MITL	Medium Intensity Taxiway Lights
MALS	Medium Intensity Approach Lighting System		
MISC	Miscellaneous		
MATL	Material	MLS	Microwave Landing System
MAX	Maximum		
MH	Manhole	MLW	Mean Low Water
MHW	Mean High Water	MON	Monument
MIN	Minimum	MSL	Mean Sea Level
MIRL	Medium Intensity Runway Lights		
MTL	Metal		

N

NATL	National	NOM	Nominal
NAVID	Navigational Aid	NOTAM	Notice to Airmen
NIC	Not In Contract	NTS	Not To Scale
NO	Number		

O

OA	Over-All	OFZ	Obstacle Free Zone
OC	On Center	OPS	Operations
OD	Outside Diameter	ORIG	Original

P

PAPI	Precision Approach Path Indicator		
PREP	Prepare	PL	Plate
PAR	Precision Approach Radar		
PROJ	Project	PROP	Proposed
PAV□T	Pavement	PSI	Pounds Per Square Inch
PC	Point of Curve		
PCC	Portland Cement Concrete	PT	Point
PFC	Porus Friction Course	PT	Point of Tangency
PI	Point of Intersection	PVC	Polyvinyl Chloride
PIV	Post Indicator Valve	PVC	Point of Vertical Curve
PJF	Premolded Joint Filler	PVI	Point of Vertical Intersection
POL	Petroleum Fuel, Oil, and/or Lubricants		
PVT	Point of Vertical Tangency	PVMT	Pavement

Q

QA	Quality Assurance	QC	Quality Control

R

R	Right	RELOC	Relocated
R or RAD	Radius	REP	Repair
RAIL	Runway Alignment Indicator Lights		
REQD	Required	RET	Return
R/W or RW	Runway	REV	Revise
RC	Reinforced Concrete	ROC	Run of Crusher
RCP	Reinforced Concrete Pipe	ROW	Revolutions Per Minute
RCPE	Reinforced Concrete Elliptical Pipe		
RD	Road	RPM	Revolutions Per Minute
REF	Reference		
REIL	Runway End Identifier Lights		
RPZ	Runway Protection Zone		
REINF	Reinforce	RR	Railroad

S

S	Slope	SIM	Similar
SABC	Stabilized Aggregate Base Course		
SK	Sketch	SP	Space(s)
SALV	Salvage	SPEC	Specification
SAN	Sanitary	SQ	Square
SB	Straw Bale	SS	Stainless Steel
SBST	Single Bituminous Surface Treatment		
STA	Station	STD	Standard
SCHED	Schedule	STL	Steel
SEC	Second	STR	Structural
SEC COR	Section Corner	SUPP	Supplement
SECT	Section	SWG	Swing
SEP	Separate	SYM	Symbol
SF	Silt Fence	SY or SQ.YD.	Square Yards
SHT	Sheet	SYS	System
SHLD	Shoulder		

T

T	Thick	T/L or TL	Taxilane
T	Ton	TOC	Top of Curb
T&B	Top and Bottom	TOG	Top of Grade
TBM	Temporary Bench Mark	TOL	Tolerance
TECH	Technical	TOP	Top of Pavement
TEL	Telephone	TRANS	Transfromer
TEMP	Temperature	TSD	Temporary Slope Drain
THK	Thick	THRU	Through
T/W or TW	Taxiway	TYP	Typical

U

UD	Underdrain	USGS	United States Geodetic Survey
UG	Underground	UGT	Underground Telephone Line

V

VASI	Visual Approach Slope Indicator		
VCP	Vitrified Clay Pipe	VERT	Vertical
VB	Valve Box	VFR	Visual Flight Rules
VC	Vertical Curve	VS	Versus

W

W	Water	WL	Water Line
W/	With	WWF	Welded Wire Fabric
WGT	Weight	WP	Working Point
W/O	Without		

X

X	By (Used Between Dimensions)	XSECT	Cross Section

Y

YD	Yard

1.03 SYMBOLS: As outlined on drawings.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01070

SECTION 01090 - REGULATIONS AND DEFINITIONS

PART 1 GENERAL

1.01 RELATED DOCUMENTS: Drawings, General Provisions, Supplementary Conditions, Specifications, and other contract documents apply to work of this section. See Section 10 of General Provisions for additional definitions.

1.02 DESCRIPTION OF REQUIREMENTS:

A. General: This section specifies procedural and administrative requirements for compliance with governing regulations, codes and standards imposed upon the work. These requirements include obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with regulations, codes and standards.

The term "Regulations" is defined to include laws, statutes, ordinances and lawful orders issued by governing authorities, as well as those rules, conventions and agreements within the construction industry which effectively control the performance of the work regardless of whether they are lawfully imposed by governing authority or not.

B. Governing Regulations: Refer to General Provisions, Supplementary Conditions, and General Requirements for requirements related to compliance with governing regulations.

1.03 DEFINITIONS:

A. General Explanation: Certain terms used in contract documents are defined in this article. Definitions and explanations contained in this section are not necessarily complete, but are general for the work to the extent that they are not stated more explicitly in another element of the contract documents.

B. General Requirements: Provisions and requirements of Division 1 sections apply to the entire work of the contract and, where so indicated, to other elements which are included in the project.

C. Indicated: The term "indicated" is a cross-reference to graphic representations, notes or schedules on the drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in contract documents. Where terms such as "shown", "noted", "scheduled", and "specified" are in lieu of "indicated", it is for the purpose of helping the reader locate the cross-reference, and no limitation of locations is intended except as specifically noted.

D. Directed, Requested, etc.: Terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by the Engineer", "requested by the Engineer", and similar phrases. However, no such implied meaning will be interpreted to extend the Engineer's responsibility into the Contractor's area of construction supervision.

E. Approved: Where used in conjunction with the Engineer's response to submittals, requests, applications, inquiries, reports and claims by the Contractor, the term "approved" will be held to limitations of the Engineer's responsibilities and duties as specified in General

Provisions and Supplementary Conditions. In no case will the Engineer's approval be interpreted as a release of the Contractor from responsibilities to fulfill requirements of contract documents or acceptance of the work, unless otherwise provided by requirements of the contract documents.

F. Project Site: The term "project site" means the space available to the Contractor for performance of the work, either exclusively or in conjunction with others performing other construction as part of the project. The extent of the project site is shown on the drawings.

G. Furnish: The term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations."

H. Install: The term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations."

I. Provide: The term "provide" means "to furnish and install, complete and ready for the intended use."

J. Installer: The "installer" is the "the entity" (person or firm) engaged by the Contractor, its subcontractor or sub-subcontractor for performance of a particular element of construction at the project site, including installation, erection, application and similar required operations. It is a requirement that installers are experienced in the operations they are engaged to perform.

1.04 SUBMITTALS: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01090

SECTION 01150 - MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 DESCRIPTION:

A. Method of Measurement and Payment: This section supplements Section 90 of the General Provisions and establishes the method of measurement and payment for work performed under this contract.

B. Unit Price: Except where lump sum is indicated, payment for work performed shall be made on a unit price basis in accordance with the accepted bid and the method of payment provided in the General Provisions.

C. Related Requirements in Other Parts of the Specifications:

1. Bid (Proposal).
2. Agreement.
3. Conditions of the Contract.

D. Related Requirements Specified in Other Sections:

1. Summary of Work - Section 01010.
2. Submittals - Section 01300.
3. Contract Closeout - Section 01700.

E. Work With No Identified Payment Items: No additional payment will be made for items of work for which a separate payment item is not specified or contained in the Bid Schedule; such work shall be deemed incidental to the project and payment for said work shall be considered as included in the various unit bid prices.

1.02 APPLICATIONS FOR PAYMENT:

A. Submittal Schedule: Submit Applications for Payment to the Engineer in accordance with the schedule established by Conditions of the Contract and Agreement between Owner and Contractor.

B. Format and Data Required:

1. Submit Applications for Partial Payment on the form required by Owner with itemized data typed on 8 1/2 x 11 inch white paper continuation sheets.

2. Provide itemized data on continuation sheet: Format, schedules, line items and values: Those of the Schedule of Values accepted by the Engineer.

C. Preparation of Application for Each Progress Payment:

1. Application Form:

a. Fill in required information, including that for Change Orders executed prior to the date of submittal of application.

b. Fill in summary of dollar values to agree with the respective totals indicated on the continuation sheets.
c. Execute certification with the signature of a responsible officer of the contract firm.

2. Continuation Sheets:
   a. Fill in total list of all scheduled component items of work, with item number and the scheduled dollar value for each item.
   b. Fill in the dollar value in each column for each scheduled line item when work has been performed or products stored. Round off values to the nearest dollar, or as provided in the bid.

3. List each Change Order executed prior to the date of submission, at the end of the continuation sheets.
   a. List by Change Order and description, as for an original component item of work.

4. Submit Applications for Payment to Owner at the times stipulated in the Agreement.
   a. Number: Four copies of each Application.

D. Substantiating Data:

1. When the Owner or Engineer require substantiating data, Contractor shall submit suitable information with cover letter identifying:
   a. Project.
   b. Application number and date.
   c. Detailed list of enclosures.
   d. For stored products: Item number and identification as shown on application.
   e. Description of specific material.

2. Submit one copy of data and cover letter for each copy of application.

E. Preparation of Application for Final Payment:
1. Fill in application form as specified for progress payments.

2. Use continuation sheet for presenting the final statement of accounting as specified in Section 01700 - Contract Closeout.

1.03 CHANGE ORDER PROCEDURES:

A. Format and Data Required:

1. Change Orders shall be prepared and submitted and will be processed in accordance with requirements of General Provisions and Funding Agency Requirements.

2. Engineer will transmit Certificate for Change to Owner and Agency for approval.

3. When Owner and Agency approval is received, Change Order will be included under next partial Application for Payment.

1.04 MEASURES AND WEIGHTS:

A. Contractor Assistance: To aid the Owner in determining all quantities, the Contractor shall, whenever so requested, provide scales, equipment and assistance for weighing or for measuring any of the materials at no cost to the Owner.

B. Weights and Measures: Quantities for payment will be the actual weight or actual measure, and no special or trade or so-termed customary allowances will be made, nor will any material which is lost or misplaced be included for payment.

C. Use of Planimeter: For estimating quantities in which computation of areas by geometric methods would be comparatively laborious, it is agreed that the planimeter shall be considered an instrument of precision to the measurement of such areas.

D. Precedence of Dimensions: Figured dimensions on drawings shall take precedence over measurement by scale, and detailed working drawings are to take precedence over general drawings and shall be considered as explanatory of them and not as indicating extra work.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01150

SECTION 01300 - SUBMITTALS

PART 1 GENERAL

1.01 SUBMITTALS BY CONTRACTOR:

A. Construction Progress Schedule.

B. Certifications as specified in the various sections.

C. Shop Drawings and Project Data as specified in the various sections.

D. Miscellaneous:

1. Weekly Payroll.
2. EEO Reports.
3. Safety Plan.
4. Security Plan.
5. Warranties and Bonds.
6. QC Plan.
7. Other(s) as required.

1.02 PROGRESS SCHEDULE:

A. Bar-Chart Schedule: Submit a CPM or linear type bar-chart schedule 7 calendar days prior to the preconstruction conference date established for the work. On the schedule, indicate a time bar for each major category or unit of work to be performed at the site, properly sequenced and coordinated with other elements of work. Show completion of the work sufficiently in advance of the date established for substantial completion of work.

1. Submittal Tabulation: With the bar-chart submittal, submit a tabulation, by date, of the submittals which are required during the first 30 days of construction time. At the Contractor's option, submittal dates may be shown on the bar-chart schedule, in lieu of being tabulated.

B. Phasing: Arrange schedule with notations to show how sequence of work is affected by requirements for phased completion, limitations of continued utilization, non-interruptible services, use prior to substantial completion, site restrictions, runway and/or taxiway closures, provisions for future work, seasonal variations, environmental control, and similar provisions of total project. Phase I schedule is required at the preconstruction meeting. Each subsequent phasing schedule is required at least two weeks before the phase is to begin. Refer to other sections of the General Requirements and other contract documents for requirements.

C. Distribution: Following the initial submittal to and response by the Engineer, print and distribute progress schedules to the Engineer (3 copies), Owner, separate contractors, principal subcontractors and suppliers or fabricators, and others with a need-to-know schedule-compliance requirement. Post copies in the project meeting room and temporary field office. When revisions are made, distribute updated issues to the same entities and post updated issues in the same locations. Delete entities from distribution when they have

completed their assigned work and are no longer involved in the performance of scheduled work.

D. Update: Contractor shall update the schedule monthly for duration of construction.

1.03 SHOP DRAWINGS AND PRODUCT DATA:

A. Scope: Submit shop drawings, certifications, and product data for all products to be incorporated in the work.

B. Shop Drawings Shall:

1. Be original drawings, prepared by the Contractor, subcontractor, supplier, or distributor, which illustrate some portion of the work; showing fabrication, layout, setting, or erection details.

2. Be prepared by a qualified detailer.

3. Identify details by reference to sheet and detail numbers shown on Contract Drawings.

4. Be sheet size 24 in. x 36 in.

5. Be reproduced for submittals on opaque diazo prints or blueprints.

C. Product Data Shall:

1. Include manufacturer's standard schematic drawings. The Contractor shall:

a. Modify drawings to delete information which is not applicable to project.
b. Supplement standard information to provide additional information applicable to project.

2. Include manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive data. The Contractor shall:

a. Clearly mark each copy to identify pertinent materials or products.
b. Show dimensions and clearances required.
c. Show performance characteristics and capacities.

D. The Contractor Shall:

1. Be responsible for all submittals.

2. Review shop drawings and product data prior to submission.

3. Verify:
a. Field measurements.
b. Field construction criteria.
c. Catalog numbers and similar data.

4. Coordinate each submittal with the requirements of the work and of the Contract Documents.

5. Notify the Engineer, in writing at time of submission, of deviations in submittals from requirements of the Contract Documents.

6. Begin no work which requires submittals until the return of submittals with the Engineer's stamp and initials or signature indicating review.

7. After the Engineer's review, distribute copies.

E. Contractor's Responsibilities:

1. Contractor's responsibility for errors and omissions in submittals is not relieved by the Engineer's review of submittals.

2. Contractor's responsibility for deviations in submittals from requirements of the Contract Documents is not relieved by the Engineer's review of submittal, unless the Engineer gives written acceptance of specific deviations.

F. Submission Requirements Include:

1. The shop drawings shall be submitted in sufficient time to allow discussion and correction prior to beginning the work. Work shall not be performed nor materials ordered prior to the review of the drawings except at the Contractor's risk.

2. Submit 3 copies of all shop drawings after which one copy will be returned for correction or marked reviewed as noted. Any drawings returned for correction must be resubmitted with same number of copies as required above.

3. All submittals must be accompanied by a transmittal letter, in duplicate, containing:

   a. Date.
   b. Project title and number.
   c. Contractor's name and address.
   d. The number of each shop drawing and product data submitted.
   e. Notification of deviations from Contract Documents.
   f. Other pertinent data.

4. Submittals shall include the following, as applicable:

   a. Date and revision dates.
   b. Project title and number.
   c. The names of:

      (1) Engineer.
      (2) Contractor.
      (3) Subcontractor.
      (4) Supplier.
      (5) Manufacturer.
      (6) Separate detailer when pertinent.

d. Identification of product or material.
e. Relation to adjacent structure or materials.
f. Field dimensions, clearly identified as such.
g. Specification item or section number.
h. Applicable standards, such as ASTM number or Federal Specification.
i. A blank space, 5 in. x 5 in., for the Engineer's stamp.
j. Identification of deviations from the Contract Documents.
k. Contractor's stamp, initialed or signed, certifying Contractor's review of submittal, verification of field measurements, and compliance with Contract Documents.

G. Resubmission Requirements Include:

1. Revision of initial drawings as required and resubmittal as specified for initial submittal.

2. An indication on the drawings of any changes which have been made, other than those requested by the Engineer.

3. On product data resubmittals, include new data as required for initial submittal.

H. Distribution to Others: After review and approval, the Contractor shall distribute copies of shop drawings and product data which carry the Engineer's stamp to others as may be required.

I. Shop Drawings and Product Data:

1. Submit notarized certifications cosigned by manufacturer/supplier and Contractor for:

a. Storm drainage pipe, castings and structure materials.
b. Pavement subbase, base, surfacing and related materials.
c. Grass seed.
d. Pavement marking paint.
e. All other products as required by the drawings, specifications, and Engineer.

2. Submit shop drawings, product data and steel placement plans for:

a. All cast-in-place or precast structures.
b. Catch basin and manhole grate, cover and frame castings.
c. Concrete and asphalt mix designs.
d. All other products as required by the drawings, specifications, and Engineer.

1.04 MISCELLANEOUS:

A. Weekly Payrolls:

1. In accordance with the General Provisions submit certified weekly payrolls for prime contractor and all subcontractors working at project site.

2. Submit payrolls no later than 7 calendar days after pay period. Payrolls will be considered current if received within 10 calendar days after last work day of payroll

work week. A work week is the seven day period between midnight Sunday and midnight the following Sunday.

3. The Contractor is responsible for submission of payrolls by his subcontractors.

4. Submit a typed summary sheet with each payroll submission listing by week when contractor and each subcontractor worked at site.

5. A payroll submission is only required for weeks when Contractor or subcontractor is actually working at the site.

B. EEO Reports:

1. Contractor shall submit Monthly Employment Utilization Report and Annual EEO-1 Report to the appropriate Federal Labor Area Office in accordance with the General Provisions. Submit copy of submittal to Owner for his records.
2. Prime Contractor shall insure that all his first tier subcontractors submit these reports and shall submit a sworn statement to Owner monthly certifying that all subcontractor reports have been submitted as required.

C. Security Plan: At preconstruction conference, submit for approval proposed security plan describing specifically how security will be maintained at each access point and work area by Contractor's forces.

D. Warranties and Bonds: Submit as Specified in Section 01740.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01300

SECTION 01400 - QUALITY CONTROL SERVICES

PART 1 GENERAL

1.01 RELATED DOCUMENTS: Drawings, General Provisions, Supplementary Conditions, Specifications, and other Contract Documents apply to work of this section.

1.02 DESCRIPTION OF REQUIREMENTS:

A. General: Required inspection and testing services are intended to assist in the determination of probable compliance of the work with requirements specified or indicated. These required services do not relieve the Contractor of responsibility for compliance with these requirements or for compliance with requirements of the Contract Documents.

B. Specified Inspection and Tests: Inspection, tests and related actions specified in this section and elsewhere in the Contract Documents are not intended to limit the Contractor's own quality control procedures which facilitate overall compliance with requirements of the Contract Documents.

C. Contractor Quality Control: Requirements for the Contractor to provide quality control services as required by the Engineer, the Owner, governing authorities or other authorized entities are not limited by the provisions of this section.

D. Contractor's Quality Control Personnel and Laboratory: Contractor shall conform to the requirements of ~~General Provisions Section 100 and~~ all technical specifications as listed in this manual.

1.03 RESPONSIBILITIES:

A. Contractor Responsibilities: Contractor is responsible for his own quality control testing and inspection to insure the quality of his means and methods of construction will produce the specified quality of work, and for any tests and inspections required by regulatory agencies. Costs for these services shall be included in the contract sum. The Contractor may employ and pay an independent agency, testing laboratory or other qualified firm to perform quality control services specified, or these services may be performed by qualified contractor personnel.

The Contractor shall submit for Engineer's approval a Quality Control (QC) Plan delineating his methods for each item requiring inspections, tests, and similar services.

B. Quality Assurance: The Owner will engage and pay for the services of an independent agency to perform inspections and tests of materials for Quality Assurance. The Owner's quality assurance testing shall in no way relieve the Contractor of the responsibility for providing the quality materials, workmanship and testing required to comply with these specifications.

C. Retest Responsibility: Where results of required inspections, tests, or similar services prove unsatisfactory and do not indicate compliance with the requirements of the Contract Documents, then retests are the responsibility of the Contractor, and shall be deducted from monies due the Contractor on his monthly pay request, regardless of whether the original test was the Contractor's responsibility. Retesting of work revised or replaced by the

Contractor is the Contractor's responsibility, where required tests were performed on original work.

D. Responsibility for Associated Services: The Contractor is required to cooperate with the independent agencies performing required inspections, tests, and similar services. Provide such auxiliary services as are reasonably requested. Notify the testing agency sufficiently in advance of operations to permit assignment of personnel. These auxiliary services include but are not necessarily limited to the following:

1. Providing access to the work.
2. Taking samples or providing assistance with taking samples.
3. Delivery of samples to test laboratories.
4. Security and protection of samples and test equipment at the project site.
5. Surveying services required to establish horizontal and vertical location of tests by Engineer's quality assurance testing laboratory.

1.04 SCHEDULE OF SERVICES: Each specification section identifies principal inspections, tests and similar services required by the Contractor Documents.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 REPAIR AND PROTECTION: Upon completion of inspection, testing, sample-taking, and similar services performed on the work, repair damaged work and test sites to eliminate deficiencies. Protect work exposed by or for quality control service activities, and protect repaired work. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

3.02 MEASUREMENT AND PAYMENT: No measurement or payment will be made for work in this section; it will be considered as incidental cost to Mobilization and other items of work.

END OF SECTION 01400

SECTION 01510 - TEMPORARY FACILITIES

PART 1 GENERAL

1.01 DESCRIPTION:

A. Contractor shall furnish, install and maintain temporary utilities required for construction and other temporary facilities as indicated; remove on completion of work.

B. Related requirements are specified in other sections of the specifications.

1.02 REQUIREMENTS OF REGULATORY AGENCIES:

A. Comply with National Electric Code.

B. Comply with Federal, State, and Local codes and regulations and with utility company requirements.

PART 2 PRODUCTS

2.01 MATERIALS, GENERAL:

Materials, furniture, and equipment may be new or used, but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards. Acceptability of all items will be determined by the Engineer.

PART 3 EXECUTION

3.01 TEMPORARY ELECTRICITY AND LIGHTING:

Provide temporary electrical service required for power and lighting, and pay all costs for service and for power used.

3.02 TEMPORARY WATER:

A. Provide water for construction purposes; pay all costs for installation, maintenance and removal, and service charges for water used.

B. The site is served by a municipal water system. The Contractor shall make arrangements for securing and providing necessary water as required for the performance of the work.

3.03 TEMPORARY SANITARY FACILITIES:

A. Provide sanitary facilities in compliance with laws and regulations.

B. Service, clean and maintain facilities and enclosures.

3.04 TEMPORARY SUPPORT FACILITIES:

A. General: Provide reasonably neat and uniform in appearance temporary support facilities acceptable to the Engineer and the Owner.

B. Siting: Locate field offices, storage and fabrication sheds and other support facilities for easy access to the work. Position office so that windows give the best possible view of construction activities.

C. Maintenance: Maintain field offices, on-site plants, storage and fabrication sheds, temporary sanitary facilities, waste collection and disposal systems, and project identification and temporary signs until project completion.

D. Testing Laboratory: Furnish a building or trailer at the asphalt plant(s) for performing asphalt quality assurance testing. The building or trailer shall be equipped with all necessary equipment and supplies to sample and conduct all required plant testing. The laboratory shall meet LaDOTD and OSHA regulations.

E. Airfield Communications:

1. Contractor shall furnish his construction personnel with sufficient truck and hand-held radios to allow all construction locations to be in radio contact with the Airport ATC and/or Unicom frequency. ~~The Contractor shall furnish 2 hand-held radio(s) for use by the Engineer. All radios shall be capable of two-way communications with ATC and shall be Communication Specialists, TR-720 Handheld AM Transceivers or approved equal. When working within active runway or taxiway safety areas, project superintendents shall be in constant radio contact with ATC and shall be responsible for controlling the movement of project equipment, vehicles and personnel.~~

   ~~Provide the following accessories: 114 VAC wall charger, plug-in earphone, car cigarette lighter DC charger, one spare battery, case with belt loop, antenna, and operating manual. Radio shall cover Aviation NAV band 108-118 mH, and COM band 118-136 mH.~~

2. All radios will remain the property of the Contractor.

3. The Contractor will not be directly compensated for providing two-way radios as this work is considered incidental to the work covered by the various contract items.

F. Staging Area: Contractor shall prepare his staging area and access road. ~~by grading, drainage, and placing a four (4) inch thick stone base of coarse aggregate (#57 stone) over the entire staging area and access road(s). The Contractor shall apply a periodic top dressing to the stone base in order to minimize any fugitive dust or mud during the construction period. Upon completion of the project, the stone base shall be completely removed, the site graded to drain, and then seeded and mulched in accordance with Item T-901.~~

G. Access and Haul Roads:

1. Locations of access and haul roads will be approved by the Engineer and are shown on the drawings. These roads will be located to minimize conflict with Airport operations and shall be maintained, well defined, and confined to the minimum area required. Damaged roads shall be promptly repaired by the Contractor to the satisfaction of the Engineer at no cost to the Owner.

2. The Contractor shall utilize existing or construct the access and haul roads and shall maintain the roads as required to create no dust. All project traffic must be routed through these areas. The Contractor shall provide all markings required to clearly define the access and haul roads.

3. The Contractor will be responsible for obtaining any necessary driveway permit(s) from local or state agencies for access and haul roads.

4. If access or haul roads cross a utility, the Contractor shall protect the utility as directed by the Owner of the utility.

5. There shall be no direct payment for the construction, maintenance, and removal of access and haul roads.

3.05 EXECUTION, GENERAL:

Maintain and operate systems to assure continuous service.

3.06 REMOVAL:

A. Completely remove temporary materials and equipment when their use is no longer required.
B. Clean and repair damage caused by temporary installations or use of temporary facilities. Restore grassed and paved areas to their pre-construction condition.

3.07 MEASUREMENT AND PAYMENT:

There shall be no separate measurement and payment for Temporary Facilities. All provision and removal costs shall be included in Item 01000, Mobilization.

END OF SECTION 01510

SECTION 01530 - AIRFIELD TEMPORARY MARKINGS AND BARRICADES

PART 1 GENERAL

1.01 DESCRIPTION:

A. Provide temporary barricades, ~~runway number covers and a temporary relocated threshold~~ as required for safety of aircraft and contractor's work forces, and to maintain use of the various portions of the air operations area during construction. Upon the completion of the project, all barricades ~~and runway number covers~~ will be removed and remain the property of the Contractor.

B. Comply with referenced FAA Advisory Circulars and the safety and staging plan.

C. Related work specified elsewhere:

1. Construction safety: General Provisions and General Requirements.
2. Staging and safety plan: Contract Drawings and General Requirements.

PART 2 PRODUCTS

2.01 BARRICADES:

A. Type 1 (Low) Barricades: 10” wide by 10” high by 8’ long high impact UV-resistant polyethylene, with alternating diagonal white and orange stripes, two 20"x20" orange and white checkered flags, and two battery powered flashing or steady-burn red lights. Flags shall be framed and installed so that they are always in the extended position and oriented along the long axis of the barricade. Overall barricade height shall not exceed 36".

~~2.02 RUNWAY NUMBER COVERS: Numerals shall be obliterated as described on the drawings, or covered with waterproof paper, opaque polyethylene film, burlap-polyethylene sheets, or other material approved by Engineer. Anchor in place with sandbags or other approved means.~~

~~2.03 TEMPORARY RELOCATED THRESHOLD: Pavement marking necessary for the relocated threshold shall adhere to requirements of Section P-620 and be placed according to drawing DT-~~

~~1. Temporary lighting required as shown on drawing DT-1 shall comply with FAA standards as established in Advisory Circular 150/5340-30B.~~

PART 3 EXECUTION

3.01 GENERAL:

A. Install at locations shown on the drawings and where directed by Engineer. Generally, place barricades a maximum of 20 feet on centers and not less than three per taxiway. Anchor barricades and markers with sandbags or other methods approved by Engineer.

B. Maintain barricades and covers until removal is directed by Engineer. The barricade flasher batteries shall be checked daily to insure that flashers are operational. Replace batteries as required.

C. Remove barricades, covers ~~and temporary relocated threshold~~ as directed by Engineer. Repair any damage to pavement or surrounding area caused by markers or barricades.

3.02 MEASUREMENT AND PAYMENT: There will be no separate measurement or payment for Airfield Temporary Markings and Barricades. All work associated with this item shall be considered subsidiary to Item 01000, Mobilization.

END OF SECTION 01530

SECTION 01600 - MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 REQUIREMENTS:

A. Material, Equipment, and Products Incorporated Into the Work shall conform to applicable specifications and standards; shall comply with size, make, type and quality specified, or as specifically approved in writing by the Engineer; and shall not be used for any purpose other than that for which it is designed or is specified.

B. Manufactured and Fabricated Products shall be designed, fabricated and assembled in accordance with the best engineering and shop practices. Like parts of duplicate units shall be manufactured to standard sizes and gages, to be interchangeable. Products shall be suitable for service conditions. Equipment capacities, sizes and dimensions shown or specified shall be adhered to unless variations are specifically approved by Engineer in writing.

C. Related Requirements in Other Parts of the Project Manual: Conditions of the Contract.

D. Standardization: Unless otherwise approved by the Engineer, items and equipment of a similar type and function shall be furnished by one manufacturer to standardize on replacement parts, service calls, operation and maintenance matters, and to avoid a division of responsibility among several manufacturers.

A single supplier shall be used on principal items of equipment and systems where one or more components are not manufactured by the principal supplier; this is required to place performance and service responsibilities for the entire unit or system with only one supplier or manufacturer.

1.02 PRODUCTS SUBSTITUTIONS AND OPTIONS:

A. Products List: Contractor shall submit a complete list of products to be incorporated into the work (with the name of the installing contractor) at the Preconstruction Conference required by these specifications.

B. Contractor's Options:

1. For products specified only by reference standard, select any product meeting that standard.

2. For products specified by naming several products or manufacturers, select any one of the products or manufacturers named, which complies with the specifications.

3. Airport lighting equipment covered by FAA specifications require certification under the Airport Lighting Equipment Certification Program described in Advisory Circular 150/5345-53, latest edition. Select equipment from the Certified Airport Lighting Equipment list appended to the Advisory Circular. An updated list is published biannually.

C. Product Substitutions: Contractor shall submit, at the Preconstruction Conference, all requests for product substitutions. No requests for substitutions will be accepted from manufacturers or suppliers.

Submit a separate written request for each product, supported with complete data, with drawings and samples as appropriate, including:

1. Comparison of the qualities of the proposed substitution with that specified.
2. Changes required in other elements of the work because of the substitution.
3. Effect on the construction schedule.
4. Cost data comparing the proposed substitution with the product specified.
5. Any required license fees or royalties.
6. Availability of maintenance service, and source of replacement materials.

Engineer shall be the judge of the equality and acceptability of the proposed substitution. If Engineer determines the proposed substitute product is not "equal" to the specified product, the Contractor must provide the specified product, subject to Engineer's shop drawing review and approval.

No further requests for substitutions will be considered after Preconstruction Conference.

D. Contractor's Representation: A request for a substitution constitutes a representation that Contractor:

1. Has investigated the proposed product and determined that it is equal to or superior in all respects to that specified.
2. Will provide the same warranties or bonds for the substitution as for the product specified.
3. Will coordinate the installation of an accepted substitution into the work, and make such other changes as may be required to make the work complete in all respects.
4. Waives all claims for additional costs, under his responsibility, which may subsequently become apparent.

E. Engineer's Review: Engineer will review requests for substitutions with reasonable promptness and notify Contractor, in writing, of the decision to accept or reject the requested substitution.

1.03 MANUFACTURER'S INSTRUCTIONS:

A. Printed Instructions: When Contract Documents require that installation of work shall comply with manufacturer's printed instructions, Contractor shall obtain and distribute copies of such instructions to parties involved in the installation, including copies to Engineer. Maintain one set of complete instructions at the job site during installation and until completion and acceptance.

B. Strict Compliance: Handle, install, connect, clean, condition, and adjust products in strict accord with such instructions and in conformity with specified requirements. Should job conditions or specified requirements conflict with manufacturer's instruction, consult with Engineer for further instructions. Do not proceed with work without clear instructions.

C. Complete Compliance: Perform work in accord with manufacturer's instructions. Do no omit any preparatory step or installation procedure unless specifically modified or exempted by Contract Documents.

1.04 TRANSPORTATION AND HANDLING:

A. Deliveries: Contractor shall arrange deliveries of products in accord with construction schedules; coordinate to avoid conflict with work and conditions at the site. Deliver products in undamaged condition, in manufacturer's original containers or packaging, with identifying labels intact and legible. Immediately on delivery, inspect shipments to assure compliance with requirements of contract documents and approved submittals, and that products are properly protected and undamaged.

B. Handling: Provide equipment and personnel to handle products by methods to prevent soiling or damage of products or packaging.

1.05 STORAGE AND PROTECTION:

A. Storage: Store products in accord with manufacturer's instructions, with seals and labels intact and legible. Store products subject to damage by the elements in weathertight enclosures. Maintain temperature and humidity within the ranges required by manufacturer's instructions.

B. Exterior Storage: Store fabricated products above the ground, on blocking or skids; prevent soiling or staining. Cover products which are subject to deterioration with impervious sheet coverings; provide adequate ventilation to avoid condensation.

Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

C. Storage Inspection: Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration.

D. Protection After Installations: Provide substantial coverings as necessary to protect installed products from damage from traffic and subsequent construction operations. Remove when no longer needed.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

END OF SECTION 01600

SECTION 01700 - CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 REQUIREMENTS:

A. Comply with requirements stated in conditions of the contract and in specifications for administrative procedures in closing out the work.

B. Related requirements in other parts of the Project Manual including fiscal provisions, legal submittals and additional administrative requirements: Conditions of the contract.

C. Related requirements specified in other sections:
1. Closeout submittals required of trades: The respective sections of specifications.
2. Project Record Documents: Section 01720.
3. Warranties and Bonds: Section 01740.

1.02 SUBSTANTIAL COMPLETION: The conditions and procedures for inspection and Contractor's, Engineer's and Owner's responsibilities pertaining to substantial completion are as specified in the General Provisions and in the Supplementary Conditions.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

3.01 FINAL INSPECTION: Shall be in accordance with conditions and procedures outlined in the Contract Documents. When Engineer finds that the work is acceptable under the Contract Documents, he will request required Contractor's Closeout Submittals.

3.02 REINSPECTION FEES: Should Engineer perform reinspections due to failure of the work to comply with the claims of status of completion made by the Contractor, the Owner will compensate Engineer for such additional services. The Owner will deduct the amount of such compensation from the final payment due the Contractor.

3.03 CONTRACTOR'S CLOSEOUT SUBMITTALS TO ENGINEER:

A. Evidence of compliance with requirements of governing authorities: Certificates of Inspection.

B. Project Record Documents: Conform to requirements of Section 01720.

C. Warranties and Bonds: Conform to requirements of Section 01740.

D. Evidence of payment and release of liens: To requirements of General Provisions and Supplementary Conditions.

E. Certificates of Insurance for products and completed operations.

F. Once the Engineer has determined the work is acceptable under the Contract Documents, he will furnish the Contractor appropriate number of copies of the following forms, copies of which are attached:

1. Contractor Warranty Form
2. Affidavit of Payment
3. Affidavit of Release of Liens
4. Final Waiver of Lien
5. Consent of Surety for Final Payment
6. DBE Participation Report

3.04 PAYMENT: No separate payment will be made under this section for work described or specified herein.

END OF SECTION 01700

AFFIDAVIT OF PAYMENT

To All Whom It May Concern:

WHEREAS, the undersigned has been employed by _____ _____ to furnish labor and materials for _____ _____ work, under a contract for the improvement of property described as in the _____ of _____ County of _____, State of of which _____ is the Owner,

NOW, THEREFORE, this _____ day of _____, 20 ___,

The undersigned, as the Contractor for the above-named Contract pursuant to the Conditions of the Contract hereby certified that, except as listed below, he has paid in full or has otherwise satisfied all obligations for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or his property might in any way be held responsible.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception.)

ATTACHMENTS:

1. Consent of Surety to Final Payment. (Whenever Surety is involved, Consent of Surety is required.)
2. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
3. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers.
4. Contractor's Affidavit of Release of Liens.

_____ (SEAL)
CONTRACTOR (Name of sole ownership, corporation or partnership)

_____ (SEAL)
(Signature of Authorized Representative)

(Affix corporate seal here)

TITLE: _____

AFFIDAVIT OF RELEASE OF LIEN

To All Whom It May Concern:

WHEREAS, the undersigned has been employed by _____
to furnish labor and materials for_____ work, under
a contract_____for the improvement
of property described as_____ _____in the
of _____ County of _____, State of _____ of which
is the Owner,

NOW, THEREFORE, this _____ day of _____, 20___,

The undersigned, as the Contractor for the above-named Contract pursuant to the Conditions of the Contract hereby certifies that to the best of his knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services, who have or may have liens against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

EXCEPTIONS: (If none, write "None". If required by the Owner, the Contractor shall furnish bond satisfactory to the Owner for each exception.)

ATTACHMENTS:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers.

_____ (SEAL)
CONTRACTOR (Name of sole ownership, corporation or partnership)

(Affix corporate seal here)

_____ (SEAL)
(Signature of Authorized Representative)

TITLE:_____

CONSENT OF SURETY

For Final Payment

Project Name _____

Location _____

Project No. _____

Contract No. _____

Type of Contract _____

Amount of Contract _____

In accordance with the provisions of the above-named contact between the Owner and the Contractor, the following named surety:

_____

_____

on the Payment Bond of the following named Contractor:

_____

_____

hereby approves of final payment to the Contractor, and further agrees that said final payment to the Contractor shall not relieve the Surety Company named herein of any of its obligations to the following named Owner: as set forth in said Surety company's bond:

_____

_____

IN WITNESS WHEREOF, the Surety Company has hereunto set its hand and seal this _____ day of_____ , 20.

_____
(Name of Surety Company)

_____
(Signature of Authorized Representative)

(Affix corporate
seal here)

TITLE _____

IF SIGNED BY ATTORNEY-IN-FACT POWER OF ATTORNEY MUST BE ATTACHED.

CONTRACTOR WARRANTY FORM

PROJECT:

LOCATION:

OWNER:

We _____ , Contractor
(Company Name)
for the above referenced project, do hereby warrant that all labor and materials furnished and work performed are in accordance with the Contract Documents and authorized modifications thereto, and will be free from defect due to defective materials or workmanship for a period of one year from Date of Substantial Completion. This warranty commences on:

_____
(Date of Substantial Completion Affixed by Engineer)

and expires on : _____
(One Year From Commencement Date)

This warranty covers that portion of the project described below:

Should any defect develop during the warranty period due to improper materials, workmanship or arrangement, the defect shall, upon written notice by the Owner, be made good by the Undersigned at no expense to the Owner.

Nothing in the above shall be deemed to apply to work which has been abused or neglected by the Owner.

Date: _____

For:_____
(Company Name)

By:

Title:

FINAL WAIVER OF LIEN

To All Whom It May Concern:

WHEREAS, the undersigned has been employed by _____ to furnish labor and materials for _____work, under a contract _____ for the improvement of property described as in the _____ (City-Village) of _____, County of _____, State of of which _____ is the Owner,

NOW, THEREFORE, this _____ day of _____, 20__,

for and in consideration of the sum of (E)_____

Dollars paid simultaneously herewith, the receipt whereof is hereby acknowledged by the undersigned, the undersigned does hereby waive and release any lien rights to, or claim of lien with respect to and on said above-described premises, and the improvements thereon, and on the monies or other considerations due to become due from the owner, on account of labor, services, material, fixtures, apparatus of machinery heretofore or which may hereafter be furnished by the undersigned to or for the above-described premises by virtue of said contract.

(F)_____(SEAL)

(Name of sole ownership, corporation or partnership)

(Affix corporate

seal here) _____(SEAL)

(Signature of Authorized Representative)

TITLE:

INSTRUCTIONS FOR FINAL WAIVER

(A) Person or firm with whom you agreed to furnish either labor, or services, or materials, or both.
(B) Fill in nature and extent of work; strike the word labor or the word materials if not in your contract.
(C) If you have more than one contract on the same premises, describe the contract by number if available, date and extent of work.
(D) Furnish an accurate enough description of the improvement and location of the premises so that it can be distinguished from any other property.
(E) Amount shown should be the amount actually received and equal to total amount of contract as adjusted.
(F) If waiver is for a corporation, corporate name should be used, corporate seal affixed and title of officer signing waiver should be set forth; if waiver is for a partnership, the partnership name should be used, partner should sign and designate himself as partner.
Construction Industry Affairs Committee of Chicago

SECTION 01710 - CLEANING AND DISPOSAL

PART 1 GENERAL

1.01 DESCRIPTION: Contractor shall execute cleaning during progress of the work and at completion of the work as required by the General Provisions and other specification documents.

1.02 DISPOSAL REQUIREMENTS:

A. Conduct cleaning and disposal operations to comply with all local, state and federal codes, ordinances, regulations, and anti-pollution laws; and with airport and construction safety requirements.

B. All disposal of waste materials shall be off airport property at locations approved by the Engineer.

C. Contractor shall be responsible for arranging for and obtaining off-site disposal areas, including payment for all costs associated with such disposal.

1.03 SUBMITTALS: Prior to beginning work, submit a Disposal Plan for the satisfactory disposal of all waste materials and debris.

Submit two (2) copies of the disposal site owner's written permission for such disposal with Disposal Plan.

PART 2 PRODUCTS

2.01 MATERIALS:

A. Use only those cleaning materials which will not create hazards to health or property and which will not damage surfaces.

B. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned.

C. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

PART 3 EXECUTION

3.01 CLEANING: Execute periodic cleaning to keep the work, site and adjacent properties free from accumulations of waste materials, rubbish, windblown debris, and dust resulting from construction operations. Provide on-site containers for the collection of waste materials, debris and rubbish. Remove waste materials, debris and rubbish from the site periodically and dispose of at approved locations.

3.02 BARRIERS AND PROTECTION: Protect existing structures and vegetation from cleaning and disposal operations as required.

3.03 DUST CONTROL: Schedule cleaning and other operations so that dust and other contaminants resulting therefrom will not fall on wet or newly coated surfaces, will not damage or contaminate aircraft, and will not unduly affect the work of other airport tenants.

3.04 DISPOSAL OF DEBRIS AND WASTE MATERIALS:

A. If permitted by Owner and local, state and federal regulations, Contractor may dispose of combustible materials on-site by burning. Unguarded fires will not be permitted. Burning will be restricted as follows:
   1. Burning of poison oak, poison ivy or other plants of similar nature will be prohibited.
   2. Tires or other combustible waste material shall not be used to augment burning.
   3. Burning operations that may in any way be hazardous to air operations will not be allowed.

B. Non-combustible and waste materials and ashes shall be removed from the site and disposed of in accordance with the Disposal Plan.

3.05 PAYMENT: No separate payment will be made under this section for work described or specified herein.

END OF SECTION 01710

SECTION 01720 - PROJECT RECORD DOCUMENTS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS:

A. Contractor shall maintain at the site as specified herein for the Owner one record copy of:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change orders and other modifications.
5. Engineer field orders or written instructions.
6. Approved shop drawings, product data and samples.
7. Field test records.
8. Laboratory test records.

B. Related requirements in other parts of the Project Manual: Conditions of the Contract.

PART 2 PRODUCTS (Not Used.)

PART 3 EXECUTION

3.01 MAINTENANCE OF DOCUMENTS AND SAMPLES:

A. Store record documents and samples in Contractor's field office apart from documents used for construction.

B. File documents and samples in accordance with data filing format of the Construction Specifications Institute - MASTERFORMAT.

C. Maintain documents in a clean, dry, legible condition and in good order. Do not use record documents for construction purposes.

D. Make documents and samples available at all times for inspection by Engineer.

3.02 RECORDING:

A. Stamp or label each document "PROJECT RECORDS" in 3/4 inch letters.

B. During daily progress of the work, the job superintendent for the Contractor shall record information concurrently with construction progress.

Do not conceal any work until required information is recorded.

C. Drawings: Legibly mark to record actual construction in color codes designated by the Engineer.

D. All field data for record information shall be obtained by a surveyor who is a Registered Land Surveyor (RLS) in the state of Louisiana. All field notes to determine the “as-built”

conditions shall be sealed by the RLS who performed the survey and shall be submitted to the Engineer.

E. Record Information includes but is not limited to the following:

1. Depths of various elements of foundation in relation to finish reference datum.
2. Horizontal and vertical locations of pavements and underground utilities and appurtenances, referenced to permanent surface improvements or finish reference datum.
3. Field changes of dimension and detail.
4. Changes made by field order or by change order.
5. Details not on original contract drawings.
6. Extent and dimensions of pavement removal.
7. Any other changes in the plans.
8. Storm drainage system construction:
   a. Exact distance between all catch basins, manholes, points of intersection, and line terminals or headwalls.
   b. The invert elevation of the end of all pipes, stubouts, and headwalls.
   c. The rim (top of frame) or top of grate and invert elevations of all manholes, catch basins, and other structures.

F. Specifications and addenda: Legibly mark each section to record:

1. Manufacturer, trade name, catalog number, and supplier of each product and item of equipment actually installed.
2. Changes made by field order or by change order.

G. All horizontal control dimensions shall be to the nearest tenth of a foot. Elevations shall be to the nearest one-hundredth of a foot.

H. Set one (1) Concrete Benchmark and document location and elevation data.

3.03 SUBMITTAL:

A. At the close of the job and prior to receipt of final payment, the Contractor shall deliver to the Engineer for the Owner one complete set of Record Documents.

B. Accompany submittal with transmittal letter containing:

1. Date.
2. Project title and number.
3. Contractor's name and address.
4. Title and number of each record document.
5. Signature of Contractor or his authorized representative.

3.04 PAYMENT: No separate payment will be made under this section for work described or specified herein. The cost of this work shall be considered incidental to and included in other items of work.

END OF SECTION 01720

SECTION 01740 - WARRANTIES AND BONDS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS:

A. Contractor shall:
1. Compile specified warranties and bonds.
2. Compile specified service and maintenance contracts.
3. Co-execute submittals to verify compliance with Contract Documents.
4. Review submittals to verify compliance with Contract Documents.
5. Submit to Engineer for review and transmittal to Owner.

B. Related requirements in other parts of the Project Manual:
1. Bid Bonds: Instructions to bidders.
2. Performance Bond and Payment Bond: Conditions of the contract.
3. General warranty of construction: Conditions of the contract.

C. Related requirements specified in other sections:
1. Warranties and Bonds required for specific products: Each respective section of specifications.
2. Provisions and duration of Warranties and Bonds: The respective section of specifications which specifies the product.
3. Contract closeout: Section 01700
4. Equipment Manuals: Section 01300

PART 2 PRODUCTS (Not Used.)

PART 3 EXECUTION

3.01 SUBMITTAL REQUIREMENTS:

A. Assemble warranties, bonds, and service and maintenance contracts, executed by each of the respective manufacturers, suppliers, and subcontractors.

B. Number of original signed copies required: Two (2) each.

C. Table of Contents: Neatly typed, in orderly sequence. Provide complete information for each item.
1. Product or work item.
2. Firm, with name of principal, address and telephone number.
3. Scope.
4. Date of beginning of warranty, bond, or service and maintenance contract.
5. Duration of warranty, bond, or service and maintenance contract.

6. Provide information for Owner's personnel:
   a. Proper procedure in case of failure.
   b. Instances which might affect the validity of warranty or bond.
7. Contractor, name of responsible principal, address and telephone number.

3.02 FORM OF SUBMITTALS:

A. Prepare in duplicate packets.

B. Format:
   1. Size 8 1/2 inches x 11 inches. Punch sheets for 3-ring binder. Fold larger sheets to fit into binders.
   2. Cover: Identify each packet with typed or printed title "WARRANTIES AND BONDS". List:
      a. Project title and number.
      b. Owner's name.
      c. Contractor's name and address.

C. Binders: Commercial quality, 3-ring, with durable and cleanable plastic covers.

3.03 TIME OF SUBMITTALS:

A. Submit within ten (10) days after date of substantial completion, and prior to final request for payment.

B. For items of work where acceptance is delayed materially beyond the date of substantial completion, provide updated submittal within ten (10) days after acceptance, listing the date of acceptance as the start of the warranty period.

3.04 SUBMITTALS REQUIRED: Submit warranties, bonds, and service and maintenance contracts as specified in the respective sections of specifications.

3.05 PAYMENT: No separate payment will be made under this section for work described or specified herein.

END OF SECTION 01740

PROPOSAL FORMS

BID FORM

(Failure to furnish all requested data will be cause for considering BIDDER nonresponsive and may render this BID invalid on that basis.)

BID FOR: Hammond Northshore Regional Airport
Runway 18-36/13-31 Intersection Reconstruction

SUBMITTED TO: City of Hammond
600 Judge Leon Ford Drive
Hammond, Louisiana 70401

SUBMITTED BY:

_____
BIDDER's Name

_____
Address

_____
City, State and Zip Code

1. The undersigned, hereinafter called BIDDER, in compliance with the "Notice to Bidders," accepting all of the terms and conditions of the "Instructions to Bidders," including without limitation those dealing with the disposition of Bid Security; proposes and agrees, if awarded the Contract, to enter into an Agreement with the OWNER in the form of Agreement included in the Contract Documents, to furnish all materials, equipment, machinery, tools, apparatus, means of transportation and labor necessary to complete the work to be performed under this Contract within the Contract Time indicated in this BID, in full and complete accordance with the shown, noted, described and reasonably intended requirements of the Contract Documents, to the full and entire satisfaction of the OWNER, for the amounts contained in the Bid Schedules.

2. This BID will remain open for **60 days** after the day of Bid opening. If awarded a contract, BIDDER will sign the Agreement and submit the Contract Security and other documents required by the Contract Documents within 15 days after the date indicated in OWNER's Notice of Award.

3. In submitting this BID, BIDDER represents that:

   (a) BIDDER has become thoroughly familiar with the terms and conditions of the proposed Contract Documents accepting the same as sufficient to indicate and convey understanding of all the conditions and requirements under the Contract which will be executed for the Work.

   (b) BIDDER has examined the site and locality where the Work is to be performed, the legal requirements (federal, state and local laws, ordinances, rules and regulations) and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as BIDDER deems necessary.

   (c) This BID is genuine and not made in the interest of or on behalf of any undisclosed person, firm or corporation and is not submitted in conformity with any agreement or rules of any group, association, organization or corporation; BIDDER has not directly or

indirectly induced or solicited any other BIDDER to submit a false or sham BID; BIDDER has not solicited or induced any person, firm or corporation to refrain from bidding; and BIDDER has not sought by collusion to obtain for himself any advantage over any other BIDDER or over OWNER.

(d) That no member of the Council or other officers or employees of said OWNER is interested directly or indirectly in the Bid or in any portion of the Bid nor in the Contract or any part of the Contract which may be awarded the undersigned on the basis of such BID.

(e) This BID is based upon prevailing wages in **Hammond, Louisiana** and in no case are wages less than those contained in Wage Determination No. LA150017, U.S. Department of Labor, a reproduction of which is contained in the Supplementary Conditions.

(f) It is a condition of this BID and any subsequent contract entered into pursuant to this BID, and it shall be made a condition of each subcontract entered into pursuant to the prime contract that the Contractor and any Subcontractor shall not require any laborer or mechanic employed in performance of the contract to work in surroundings or under working conditions which are unsatisfactory, hazardous, or dangerous to his health or safety, as determined under Construction Safety and Health Standards, Title 29, CFR, Part 1518 36FR7340, promulgated by the U.S. Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act, 82, Statt. 96; that it is a further condition of this BID that he shall be solely responsible for the enforcement of such Construction and Health Standards, and that he definitely understands that the OWNER and his authorized representatives will not assume any liability resulting from his failure to police and enforce all such standards.

(g) The description under each bid item, being briefly stated, implies, although it does not mention, all incidentals and that prices stated are intended to cover all such work, materials and incidentals as constitute BIDDER's obligations as described in the Specifications, and any details not specifically mentioned, but evidently included in the Contract shall be compensated for in the item which most logically includes it.

(h) The Unit Prices Bid includes all applicable taxes and fees. Bids shall also include appropriate provisions for price escalation for materials and labor including but not limited to increase in federal, state or local sales taxes and income or FICA taxes.

4. Contract Time: BIDDER agrees that:

(a) If a contract is awarded, the work will be completed within **35** consecutive calendar days from the date of Notice-to-Proceed. If additive alternate 1 is awarded an additional **20** calendar days will be added. If additive alternate 2 is awarded an additional **5** calendar days will be added. If additive alternate 3 is awarded an additional **20** calendar days will be added. All work will be completed in accordance with the phases prescribed in Project Specifications and the Contract Drawings.

(b) He/She will commence work with an adequate force and equipment at the time stated in the Notice to Proceed, and complete all work in the number of days stipulated from the date stated in said notice including working overtime and on Saturdays, Sundays, and legal holidays as necessary in order to complete the project on time.

(c) The quantities of work listed in the Bid Schedule are ***approximate*** and are assumed solely for comparison of Bids. Compensation will be based upon the unit price bid and actual quantities of work performed in accordance with the Contract Documents.

Bid Schedule: See attached pages.

LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: City of Hammond
600 Judge Leon Ford Drive
Hammond, LA 70401

(Owner to provide name and address of owner)

BID FOR: Hammond Northshore Regional Airport
Runway 18-36 / 13-31 Intersection Reconstruction
FAA AIP No. 3-22-0018-019-2016
LaDOTD Project No. H.011864

(*Owner to provide name of project and other identifying information)*

The undersigned bidder hereby declares and represents that she/he; a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced project, all in strict accordance with the Bidding Documents prepared by: Michael Baker International, Inc. and dated: July, 2016

(Owner to provide name of entity preparing bidding documents.)

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

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

_____ Dollars ($ _____)

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

Alternate No. 1 *Reconstruct Asphalt Runway 13-31 Outside RSA* for the lump sum of:

_____ Dollars ($ _____)

Alternate No. 2 *Runway 13-31 Marking* for the lump sum of:

_____ Dollars ($ _____)

Alternate No. 3 *Runway 13-31 and Taxiway Alpha Repair* for the lump sum of:

_____ Dollars ($_____)

NAME OF BIDDER: _____

ADDRESS OF BIDDER: _____

_____

LOUISIANA CONTRACTOR'S LICENSE NUMBER: _____

NAME OF AUTHORIZED SIGNATORY OF BIDDER: _____

TITLE OF AUTHORIZED SIGNATORY OF BIDDER: _____

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER **: _____

DATE: _____

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

** If someone other than a corporate officer signs for the Bidder/Contractor, a copy of a corporate resolution or other signature authorization shall be required for submission of bid. Failure to include a copy of the appropriate signature authorization, if required, may result in the rejection of the bid unless bidder has complied with La. R.S. 38:2212(A)(1)(c) or RS 38:2212(O) .

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

LOUISIANA UNIFORM PUBLIC WORK BID FORM

UNIT PRICE FORM

TO: City of Hammond
600 Judge Leon Ford Drive
Hammond, LA 70401

(Owner to provide name and address of owner)

BID FOR: Hammond Northshore Regional Airport
Runway 18-36 / 13-31 Intersection Reconstruction

(Owner to provide name of project and other identifying information)

BASE BID – RUNWAY INTERSECTION RECONSTRUCTION – CONCRETE RUNWAY 18-36/13-31 INSIDE RSA

UNIT PRICES: This form shall be used for any and all work required by the Bidding Documents and described as unit prices. Amounts shall be stated in figures and only in figures.

DESCRIPTION:	MOBILIZATION (SECTION 105)			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
M-105	1	LUMP SUM		

DESCRIPTION:	TEMPORARY BARRICADES, LIGHTING AND FACILITIES			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
M-200	1	LUMP SUM		

DESCRIPTION:	PAVEMENT REMOVAL, 6-INCH CONCRETE			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-101.1	24,461	SQUARE YARD		

DESCRIPTION:	UNCLASSIFIED EXCAVATION			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-152.1	5,611	CUBIC YARD		

DESCRIPTION:	UNDERCUT EXCAVATION			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-152.2	4,740	CUBIC YARD		

DESCRIPTION:	TEMPORARY SILT FENCE			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-156	2,400	LINEAR FEET		

DESCRIPTION:	CRUSHED AGGREGEATE BASE COURSE, 4-INCH DEPTH			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-209.1	21,307	SQUARE YARD		

DESCRIPTION:	PCC PAVEMENT, 10.5-INCH DEPTH			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-501	20,922	SQUARE YARD		

DESCRIPTION:	BITUMINOUS PRIME COAT			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-602	5,327	GALLON		

DESCRIPTION:	PAVEMENT MARKING REMOVAL (100%)			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.1	1,800	SQUARE FEET		

DESCRIPTION:	TEMPORARY RUNWAY MARKING – WHITE			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.2	12,332	SQUARE FEET		

DESCRIPTION:	FINAL RUNWAY MARKING – WHITE			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.3	12,332	SQUARE FEET		

DESCRIPTION:	FINAL OUTLINE MARKING – BLACK			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.4	1,016	SQUARE FEET		

DESCRIPTION:	UNDERDRAIN, 6-INCH PERFORATED (COMPLETE, INCLUDING POROUS BACKFILLE AND FILTER FABRIC)			☒ Base Bid or ❑ Alt.# ___
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
D-705.1	2,579	LINEAR FEET		

DESCRIPTION:	UNDERDRAIN, 6-INCH NON-PERFORATED ☒ Base Bid or ❑ Alt.# ___			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
D-705.2	961	LINEAR FEET		

DESCRIPTION:	UNDERDRAIN CLEANOUT ☒ Base Bid or ❑ Alt.# ___			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
D-751	12	EACH		

DESCRIPTION:	CABLE, 1/C #8kV, L-824C INSTALLED IN CONDUIT OR DUCT BANK ☒ Base Bid or ❑ Alt.# ___			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-108.1	1,690	LINEAR FEET		

DESCRIPTION:	COUNTERPOISE, #6 BARE SOLID COPPER, INCLUDING GROUND RODS AND CONNECTIONS ☒ Base Bid or ❑ Alt.# ___			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-108.2	840	LINEAR FEET		

DESCRIPTION:	ELECTRICAL CONDUIT, 1-WAY, 2” SCHEDULE-40PVC, DIRECT EARTH BURIAL, EARTH BACKFILL ☒ Base Bid or ❑ Alt.# ___			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-110.1	450	LINEAR FEET		

DESCRIPTION:	ELECTRICAL CONDUIT, 1-WAY, 2” SCHEDULE-40PVC, CONCRETE ENCASED, INSTALLED UNDER NEW RUNWAY PAVEMENT ☒ Base Bid or ❑ Alt.# ___			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-110.2	365	LINEAR FEET		

DESCRIPTION:	RELOCATED L-861 MEDIUM INTENSITY RUNWAY EDGE LIGHT, NEW L-867B BASE, ISOLATION TRANSFORMER, COVER PLATE IN EARTH SHOULDER, INSTALLED COMPLETE ☒ Base Bid or ❑ Alt.# ___			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-125.2	6	EACH		

DESCRIPTION:	NEW L-852D IN-PAVEMENT MEDIUM INTENSITY RUNWAY EDGE LIGHT INSTALLED ON NEW L-868B BASE IN NEW PCC PAVEMENT, INSTALLED COMPLETE ☒ Base Bid or ❑ Alt.# ___			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-125.3	4	EACH		

DESCRIPTION:	REMOVE CONCRETE ENCASED LIGHT BASE ☒ Base Bid or ❑ Alt.# ___			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-125.4	10	EACH		

DESCRIPTION:	SEEDING (HYDROSEED) ☒ Base Bid or ❑ Alt.# ___			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
T-901	2	ACRE		

ADDITIVE ALTERNATE 1 – RECONSTRUCT ASPHALT RUNWAY 13-31 OUTSIDE RSA

DESCRIPTION:	TEMPORARY BARRICADES, LIGHTING AND FACILITIES ❑ Base Bid or ☒ Alt.# 1			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
M-200	1	LUMP SUM		

DESCRIPTION:	PAVEMENT REMOVAL, 6-INCH CONCRETE ❑ Base Bid or ☒ Alt.# 1			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-101.2	11,765	SQUARE YARD		

DESCRIPTION:	UNCLASSIFIED EXCAVATION ❑ Base Bid or ☒ Alt.# 1			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-152.1	3,420	CUBIC YARD		

DESCRIPTION:	UNDERCUT EXCAVATION ❑ Base Bid or ☒ Alt.# 1			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-152.2	1,870	CUBIC YARD		

DESCRIPTION:	SUBBASE COURSE, 8-INCH DEPTH			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-154	7,375	SQUARE YARD		

DESCRIPTION:	TEMPORARY SILT FENCE			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-156	1,470	LINEAR FEET		

DESCRIPTION:	CRUSHED AGGREGATE BASE COURSE, 8-INCH DEPTH			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-209.2	7,272	SQUARE YARD		

DESCRIPTION:	BITUMINOUS ASPHALT SURFACE COURSE (PG 76-22, GRADATION 2)			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-401	1,970	TON		

DESCRIPTION:	BITUMINOUS PRIME COAT			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-602	2,050	GALLON		

DESCRIPTION:	BITUMINOUS TACK COAT			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-603	820	GALLON		

DESCRIPTION:	TEMPORARY RUNWAY MARKING – WHITE			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.2	5,130	SQUARE FEET		

DESCRIPTION:	FINAL RUNWAY MARKING - WHITE			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.3	5,130	SQUARE FEET		

DESCRIPTION:	TEMPORARY TAXIWAY MARKING - YELLOW			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.5	593	SQUARE FEET		

DESCRIPTION:	FINAL TAXIWAY MARKING - YELLOW			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.6	593	SQUARE FEET		

DESCRIPTION:	UNDERDRAIN, 6-INCH PERFORATED (COMPLETE, INCLUDING POROUS BACKFILL AND FILTER FABRIC)			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
D-705.1	1,270	LINEAR FEET		

DESCRIPTION:	UNDERDRAIN CLEANOUT			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
D-751	4	EACH		

DESCRIPTION:	CABLE, 1/C #8kV, L-824C INSTALLED IN CONDUIT OR DUCT BANK			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-108.1	175	LINEAR FEET		

DESCRIPTION:	COUNTERPOISE, #6 BARE SOLID COPPER, INCLUDING GROUND RODS AND CONNECTIONS			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-108.2	350	LINEAR FEET		

DESCRIPTION:	ELECTRICAL CONDUIT, 1-WAY, 2” SCHEDULE-40PVC, DIRECT EARTH BURIAL, EARTH BACKFILL			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-110.1	350	LINEAR FEET		

DESCRIPTION:	RELOCATED L-861T MEDIUM INTENSITY TAXIWAY EDGE LIGHT, NEW L-867B BASE, ISOLATION TRANSFORMER, COVER PLATE IN EARTH SHOULDER, INSTALLED COMPLETE ❑ Base Bid or ☒ Alt.# 1			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-125.1	2	EACH		

DESCRIPTION:	RELOCATED L-861 MEDIUM INTENSITY RUNWAY EDGE LIGHT, NEW L-867B BASE, ISOLATION TRANSFORMER, COVER PLATE IN EARTH SHOULDER, INSTALLED COMPLETE ❑ Base Bid or ☒ Alt.# 1			
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-125.2	8	EACH		

DESCRIPTION:	REMOVE CONCRETE ENCASED LIGHT BASE			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
L-125.4	3	EACH		

DESCRIPTION:	SEEDING (HYDROSEED)			❑ Base Bid or ☒ Alt.# 1
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
T-901	1	ACRE		

ADDITIVE ALTERNATE 2 – RUNWAY 13-31 MARKING

DESCRIPTION:	FINAL RUNWAY MARKING - WHITE			❑ Base Bid or ☒ Alt.# 2
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.3	70,552	SQUARE FEET		

DESCRIPTION:	FINAL OUTLINE MARKING - BLACK			❑ Base Bid or ☒ Alt.# 2
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.4	15,750	SQUARE FEET		

DESCRIPTION:	FINAL TAXIWAY MARKING - YELLOW			❑ Base Bid or ☒ Alt.# 2
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.6	2,400	SQUARE FEET		

DESCRIPTION:	PAVEMENT MARKING REMOVAL (70%)			❑ Base Bid or ☒ Alt.# 2
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.7	88,702	SQUARE FEET		

ADDITIVE ALTERNATE 3 – RUNWAY 13-31 AND TAXIWAY ALPHA REPAIR

DESCRIPTION:	TEMPORARY BARRICADES, LIGHTING AND FACILITIES			❑ Base Bid or ☒ Alt.# 3
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
M-200	1	LUMP SUM		

DESCRIPTION:	PAVEMENT REMOVAL, 4-INCH ASPHALT			❑ Base Bid or ☒ Alt.# 3
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-101.2	1,500	SQUARE YARD		

DESCRIPTION:	UNCLASSIFIED EXCAVATION			❑ Base Bid or ☒ Alt.# 3
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-152.1	4,375	CUBIC YARD		

DESCRIPTION:	SUBBASE COURSE, 8-INCH DEPTH			❑ Base Bid or ☒ Alt.# 3
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-154	1,464	SQUARE YARD		

DESCRIPTION:	CRUSHED AGGREGATE BASE COURSE, 8-INCH DEPTH			❑ Base Bid or ☒ Alt.# 3
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-209.2	1,440	SQUARE YARD		

DESCRIPTION:	BITUMINOUS ASPHALT SURFACE COURSE (PG 76-22, GRADATION 2)			❑ Base Bid or ☒ Alt.# 3
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-401	360	TON		

DESCRIPTION:	BITUMINOUS PRIME COAT			❑ Base Bid or ☒ Alt.# 3
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-602	375	GALLON		

DESCRIPTION:	BITUMINOUS TACK COAT			❑ Base Bid or ☒ Alt.# 3
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-603	150	GALLON		

DESCRIPTION:	TEMPORARY TAXIWAY MARKING - YELLOW			❑ Base Bid or ☒ Alt.# 3
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.5	50	SQUARE FEET		

DESCRIPTION:	FINAL TAXIWAY MARKING – YELLOW			❑ Base Bid or ☒ Alt.# 3
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
P-620.6	50	SQUARE FEET		

DESCRIPTION:	SEEDING (HYDROSEED)			❑ Base Bid or ☒ Alt.# 3
REF. NO.	QUANTITY:	UNIT OF MEASURE:	UNIT PRICE	UNIT PRICE EXTENSION *(Quantity times Unit Price)*
T-901	0.2	ACRE		

Wording for "DESCRIPTION" is to be provided by the Owner.
All quantities are estimated. The contractor will be paid based upon actual quantities as verified by the Owner

6. Execution of Contract: BIDDER agrees that:

   (a) In case of failure on his part to execute the said Contract and Bonds within 15 days after the date indicated in the "Notice of Award", the check or bid bond accompanying this BID, and the money payable thereon, shall be paid to the OWNER as liquidated damages for such failure; otherwise the Bid Bond or check accompanying this BID shall be returned to the undersigned.

7. Bid Documentation: The following documents are attached to and made a part of this BID:

   (a) Louisiana Uniform Public Work Bid Form

   (b) Bid Schedule

   (c) Required Bid Security in the form of a Bid Bond payable to the order of the City of Hammond.

   Documents to be submitted by the apparent low bidder by 10:30 AM (10) business days following the Bid Opening:

   (a) Noncollusion Affidavit

   (b) EEO Report Statement

   (c) Bidder's Affidavit

   (d) Certification Regarding Fair Trade

   (e) Certificate of Prompt Payment

   (f) Buy American Certificate

   (g) Certification of Nonsegregated Facilities

   (h) Performance of Work by Subcontractors

   (i) Bidder's Questionnaire Regarding Subcontractors

   (j) Bidder Qualification Questionnaire

   (k) Attestation Clause

   (l) Affidavit Regarding Verification of Employees

8. Name, phone number and business address (mailing and street) of BIDDER to which all formal Notices shall be sent:

   _____

   _____

9. The terms used in this BID which are defined in the General Provisions of the Construction Contract included as a part of the Contract Documents have the meanings assigned to them in the General Provisions.

10. The BIDDER shall state on the line below, if a corporation, the name of state in which incorporated and the date of said corporation.

_____

Signed this _____ day of _____, 20___.

_____
Contractor

By: _____
(Signature of individual, partner
or officer signing the Bid)

_____
License Number

ATTEST:

(Seal)

(Seal required if BIDDER
is a corporation.)

NOTE: If Contractor is a Corporation, Secretary should attest seal. Seal is required if BIDDER is a Corporation. If Contractor is a partnership, all partners shall execute the BID (add spaces as required).

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned

_____ as Principal, and

_____ as Surety, are hereby held and firmly

bound unto **City of Hammond** (OWNER) in the penal sum of _____

for the payment of which, well and truly to be made, we hereby jointly and severally, bind

ourselves, our heirs, executors, administrators, successors, and assigns.

Signed, this _____ day of _____, 20___.

The conditions of the above obligation is such that whereas the Principal has submitted

To **City of Hammond** certain BID, attached hereto and hereby made a part

hereof to enter into a Contract in writing for the Construction of:

Runway 18-36/13-31 Intersection Reconstruction at Hammond Northshore Regional Airport

_____

NOW THEREFORE,

(a) If said Bid shall be rejected, or in the alternate,

(b) If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Agreement attached hereto (properly completed in accordance with said Bid) and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said BID, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that obligations of said Surety and its Bonds shall be in no way impaired or affected by any extension of the time within which the Owner may accept such BID; and said Surety does hereby waive notice of any such extension.

DISADVANTAGED BUSINESS ENTERPRISE FORMS

UTILIZATION STATEMENT

Disadvantage Business Enterprise (DBE)

The undersigned bidder/offeror has satisfied the requirements of the bid specification in the following manner. (Please mark the appropriate box)

☐ The bidder/offeror is committed to a minimum of _____% DBE utilization on this contract.

☐ The bidder/offeror, while unable to meet the DBE goal of _____%, hereby commits to a minimum of _____% DBE utilization on this contract and also submits documentation, as an attachment demonstrating good faith efforts (GFE) in seeking participation by certified DBE Firms.

The undersigned hereby further assures that the information included herein is true and correct, and that the DBE firm(s) listed herein have agreed to perform a commercially useful function in the work items noted for each firm.

The undersigned further understands that no changes to this statement may be made without prior approval from the Civil Right Staff of the Federal Aviation Administration.

_____

Bidder's/Offeror's Firm Name

_____ _____

Signature Date

DBE UTILIZATION SUMMARY

	Contract Amount		DBE Amount	Contract Percentage
DBE Prime Contractor	$_____	x 1.00 =	$ _____	_____%
DBE Subcontractor	$_____	x 1.00 =	$ _____	_____%
DBE Supplier	$_____	x 0.60 =	$ _____	_____%
DBE Manufacturer	$_____	x 1.00 =	$ _____	_____%
Total Amount DBE			$ _____	_____%
DBE Goal			$ _____	_____%

Note: If the total proposed DBE participation is less than the established DBE goal, Bidder must provide written documentation of the good faith efforts as required by 49 CFR Part 26..

LETTER OF INTENT

(SUBMIT THIS PAGE FOR EACH DBE SUB-CONTRACTOR)

Bidder/Offer Name:_____

Address:_____

City:_____ State:_____ Zip:_____

DBE Firm: DBE Firm:_____

Address:_____

City:_____ State:_____ Zip:_____

DBE Contact Person: Name:_____ Phone: (___)_____

DBE Certifying Agency: _____ Expiration Date:_____

Each DBE Firm shall submit evidence (such as a photocopy) of their certification status.

Classification: ☐ Prime Contractor ☐ Subcontractor ☐ Joint Venture ☐ Manufacturer ☐ Supplier

Work item(s) to be performed by DBE	Description of Work Item	Quantity	Total

The bidder/offeror is committed to utilizing the above-named DBE firm for the work described above. The estimated participation is as follows:

DBE contract amount: $_____ Percent of total contract:_____%

AFFIRMATION:
The above-named DBE firm affirms that it will perform that portion of the contract for the estimated dollar value as stated herein above.

By: _____
(Signature) *(Title)*

* In the event the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.

FORM OF NONCOLLUSION AFFIDAVIT

(This Affidavit is Part of BID)

STATE OF _____)
) SS.
COUNTY OF _____)

_____
being first duly sworn, deposes and says that he is

_____
(Sole owner, a partner, president, secretary, etc.)

of_____
the party making the foregoing Proposal or BID that such BID is genuine and not collusive or sham; that said BIDDER has not colluded, conspired, connived, or agreed, directly or indirectly, with any BIDDER or person, to put in a sham BID, or that such other person shall refrain from bidding, and has not in any manner, directly or indirectly sought by agreement or collusion, or communication or conference, with any person, to fix the Bid Price of affiant or any other BIDDER, or to fix any overhead, profit or cost element of said Bid Price, or of that of any other BIDDER, or to secure any advantage against OWNER any person interested in the proposed Contract; and that all statements in said Proposal or BID are true; and further, that such BIDDER has not, directly or indirectly submitted this BID, or the contents thereof, or divulged information or date relative thereto to any association or to any member or agent thereof.

_____
(BIDDER)

Sworn to and subscribed before me this _____ day of _____, 20__.

_____
Notary Public in and for

_____ County

My Commission expires _____, 20__.

(SEAL)

(THIS REPORT IS PART OF THE BID)

EQUAL OPPORTUNITY REPORT STATEMENT
AS REQUIRED BY 41 CFR 60-1.7(b)

The BIDDER (Proposer) shall complete the following statement by checking the appropriate blanks. Failure to complete these blanks may be grounds for rejection of bid:

1. The BIDDER (Proposer) has _____ has not _____ developed and has _____ does not have _____ on file at each establishment affirmative action programs pursuant to 41 CFR 60-1.40 and 41 CFR 60-2.

2. The BIDDER (Proposer) has _____ has not _____ participated in any previous contract or subcontract subject to the equal opportunity clause prescribed by Executive Order 11246, as amended.

3. The BIDDER (Proposer) has _____ has not _____ filed with the Joint Reporting Committee the annual compliance report on Standard Form 100 (EEO-1 Report).

4. The BIDDER (Proposer) does _____ does not _____ employ fifty (50) or more employees.

NAME OF BIDDER:_____

BY:_____

TITLE:_____

DATE:_____

BIDDER'S AFFIDAVIT

(This Affidavit is part of the BID)

STATE OF _____)

COUNTY OF_____)

_____

being duly sworn, deposes and says that he resides at _____

_____

that he is the _____
(Give Title)

_____

who signed the abode Proposal or BID, That he was duly authorized to sign and that the BID is the true offer of the BIDDER, that the seal attached is that seal of the BIDDER and that all the declarations and statements contained in the BID are true to the best of his knowledge and belief.

_____
(Affiant)

Subscribed and Sworn to before me this _____ day of _____, 20__.

_____
(Notary Public)

My Commission expires_____, 20__.

(SEAL)

CERTIFICATION REGARDING FAIR TRADE

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

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

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

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

Unless the restrictions of this clause are waived by the Secretary of Transportation in accordance with 49 CFR 30.17, no contract shall be awarded to a contractor or subcontractor who is unable to certify to the above. If the contractor knowingly procures or subcontracts for the supply of any product or service of a foreign country on the said list for use on the project, the Federal Aviation Administration may direct, through the sponsor, cancellation of the contract at no cost to the Government.

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

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

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

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

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

NAME OF BIDDER: _____

BY: _____

TITLE: _____

DATE: _____

CERTIFICATE OF PROMPT PAYMENT

The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than seven (7) days from the receipt of each payment the prime contractor receives from the Owner. The prime contractor agrees further to return retainage payments to each subcontractor within seven (7) days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the Owner. This clause applies to both DBE and non-DBE subcontractors.

NAME OF BIDDER: _____

BY: _____

TITLE: _____

DATE: _____

BUY AMERICAN CERTIFICATE

By submitting a BID/proposal under this solicitation, except for those items listed by the BIDDER below or on a separate and clearly identified attachment to this BID/proposal, the offeror certifies that steel and each manufactured product, is produced in the United States (as defined in Article 23 of Instruction to Bidders "Buy American - Steel and Manufactured Products For Construction Contracts") and that components of unknown origin are considered to have been produced or manufactured outside the United States.

PRODUCT	**COUNTRY OF ORIGIN**

Signature of BIDDER

Title

CERTIFICATE OF BUY AMERICAN COMPLIANCE FOR MANUFACTURED PRODUCTS

As a matter of bid responsiveness, the bidder or offeror must complete, sign, date, and submit this certification statement with their proposal. The bidder or offeror must indicate how they intend to comply with 49 USC § 50101 by selecting one on the following certification statements. These statements are mutually exclusive. Bidder must select one or the other (not both) by inserting a checkmark (✓) or the letter "X".

☐ Bidder or offeror hereby certifies that it will comply with 49 USC § 50101 by:

a) Only installing steel and manufactured products produced in the United States, or;
b) Installing manufactured products for which the FAA has issued a waiver as indicated by inclusion on the current FAA Nationwide Buy American Waivers Issued listing, or;
c) Installing products listed as an Excepted Article, Material or Supply in Federal Acquisition Regulation Subpart 25.108.

By selecting this certification statement, the bidder or offeror agrees:

1. To provide to the Owner evidence that documents the source and origin of the steel and manufactured product.
2. To faithfully comply with providing US domestic product
3. To furnish US domestic product for any waiver request that the FAA rejects
4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

☐ The bidder or offeror hereby certifies it cannot comply with the 100% Buy American Preferences of 49 USC § 50101(a) but may qualify for either a Type 3 or Type 4 waiver under 49 USC § 50101(b). By selecting this certification statement, the apparent bidder or offeror with the apparent low bid agrees:

1. To the submit to the Owner within 15 calendar days of the bid opening, a formal waiver request and required documentation that support the type of waiver being requested.
2. That failure to submit the required documentation within the specified timeframe is cause for a non-responsive determination may result in rejection of the proposal.
3. To faithfully comply with providing US domestic products at or above the approved US domestic content percentage as approved by the FAA.
4. To refrain from seeking a waiver request after establishment of the contract, unless extenuating circumstances emerge that the FAA determines justified.

Required Documentation

Type 3 Waiver - The cost of the item components and subcomponents produced in the United States is more that 60% of the cost of all components and subcomponents of the "item". The required documentation for a type 3 waiver is:

a) Listing of all product components and subcomponents that are not comprised of 100% US domestic content (Excludes products listed on the FAA Nationwide Buy American Waivers Issued listing and products excluded by Federal Acquisition Regulation Subpart 25.108; products of unknown origin must be considered as non-domestic products in their entirety).
b) Cost of non-domestic components and subcomponents, excluding labor costs associated with final assembly at place of manufacture.
c) Percentage of non-domestic component and subcomponent cost as compared to total "item" component and subcomponent costs, excluding labor costs associated with final assembly at place of manufacture.

Type 4 Waiver – Total cost of project using US domestic source product exceeds the total project cost using non-domestic product by 25%. The required documentation for a type 4 of waiver is:

a) Detailed cost information for total project using US domestic product
b) Detailed cost information for total project using non-domestic product

False Statements: Per 49 USC § 47126, this certification concerns a matter within the jurisdiction of the Federal Aviation Administration and the making of a false, fictitious or fraudulent certification may render the maker subject to prosecution under Title 18, United States Code.

Date	Signature
Company Name	Title

SUBCONTRACTS EXCEEDING $10,000 WHICH ARE NOT
EXEMPT FROM THE EQUAL OPPORTUNITY CLAUSE

CERTIFICATION OF NONSEGREGATED FACILITIES

The federally assisted construction Contractor certifies that he does not maintain or provide, for his employees, any segregated facilities at any of his establishments and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction Contractor certifies that he will not maintain or provide, for his employees, segregated facilities at any of his establishments and that he will not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. The federally assisted construction Contractor agrees that a breach of this certification is a violation of the equal opportunity clause in this contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment area, transportation, and housing facilities provided for employees which are segregated by explicit directives or are in fact segregated on the basis or race, color, religion, or national origin because of habit, local custom, or any other reason. The federally assisted construction Contractor agrees that (except where he has obtained identical certifications from proposed Subcontractors for specific time periods) he will obtain identical certifications from proposed Subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the equal opportunity clause and that he will retain such certifications in his files.

_____ _____

Signature of BIDDER Title

BIDDER QUESTIONNAIRE REGARDING SUBCONTRACTORS

All firms bidding or quoting on subcontracts for this DOT-assisted project are listed below.

			Annual Gross Receipts				
Firm Name/Age of Firm	**Address**	**Certified DBE** (Y or N)	**<$500,000**	**$500,000-$1 mil**	**$1 mil-$5 mil**	**$5 mil-$10 mil**	**>$10 mil**

PERFORMANCE OF WORK BY SUBCONTRACTORS

The BIDDER hereby states that he proposes, if awarded the Contract, to use the following subcontractors on this project: List below all proposed subcontractors and trade specialties. (List only one subcontractor for each item.) The BIDDER shall obtain prior written permission of the OWNER should he choose to add or substitute other subcontractor(s) not shown herein.

Item	**Name of Subcontractor**	**Estimated Dollar Value**

Estimated Total Cost of Items that BIDDER states will be performed by Subcontractors:

($_____)

BIDDER QUALIFICATION QUESTIONNAIRE

Submitted by _____
Name of BIDDER

General Contractor's License # _____

( ) An Individual
( ) A Partnership
( ) A Corporation

Federal Identification # _____

Principal Office Address:

_____

_____

(1) How many years has your organization been in business as a contractor under your present name?

_____

(2) How many years experience in construction work has your organization had as a general contractor?

_____

_____

As a Subcontractor?

_____

_____

(3) List below the requested information concerning projects your organization has completed in the last five (5) years for the type of work required in this project. (Use additional sheets if necessary)

Project Title	Contract Amount	Required Completion Date	Actual Completion Date	Name/Address/Tel of Owner

(4) Have you ever failed to complete any work awarded to you? If so, where and why?

_____

_____

(5) Has any officer or partner of your organization ever been an officer or partner of some other organization that failed to complete a construction contract? If so, state name of individual, name of other organization, and reason therefore.

_____

_____

_____

(6) Has any officer or partner of your organization ever failed to complete a construction contract handled in his own name? If so, state name of individual, name of owner and reason therefore.

_____

_____

_____

(7) Give below any information which would indicate the size and capacity of your organization, including number of employees, equipment owned by your organization, etc., which are available for utilization on this Contract.

_____

_____

_____

_____

(8) What is your bonding capacity?_____

_____

(9) What amount of your bonding capacity has been used as of the date of this bid?

_____

_____

(10) How many applications for performance and payment bonds have you made in the last three (3) years? _____

_____

_____

_____

(11) How many of these applications were not approved? _____

_____

_____

_____

_____

(12) Have any claims been filed against a bond provided for you by your surety bond company in the last five (5) years? If so, describe the nature of the claims and give the names of the surety companies, dates of each claim, identifying numbers of each claim, amounts of each claim, and the status of each claim. (Use additional sheets if necessary.)

_____

_____

_____

_____

(13) Have your company been in disputes or litigations in the last five (5) years over construction projects which are completed or still pending for completion? If so, describe the nature of the disputes or litigations and state the Owner's Name, Address, Telephone, and amount of disputes or litigations. (Use additional sheets if necessary.)

_____

_____

_____

_____

_____

I, the undersigned, do hereby declare that the foregoing statements are true and correct, all as of the date hereinafter set forth, and that those examining this document have my permission to contact any or all of those parties listed in this questionnaire. Incorrect or misleading statements in this questionnaire shall be grounds for a determination of nonresponsibility with respect to such contractor.

****

_____

(SIGNATURE OF BIDDER)

_____

(TYPE OR PRINT COMPANY NAME)

_____

(TYPE OR PRINT ADDRESS)

Hammond Northshore Regional Airport
Runway 18-36/13-31 Intersection Reconstruction
NAME OF PROJECT

AIP #3-22-0018-019-2016; LaDOTD #H.011864
PROJECT NUMBER **DATE OF BID**

ATTESTATION CLAUSE REQUIRED BY LA. R.S. 38:2227
(PAST CRIMINAL CONVICTIONS OF BIDDERS)

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

A. No sole proprietor or individual partner, incorporator, director, manager, officer organizer, or member who has a minimum of a ten percent (10%) ownership in bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes:

(a) Public bribery (R.S. 14:118)
(b) Corrupt influencing (R.S. 14:120)
(c) Extortion (R.S. 14:71.1)
(d) Money laundering (R.S. 14:230)

B. Within the past five years from the project date, no sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following sate crimes or equivalent federal crimes, during the solicitation or execution of a contract or bid awarded pursuant to the provisions of Chapter 10 of Title 28 of the Louisiana Revised Statutes:

(a) Theft (R.S. 14:67)
(b) Identity Theft (R.S. 14:67.16
(c) Theft of a business record (R.S. 14:67.20)
(d) False accounting (R.S. 14:70) (R.S. 14:71)
(e) Issuing worthless checks (R.S. 14.71)
(f) Bank fraud (R.S. 14:71.1)
(g) Forgery (R.S. 14:72)
(h) Contractors; misapplication of payments (R.S. 14:202)
(i) Malfeasance in office (R.S. 14:134)

NAME OF BIDDER **NAME OF AUTHORIZED SIGNATOR OF BIDDER**

DATE **TITLE OF AUTHORIZED SIGNATORY OF BIDDER**

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER

Hammond Nortshore Regional Airport
Runway 18-36/13-31 Intersection Reconstruction
NAME OF PROJECT

STATE OF Louisiana

PARISH OF TANGIPAHOA

AFFIDAVIT REGARDING VERIFICATION OF EMPLOYEES

Before me, the undersigned notary public, duly commissioned and qualified in and for the parish and state aforesaid came and appeared _____(name), _____ (office/position) of _____ (name of Bidder/Proposer)(hereinafter, "Appearer"), who after being duly sworn, attested as follows:

LA. R.S. 38:2212.10 Verification of Employees

A. He/She is an authorized signatory of Appearer and is authorized to legally execute this Affidavit on behalf of Appearer.

B. Appearer is registered and participates in a status verification system to verify that all employees in the State of Louisiana are legal citizens of the United States or are legal aliens.

C. If awarded the contract, Appearer shall continue, during the term of the contract, to utilize a status verification system to verify the legal status of all new employees in the state of Louisiana.

D. If awarded the contract, Appearer shall require all subcontractors to submit to it a sworn affidavit verifying compliance with Paragraphs (A) and (B) of this Subsection.

_____

NAME OF BIDDER **NAME OF AUTHORIZED SIGNATORY OF BIDDER**

_____

DATE **TITLE OF AUTHORIZED SIGNATORY OF BIDDER**

_____

SIGNATURE OF AUTHORIZED
SIGNATORY OF BIDDER/AFFIANT

Sworn to and subscribed before me by Affiant on the _____ day of _____ 20___.

_____Notary Public (Sign Name)

_____Notary Public (Print Name)

Notary Public No. _____

CONTRACT FORMS

THIS AGREEMENT dated the _____ day of _____ in the year 20____, by and between **City of Hammond** (hereinafter called the OWNER) and _____ _____ (hereinafter call the CONTRACTOR). OWNER and CONTRACTOR, in consideration of the mutual covenants hereinafter set forth, agree as follows:

Article 1 – NOTICE

TAKE NOTICE: THIS CONTRACT IS SUBJECT TO ARBITRATION PURSUANT TO THE LAWS OF THE STATE OF LOUISIANA.

This same Notice shall be placed on all contracts, subcontracts, purchase orders, agreements and bonds relating to the Project or the Work.

Article 2 – WORK

Project Name: Runway 18-36/13-31 Intersection Reconstruction
Project Location: Hammond Northshore Regional Airport

CONTRACTOR shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

The work generally consists of full depth pavement removal, new pavement construction, edge drain installation, edge light replacement, and pavement markings. Contract time shall be [will be updated after bids are received] consecutive calendar days.

Article 3 – ENGINEER

The Project has been designed by:

MICHAEL BAKER INTERNATIONAL
2600 Citiplace Drive, Suite 450
Baton Rouge, LA 70808

who is hereinafter called ENGINEER and who is to act as OWNER's representative, assume all duties and responsibilities and have the rights and authority assigned to ENGINEER in the Contract Documents in connection with completion of the Work in accordance with the Contract Documents.

Article 4 – CONTRACT TIME

4.1 The Work will be completed and ready for final payment within the time specified in Section 01010, "Scope of Work", as described in the contract drawings for final acceptance in accordance with General Provisions, Paragraph 50-15.

4.2 Liquidated Damages. OWNER and CONTRACTOR recognize that time is of the essence of this Agreement and that OWNER will suffer financial loss if the Work is not substantially complete within the time and phases described in these Contract Documents. They also recognize the delays, expense and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by OWNER if the Work is not completed on time. Accordingly, instead of requiring any such proof, OWNER and CONTRACTOR agree that as liquidated damages for delay (but not as a penalty) CONTRACTOR shall pay OWNER the amounts stipulated in Section 01010 for each calendar day that expires after the time specified.

4.3 CONTRACTOR further understands and hereby expressly agrees that in addition to liquidated damages specified in Article 4.2 above, to pay the OWNER the actual costs to OWNER for any inspector or inspectors necessarily employed by OWNER on the Work and the actual costs to OWNER for the ENGINEER's observation of construction and project representative services including all travel and subsistence expenses after the date specified for the project completion until the Work is completed and ready for final payment. Further, the CONTRACTOR agrees that the sums to be paid the OWNER may be deducted from the sum due the CONTRACTOR for work performed as provided in Section 90 of the General Provisions.

Article 5 – CONTRACT PRICE

OWNER shall pay CONTRACTOR for completion of the Work in accordance with the Contract Documents, Unit Prices submitted on _____ and per Unit Bid Prices times the actual approved and accepted quantities with initial contract amount of_____ _____.

Article 6 – PAYMENT PROCEDURES

CONTRACTOR shall submit Applications for Payment in accordance with Section 90 of the General Provisions but in no case shall submit more than one (1) Application for Payment per month. Applications for Payment will be processed by ENGINEER as provided in the General Provisions.

6.1 Progress Payments. OWNER shall make progress payments on account of the Contract Price on the basis of CONTRACTOR's Application for Payment as recommended by the ENGINEER, within thirty (30) days after receipt of the CONTRACTOR's verified and approved Application for Payment. All progress payments will be on the basis of the progress of the Work based on the number of units completed as determined by the ENGINEER.

6.1.1 Progress payments will be made in an amount equal to the percentage indicated below, but, in each case, less the aggregate of payments previously made and less such amounts as ENGINEER shall determine, or OWNER may withhold, in accordance with Section 90 of the General Provisions.

95% of Work completed as determined by ENGINEER.

95% of materials and equipment not incorporated in the Work (but delivered, suitably stored and accompanied by documentation satisfactory to OWNER as provided in paragraph 90-07 of the General Provisions).

6.1.2 With each application (excluding the first pay application) for payment, CONTRACTOR shall submit a certified report stating that each Subcontractor has been paid for 95% of the bid item quantities and/or any stored materials as approved for payment by the ENGINEER in all previous applications for payment.

6.1.3 With each application for payment, the CONTRACTOR shall submit an updated CPM schedule delineating activities completed and those remaining to be completed. Additionally, he needs to identify any logic changes made since submission of his first (baseline) CPM schedule. Detailed Bar Chart, Network Diagram and Standard Report for all activities are required and shall be submitted.

6.1.4 With each application for payment the Contractor shall submit the Certified Payroll Report for his organization as well as all of his Subcontractors. This Report must be current within 14 days of the requested Application for Payment.

Final Payment. Upon final completion and acceptance of the Work in accordance with Section 50 of the General Provisions, OWNER shall pay the remainder of the Contract Price as recommended by ENGINEER as provided in Paragraph 90-09 of the General Provisions.

Article 7 – CONTRACTOR'S REPRESENTATION

In order to induce OWNER to enter into this Agreement, CONTRACTOR makes the following representations:

7.1 CONTRACTOR has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality, and all local conditions and Laws and Regulations that in any manner may affect cost, progress, performance or furnishing of the Work.

7.2 CONTRACTOR has obtained and carefully studied (or assumes responsibility for obtaining and carefully studying) all such examinations, investigations, explorations, tests, reports and studies that pertain to the subsurface or physical conditions at or contiguous to the site or otherwise may affect the cost, progress, performance or furnishing of the Work as CONTRACTOR considers necessary for the performance or furnishing of the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents, including the General Provisions; and no additional examinations, investigations, explorations, tests, reports, studies or similar information or data are or will be required by CONTRACTOR for such purposes.

7.3 CONTRACTOR has reviewed and checked all information and data shown or indicated on the Contract Documents with respect to existing underground facilities at or contiguous to the site and assumes responsibility for the accurate location of said underground facilities. No additional examinations, investigations, explorations, tests, reports, studies or similar information or data in respect of said underground facilities are or will be required by CONTRACTOR in order to perform and furnish the Work at the Contract Price, within the Contract Time and in accordance with the other terms and conditions of the Contract Documents.

7.4 CONTRACTOR has correlated the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

7.5 CONTRACTOR has given ENGINEER written notice of all conflicts, error or discrepancies that he has discovered in the Contract Documents and the written resolution thereof by ENGINEER is acceptable to CONTRACTOR

Article 8 – CONTRACT DOCUMENTS

The Contract Documents which comprise the entire agreement between OWNER and CONTRACTOR concerning the Work consist of the following:

8.1 This Agreement (*Contract Forms*, inclusive).

8.2 Performance, Payment and other Bonds (*Contract Forms*, inclusive).

8.3 General Provisions, and Supplementary Conditions.

8.4 Technical Specifications as listed in table of contents of the Project Manual.

8.5 Drawings, bearing the following general title: "Hammond Northshore Regional Airport: Runway 18-36/13-31 Intersection Reconstruction".

8.6 Addendum Number_____ to_____ .

8.7 CONTRACTOR'S Bid (*Proposal Forms*, inclusive).

There are no Contract Documents other than those listed in this Article 8. The Contract Documents may only be amended, modified or supplemented as provided in Section 40 of the General Provisions.

Article 9 – MISCELLANEOUS

9.1 Terms used in this Agreement which are defined in Section 10 of the General Provisions will have the meanings indicated in the General Provisions.

9.2 No assignment by a party hereto of any rights under or interests in the Contract Documents will be binding on another party hereto without the written consent of the party sought to be bound; and specifically but without limitation monies that may become due and monies that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

9.3 OWNER and CONTRACTOR each binds itself, its partners, successors, assigns and legal representatives to the other party hereto, its partners, successors, assigns and legal representatives in respect of all covenants, agreements and obligations contained in the Contract Documents.

Article 10 – OTHER PROVISIONS

IN WITNESS WHEREOF, OWNER and CONTRACTOR have signed this Agreement in five counterparts. All portions of the Contract Documents have been signed or identified by OWNER and CONTRACTOR or by ENGINEER on their behalf.

This agreement will be effective on _____.

OWNER	CONTRACTOR
City of Hammond	
By: _____	By: _____
	(Corporate Seal)
ATTEST: _____	ATTEST: _____
Address for giving notices:	Address for giving notices:
Hammond Northshore Regional Airport	_____
600 Judge Leon Ford Drive	_____
Hammond, Louisiana 70401	_____

CERTIFICATE OF SECRETARY

AS TO RESOLUTION ADOPTED BY THE BOARD OF DIRECTORS ON _____, I, _____, hereby certify that I am the duly authorized Secretary of _____, charged with keeping the records and the seal of said Corporation, and that the following is a true and correct copy of a resolution adopted at a meeting of the Board of Directors of the Corporation duly held on _____, which resolution is now in full force and effect.

RESOLVED, that _____, (President, Vice President) of _____ _____, is hereby authorized to execute contracts, performance bonds and labor and materials bonds on behalf of the Corporation.

WITNESS my hand as Secretary, and the seal of the Corporation this _____ day of ____ _____, 20___.

Secretary

Sworn to before me this _____ day of _____, 20___.

Notary Public for _____ Parish.

My Commission Expires: _____

EXHIBIT "A"

List of Supplies/Materials that the U.S. Government Has Determined Are Not Produced In the United States In Sufficient and Reasonably Available Quantities And of Sufficient Quality (Jan 1991)

Acatylene, black.
Agar, bulk.
Anise.
Antimony, as metal or oxide.
Asbestos, amosite, chrysolite, and crocidolite.
Bananas.
Bauxite.
Beef, corned, canned.
Beef extract.
Bephenium Hydroxynapthoate.
Bismuth.
Books, trade, text, technical, or scientific; newspapers; pamphlets; magazines; periodicals; printed briefs and films; not printed in the United States and for which domestics editions are not available.
Brazil nuts, unroasted.
Cadmium, ores and flue dust.
Calcium cyanamide.
Capers.
Cashew nuts.
Castor beans and castor oil.
Chalk, English.
chestnuts.
Chicle.
Chrome ore or Chromite.
Cinchona bark.
Cobalt, in cathodes, rondelles, or other primary ore and metal forms.
Cocoa beans.
Coconut and coconut meat, unsweetened, in shredded, desiccated or similarly prepared form.
Coffee, raw or green bean.
Colchicine alkaloid, raw.
Copra.
Cork, wood or bark and waste.
Cover glass, microscope slide.
Cryolite, natural.
Dammar gum.
Diamonds, industrial, stones and abrasives.
Emetine, bulk.
Ergot, crude.
Erthrityl tetranitrate.
Fair linen, altar.
Fibers of the following types: abaca, abace, agava, coir, flax, jute, jute burlaps, palmyra and sisal.Goat and kidskins.
Graphite, natural, crystal-line, crucible grade.
Handsewing needles.
Hemp yarn.
Hog bristles for brushes.
Hyoscine, bulk.
Ipecac, root.
Iodine, crude.
Kaurigum.
Lac.
Leather, sheepskin, hair type.
Lavender oil.
Manganese.
Menthol, natural bulk.
Mica.
Microprocessor chips (brought onto a construction site as separate units for incorporation into building systems during construction or repair and alteration of real property.)
Nickel, primary, in ingots, pigs, shots, cathodes, or similar forms; nickel oxide and nickel salts.
Nitroguanidine (also known as picrite).
Nux vomica, crude.
Oiticica oil.
Olive oil.
Olives (green), pitted or unpitted, or stuffed, in bulk.
Opium, Crude.

Oranges, mandarin, canned.
Petroleum, crude oil, un-finished oils, and finished products (see definitions below).
Pine needle oil.
Platinum and related group metals, refined, as sponge, powder, ingots, or cast bars.
Pyrethrum flowers.
Quartz crystals.
Quebracho.
Quinidine.
Quinine.
Rabbit fur felt.
Radium slats, source and special nuclear materials.
Rosettes.
Rubber, crude and latex.
Rutile.
Santonin, crude.
Secretin.
Shellac.
Silk, raw and unmanufacturered.
Spare and replacement parts for equipment of foreign manufacturer, and for which domestic parts are not available.
Spices and herbs, in bulk.
Sugars, raw.
Swords and scabbards.
Talc, block, steatite.
Tantalum.
Tapioca flour and cassava.
Tartar, crude; tartaric acid and cream of tartar in bulk.
Tea in bulk.
Thread, metallic (gold).
Thyme oil.
Tin in bars, blocks, and pigs.
Triprolidine hydrochloride.
Tungsten.
Vanilla beans.
Venom, cobra.
Wax, canauba.
Woods; logs, veneer, and lumber of the following species: Alaskan yellow cedar, angelique, balsa, ekki, greenhart, lignum vitae, mahogany, and teak.
Yarn, 50 Denier rayon

Petroleum terms are used as follows:

"Crude oil" means crude petroleum, as it is produced at the wellhead, and liquids (under atmospheric conditions) that have been recovered from mixtures of hydrocarbons that existed in a vaporous phase in a reservoir and that are not natural gas products.

"Finished products"means any one or more of the following petroleum oils, or a mixture or combination of these oils, to be used without further processing except blending by mechanical means:

(A) "Asphalt" - a solid or semi-solid cementitious material that (1) gradually liquefies when heated, (2) has bitumins as its predominating constituents, and (3) is obtained in refining crude oil.

(B) "Fuel oil" - a liquid or liquefiable petroleum product burned for lighting or for the generation of heat or power and derived directly or indirectly from crude oil, such as kerosene, range oil, distillate fuel oils, gas oil, diesel fuel, topped crude oil, or residues.

(C) "Gasoline" - a refined petroleum distillate that, by its consumption, is suitable for use as a carburant in internal combustion engines.

(D) "Jet fuel" - a refined petroleum distillate used to fuel jet propulsion engines.

(E) "Liquefied gases" - Hydrocarbon gases recovered from natural gas or produced from petroleum refining and kept under pressure to maintain a liquid state at ambient temperatures.

(F) "Lubricating oil" - a refined petroleum distillate or specially treated petroleum residue used to lessen friction between surfaces.

(G) "Naphtha" - a refined petroleum distillate falling within a distillation range overlapping the higher gasoline and the lower kerosenes.

(H) "Natural gas products" - liquids (under atmospheric conditions) including natural gasoline, that -

(1) are recovered by a process of absorption, adsorption, compression, refrigeration, cycling, or a combination of these processes, from mixtures of hydrocarbons that existed in a vaporous phase in a reservoir, and

(2) when recovered and without processing in a refinery, definitions of products contained in subdivision (B), (C), and (G) above.

(I) "Residual fuel oil" - a topped crude oil or viscous residuum that, as obtained in refining or after blending with other fuel oil, meets or is the equivalent of MILSPEC MIL-F-859 for Navy Special Fuel Oil and any more viscous fuel oil, such as No. 5 or Bunker C.

"Unfinished oils" means one or more of the petroleum oils listed under "Finished products" above, or a mixture or combination of these oils, that are to be further processed other than by blending by mechanical means.

CONSTRUCTION PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):
CITY OF HAMMOND
600 JUDGE LEON FORD DRIVE
HAMMOND, LOUISIANA 70401

CONTRACT
Date:
Amount: **$**
Description (Name and Location):
RUNWAY 18-36/13-31 INTERSECTION RECONSTRUCTION
HAMMOND NORTHSHORE REGIONAL AIRPORT
F.A.A. A.I.P. PROJECT NO. 3-22-0018-019-2016
LADOTD PROJECT NO. H.011864

BOND
Bond Number:
Date (Not earlier than Contract Date):
Amount: **$**
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Performance Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL
Company:

Signature: _____ (Seal)
Name and Title:

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

(Space is provided below for signatures of additional parties, if required.)

Attest: _____
Signature and Title

CONTRACTOR AS PRINCIPAL
Company:

Signature: _____ (Seal)
Name and Title:

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title:

EJCDC No. C-610 (2002 Edition)
Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, and the American Institute of Architects

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

2. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 3.1.

3. If there is no Owner Default, Surety's obligation under this Bond shall arise after:

3.1. Owner has notified Contractor and Surety, at the addresses described in Paragraph 10 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and

3.2. Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 3.1; and

3.3. Owner has agreed to pay the Balance of the Contract Price to:

1. Surety in accordance with the terms of the Contract;

2. Another contractor selected pursuant to Paragraph 4.3 to perform the Contract.

4. When Owner has satisfied the conditions of Paragraph 3, Surety shall promptly and at Surety's expense take one of the following actions:

4.1. Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or

4.2. Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or

4.3. Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and Contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 6 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or

4.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or

2. Deny liability in whole or in part and notify Owner citing reasons therefor.

5. If Surety does not proceed as provided in Paragraph 4 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 4.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.

6. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 4.1, 4.2, or 4.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To a limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

6.1. The responsibilities of Contractor for correction of defective Work and completion of the Contract;

6.2. Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions or failure to act of Surety under Paragraph 4; and

6.3. Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

7. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

8. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

9. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

10. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

11. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

12. Definitions.

12.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.

12.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

12.3. Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.

12.4. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone
Surety Agency or Broker
Owner's Representative (engineer or other party)

CONSTRUCTION PAYMENT BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (Name and Address):

SURETY (Name and Address of Principal Place of Business):

OWNER (Name and Address):
CITY OF HAMMOND
600 JUDGE LEON FORD DRIVE
HAMMOND, LOUISIANA 70401

CONTRACT
Date:
Amount: **$**
Description (Name and Location):
RUNWAY 18-36/13-31 INTERSECTION RECONSTRUCTION
HAMMOND NORTHSHORE REGIONAL AIRPORT
F.A.A. A.I.P. PROJECT NO. 3-22-0018-019-2016
LADOTD PROJECT NO. H.011864

BOND
Bond Number:
Date (Not earlier than Contract Date):
Amount: **$**
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms printed on the reverse side hereof, do each cause this Payment Bond to be duly executed on its behalf by its authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL
Company:

Signature: _____ (Seal)
Name and Title:

(Space is provided below for signatures of additional parties, if required.)

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title

CONTRACTOR AS PRINCIPAL
Company:

Signature: _____ (Seal)
Name and Title:

SURETY

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature and Title
(Attach Power of Attorney)

Attest: _____
Signature and Title:

EJCDC No. C-615 (2002 Edition)
Originally prepared through the joint efforts of the Surety Association of America, Engineers Joint Contract Documents Committee, the Associated General Contractors of America, the American Institute of Architects, the American Subcontractors Association, and the Associated Specialty Contractors.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.

2. With respect to Owner, this obligation shall be null and void if Contractor:
2.1. Promptly makes payment, directly or indirectly, for all sums due Claimants, and

2.2. Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.

3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.

4. Surety shall have no obligation to Claimants under this Bond until:

4.1. Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the addresses described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.

4.2. Claimants who do not have a direct contract with Contractor:

1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and

2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and

3. Not having been paid within the above 30 days, have sent a written notice to Surety and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.

5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety that is sufficient compliance.

6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:

6.1. Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.

6.2. Pay or arrange for payment of any undisputed amounts.

7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.

8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related Subcontracts, purchase orders and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS

15.1. Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor's Subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

15.2. Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3. Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or comply with the other terms thereof.

FOR INFORMATION ONLY – Name, Address and Telephone
Surety Agency or Broker
Owner’s Representative (engineer or other party)

ITEM M-200 Temporary Barricades, Lighting and Facilities

DESCRIPTION

M-200-1.1 This specification outlines the safety procedures and regulations to be followed by the contractor during the course of this Work. This item shall consist of furnishing, installing, relocating, maintaining, and removing of construction barricades, lighting, security, and traffic control, and associated facilities.

Traffic control shall include but not be limited to, traffic control signage, cones, flag-persons, escorts, safety training and any additional traffic control devices that may be required by the construction manager to provide for the safety of the public. All barricades, lights, and cones will be placed as shown on the drawings.

MATERIALS

M-200-2.1 Construction Barricades. The Contractor shall furnish low-profile water-filled barricades/barriers with battery operated flashing lights. Barricades shall be United Safety Authority Multi-Barrier Safety Barricade Model AR-10x96 or approved equal. The lights shall be battery operated and shall be of such a design that they will operate a minimum of 15 hours on a single charge.

M-200-2.2 Traffic Control. Traffic Control shall be performed in full accordance with the latest applicable rules, regulations, requirements and specifications included in the current editions of the following:

US DOT – Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices for streets and Highways (MUTCD)

Louisiana DOTD Standard Specifications for Roads and Bridges Manual Section 713 Temporary Traffic Control.

CONSTRUCTION METHODS

M-200-3.1 Construction Barricades

M-200-3.1.1 Placement of Construction Barricades. Construction barricades shall be placed as shown on the plans and as directed by the engineer. Placement of construction barricades shall be compatible with the contract documents and shall be located to the extent determined by the Engineer. Construction barricades shall be in place prior to commencing construction operations. If the Contractor fails to locate or maintain barricades and lights, it shall be cause for the suspension of work, until proper maintenance and barricade location has been fulfilled to the satisfaction of the Engineer.

Battery operated flashers shall be mounted in the locations provided by the barricade manufacturer, and shall be operative at all times. It shall be the Contractor's responsibility to immediately repair or replace any flasher that is not operating.

The Contractor shall barricade all open excavation areas and paved areas closed to vehicle and aircraft traffic. Barricades shall be placed in a line and spaced as shown on the plans, and as directed by the Engineer.

M-200-3.1.2 Relocation of Construction Barricades. Construction barricades shall be temporarily relocated as shown on the phasing plans and as directed by the Engineer to allow for construction within safety areas during temporary closures of the runway and taxiway pavement. Construction Barricades shall be returned to the designated position in accordance with 150/5370-2F, Operational Safety On Airports During Construction, upon re-opening the runway and taxiway pavement for operations.

M-200-3.2 OPERATIONAL SAFETY

M-200-3.2.1 Operational Safety. All work shall be accomplished in conformance with FAA AC 150/5370-2F, Operational Safety On Airports During Construction. All marking of vehicles and construction equipment shall conform to FAA AC 150/5210-5D, Painting, Marking, and Lighting of Vehicles Used on an Airport.

M-200-3.2.2 Safety Plan. The Contractor shall prepare a safety plan in accordance with FAA AC 150/5370-2F Operational Safety on Airports During Construction.

M-200-3.2.3. Gate Guard. The Contractor shall provide a gate guard stationed at the airfield access gate throughout the duration of the project. The gate guard shall be responsible for maintaining a log of all personnel and vehicles accessing the project site. The guard shall remain at the gate location at all times that the gate is open and unlocked.

M-200-3.2.4. Escorts. In accordance with the security regulations currently in force at the Hammond Northshore Regional Airport, Contractor personnel working inside the AOA will require escorts. The contractor will furnish such escorts during normal working hours. However, should the Contractor wish to work beyond established hours, i.e., weekends, holidays, nights, or extended hours, the Contractor must obtain written permission from the Engineer and Airport. Such costs should be included for payment under bid Item M-200.

M-200-3.2.5. Working Hours. **The normal workday will be Monday through Friday excluding holidays from 7:00 AM to 6:00 PM.** Airport personnel and/or the Engineer must be on the Airport when the CONTACTOR is working inside the Air Operations Area (AOA). Accordingly, should the CONTRACTOR wish to work inside the AOA beyond these established hours, a written request must be presented to the Airport Project Manager and Project Engineer, seventy-two (72) hours prior to desired work start time. Acknowledgement of the request in writing will be provided within forty-eight (48) hours. If it becomes necessary to cancel the request for extended hours such cancellation must be done in writing within twenty-four (24) hours of the proposed extended hour start time. Such costs should be included in the unit bid price for Item M-200, Temporary Barricades, Lighting and Facilities.

METHOD OF MEASUREMENT

M-200-4.1 Measurement for Temporary Barricades, Lighting and Facilities as specified herein will be by Lump Sum.

BASIS OF PAYMENT

M-200-5.1 Payment shall be made at the contract unit price per lump sum for Temporary Barricades, Lighting and Facilities. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item M-200 Temporary Barricades, Lighting and Facilities. – Per Lump Sum

END M-200

Item P-101 Surface Preparation

DESCRIPTION

101-1.1 This item shall consist of preparation of existing pavement surfaces for overlay, surface treatments, removal of existing pavement, and other miscellaneous items. The work shall be accomplished in accordance with these specifications and the applicable drawings.

EQUIPMENT

101-2.1 All equipment shall be specified here and in the following paragraphs or approved by the Engineer. The equipment shall not cause damage to the pavement to remain in place.

CONSTRUCTION

101-3.1 Removal of existing pavement.

a. Concrete pavement. The existing concrete pavement to be removed shall be freed from the pavement to remain by sawing through the complete depth of the slab one foot (30 cm) inside the perimeter of the final removal limits or outside the dowels, whichever is greater when the limits of removal are located on the joints. The pavement between the perimeter of the pavement removal and the saw cut shall be carefully broken up and removed using hand-held jackhammers, weighing 30 pounds (14 kg) or less, or other light-duty equipment which will not cause distress in the pavement which is to remain in place. The Contractor shall have the option of sawing through the dowels at the joint, removing the pavement and installing new dowels. Where the perimeter of the removal limits is not located on the joint and there are no dowels present, then the perimeter shall be saw cut the full depth of the pavement. The pavement inside the saw cut shall be removed by methods suitable to the Engineer which will not cause distress in the pavement which is to remain in place. If the material is to be wasted on the airport site, it shall be reduced to a maximum size designated by the Engineer. The Contractor's removal operation shall not cause damage to cables, utility ducts, pipelines, or drainage structures under the pavement. Concrete slabs that are damaged by under breaking shall be removed. Any damage shall be repaired at the Contractor's expense.

b. Asphalt concrete pavement. ~~Asphalt concrete pavement to be removed shall be cut to the full depth of the bituminous material around the perimeter of the area to be removed. The pavement shall be removed so the joint for each layer of pavement replacement is offset 1 foot (30 cm) from the joint in the preceding layer. This does not apply if the removed pavement is to be replaced with concrete or soil. If the material is to be wasted on the airport site, it shall be broken to a maximum size of **3** inches.~~

101-3.2 Preparation of joints and cracks. ~~Remove all vegetation and debris from cracks to a minimum depth of 1 inch (25 mm). If extensive vegetation exists treat the specific area with a concentrated solution of a water-based herbicide approved by the Engineer. Fill all cracks, ignoring hairline cracks (< 1/4 inch (6 mm) wide) with a crack sealant per ASTM D6690. Wider cracks (over 1-1/2 inch wide (38 mm)), along with soft or sunken spots, indicate that the pavement~~

~~or the pavement base should be repaired or replaced as stated below. Any excess joint or crack sealer on the surface of the pavement shall also be removed from the pavement surface.~~

~~Cracks and joints may be filled with a mixture of emulsified asphalt and aggregate. The aggregate shall consist of limestone, volcanic ash, sand, or other material that will cure to form a hard substance. The combined gradation shall be as shown in the following table.~~

~~Gradation~~

~~Sieve Size~~	~~Percent Passing~~
~~No. 4~~	~~100~~
~~No. 8~~	~~90-100~~
~~No. 16~~	~~65-90~~
~~No. 30~~	~~40-60~~
~~No. 50~~	~~25-42~~
~~No. 100~~	~~15-30~~
~~No. 200~~	~~10-20~~

~~Up to 3% cement can be added to accelerate the set time. The mixture shall not contain more than 20% natural sand without approval in writing from the Engineer.~~

~~The proportions of asphalt emulsion and aggregate shall be determined in the field and may be varied to facilitate construction requirements. Normally, these proportions will be approximately one part asphalt emulsion to five parts aggregate by volume. The material shall be poured or placed into the joints or cracks and compacted to form a voidless mass. The joint or crack shall be filled within 0 to 1/8 inches (0-3 mm) of the surface. Any material spilled outside the width of the joint shall be removed from the pavement surface prior to constructing the overlay. Where concrete overlays are to be constructed, only the excess joint material on the pavement surface and vegetation in the joints need to be removed.~~

101-3.3 Removal of paint and rubber. All paint and rubber over 1 foot (30 cm) wide that will affect the bond of the new overlay shall be removed from the surface of the existing pavement. Chemicals, high-pressure water, heater scarifier (asphaltic concrete only), cold milling, or sandblasting may be used. Any methods used shall not cause major damage to the pavement. Major damage is defined as changing the properties of the pavement or removing pavement over 1/8 inch (3 mm) deep. If chemicals are used, they shall comply with the state's environmental protection regulations. No material shall be deposited on the runway shoulders. All wastes shall be disposed of in areas indicated in this specification or shown on the plans.

101-3.4 Concrete spall or failed asphaltic concrete pavement repair.

a. Repair of concrete spalls in areas to be overlaid with asphalt. ~~The Contractors shall repair all spalled concrete as shown on the plans or as directed by the Engineer. The perimeter of the repair shall be saw cut a minimum of 2 inches (50 mm) outside the affected area and 2 inches (50 mm) deep. The deteriorated material shall be removed to a depth where the existing material is firm or cannot be easily removed with a geologist pick. The removed area shall be filled with asphaltic concrete with a minimum Marshall stability of 1,200 lbs (544 kg) and maximum flow of 20 (units of 0.01 in). The material shall be compacted with equipment approved by the Engineer until the material is dense and no movement or marks are visible. The material shall not be placed in lifts over 4 inches (100 mm) in depth. This method of repair applies only to pavement to be overlaid.~~

b. Asphaltic concrete pavement repair. The failed areas shall be removed as specified in paragraph 101-3.1b. All failed material including surface, base course, subbase course, and subgrade shall be removed. The base course and subbase shall be replaced if it has been infiltrated with clay, silt, or other material affecting the load-bearing capacity. Materials and methods of construction shall comply with the other applicable sections of this specification.

101-3.5 Cold milling. Milling shall be performed with a power-operated milling machine or grinder, capable of producing a finished surface that provides a good bond to the new overlay. The milling machine or grinder shall operate without tearing or gouging the under laying surface. The milling machine or grinder shall be equipped with automatic grade and slope controls. All millings shall be removed and disposed of off Airport property, unless otherwise specified. If the Contractor mills or grinds deeper or wider than the plans specify, the Contractor shall replace the material that was removed with new material at no additional cost to the Owner.

a. Patching. The milling machine shall be capable of cutting a vertical edge without chipping or spalling the edges of the remaining pavement and it shall have a positive method of controlling the depth of cut. The Engineer shall layout the area to be milled with a straightedge in increments of 1 foot (30 cm) widths. The area to be milled shall cover only the failed area. Any excessive area that is milled because the Contractor doesn't have the appropriate milling machine, or areas that are damaged because of his negligence, shall not be included in the measurement for payment.

b. Profiling, grade correction, or surface correction. The milling machine shall have a minimum width of 7 feet and it shall be equipped with electronic grade control devices that will cut the surface to the grade and tolerances specified. The machine shall cut vertical edges. A positive method of dust control shall be provided. The machine shall have the ability to remove the millings or cuttings from the pavement and load them into a truck.

c. Clean-up. The Contractor shall sweep the milled surface daily and immediately after the milling until all residual aggregate and fines are removed from the pavement surface. Prior to paving, the Contractor shall wet down the milled pavement and thoroughly sweep and/or blow the surface to remove any remaining aggregate or fines.

101-3.6. Preparation of asphalt pavement surfaces. Existing asphalt pavements indicated to be treated with a surface treatment shall be prepared as follows:

a. Patch asphalt pavement surfaces that have been softened by petroleum derivatives or have failed due to any other cause. Remove damaged pavement to the full depth of the damage and replace with new asphalt concrete similar to that of the existing pavement in accordance with paragraph 101-3.4.

b. Repair joints and cracks in accordance with paragraph 101-3.2.

c. Remove oil or grease that has not penetrated the asphalt pavement by scraping or by scrubbing with a detergent, then wash thoroughly with clean water. After cleaning, treat these areas with an oil spot primer.

d. Clean pavement surface immediately prior to placing the surface treatment by sweeping, flushing well with water leaving no standing water, or a combination of both, so that it is free of dust, dirt, grease, vegetation, oil or any type of objectionable surface film.

101-3.7 Maintenance. The Contractor shall perform all maintenance work necessary to keep the pavement in a satisfactory condition until the full section is complete and accepted by the Engineer. The surface shall be kept clean and free from foreign material. The pavement shall be properly drained at all times. If cleaning is necessary or if the pavement becomes disturbed, any work repairs necessary shall be performed at the Contractor's expense.

101-3.8 Preparation of Joints in Rigid Pavement.

101-3.8.1 Removal of Existing Joint Sealant. All existing joint sealants will be removed by plowing or use of hand tools. Any remaining sealant and or debris will be removed by use of wire brushes or other tools as necessary. Resaw joints removing no more than 1/16 inch (2 mm) from each joint face. Immediately after sawing, flush out joint with water and other tools as necessary to completely remove the slurry. Allow sufficient time to dry out joints prior to sealing.

101-3.8.2 Cleaning prior to sealing. Immediately before sealing, joints shall be cleaned by removing any remaining laitance and other foreign material. Clean joints by sandblasting, or other method approved by the Engineer, on each joint face with nozzle held at an angle and not more than three inches (75 mm) from face. Following sandblasting, clean joints with air free of oil and water. Joint surfaces will be surface-dry prior to installation of sealant.

101-3.9 Preparation of Cracks in Flexible Pavement.

101-3.9.1 Preparation of Crack. Widen crack with router or random crack saw by removing a minimum of 1/16 inch (2 mm) from each side of crack. Immediately before sealing, joints will be blown out with a hot air lance combined with oil and water-free compressed air.

101-3.9.2 Removal of Existing Sealant. Existing sealants will be removed by routing **or** random crack saw. Following routing or sawing any remaining debris will be removed by use of a hot lance combined with oil and water-free compressed air.

METHOD OF MEASUREMENT

101-4.1 Pavement removal. The unit of measurement for pavement removal shall be the number of square yards removed by the Contractor. Any pavement removed outside the limits of removal because the pavement was damaged by negligence on the part of the Contractor shall not be included in the measurement for payment.

BASIS OF PAYMENT

101-5.1 Payment. Payment shall be made at contract unit price for the unit of measurement as specified above. This price shall be full compensation for furnishing all materials and for all preparation, hauling, and placing of the material and for all labor, equipment, tools, and incidentals necessary to complete this item.

Item P 101.1	Pavement Removal, 6-Inch Concrete – Per Square Yard
Item P 101.2	Pavement Removal, 4-Inch Asphalt – Per Square Yard

MATERIAL REQUIREMENTS

ASTM D6690	Standard Specification For Joint And Crack Sealants, Hot Applied, For Concrete And Asphalt Pavements

END OF ITEM P-101

Item P-152 Excavation, Subgrade, and Embankment

DESCRIPTION

152-1.1 This item covers excavation, disposal, placement, and compaction of all materials within the limits of the work required to construct safety areas, runways, taxiways, aprons, and intermediate areas as well as other areas for drainage, building construction, parking, or other purposes in accordance with these specifications and in conformity to the dimensions and typical sections shown on the plans.

152-1.2 Classification. All material excavated shall be classified as defined below:

a. Unclassified excavation. Unclassified excavation shall consist of the excavation and disposal of all material, regardless of its nature.

152-1.3 Unsuitable excavation. Any material containing vegetable or organic matter, such as muck, peat, organic silt, or sod shall be considered unsuitable for use in embankment construction. Material, suitable for topsoil may be used on the embankment slope when approved by the Engineer.

CONSTRUCTION METHODS

152-2.1 General. Before beginning excavation, grading, and embankment operations in any area, the area shall be completely cleared and grubbed in accordance with Item P-151.

The suitability of material to be placed in embankments shall be subject to approval by the Engineer. All unsuitable material shall be disposed of in waste areas shown on the plans. All waste areas shall be graded to allow positive drainage of the area and of adjacent areas. The surface elevation of waste areas shall not extend above the surface elevation of adjacent usable areas of the airport, unless specified on the plans or approved by the Engineer.

When the Contractor's excavating operations encounter artifacts of historical or archaeological significance, the operations shall be temporarily discontinued and the Engineer notified per subsection 70-20. At the direction of the Engineer, the Contractor shall excavate the site in such a manner as to preserve the artifacts encountered and allow for their removal. Such excavation will be paid for as extra work.

Those areas outside of the limits of the pavement areas where the top layer of soil material has become compacted by hauling or other Contractor activities shall be scarified and disked to a depth of 4 inches (100 mm), to loosen and pulverize the soil.

If it is necessary to interrupt existing surface drainage, sewers or under-drainage, conduits, utilities, or similar underground structures, the Contractor shall be responsible for and shall take all necessary precautions to preserve them or provide temporary services. When such facilities are encountered, the Contractor shall notify the Engineer, who shall arrange for their removal if necessary. The Contractor, at his or her expense, shall satisfactorily repair or pay the cost of all damage to such facilities or structures that may result from any of the Contractor's operations during the period of the contract.

152-2.2 Excavation. No excavation shall be started until the work has been staked out by the Contractor and the Engineer has obtained from the Contractor, the survey notes of the elevations and measurements of the ground surface. All areas to be excavated shall be stripped of vegetation and topsoil. Topsoil shall be stockpiled for future use in areas designated on the plans or by the Engineer. All suitable excavated material shall be used in the formation of embankment, subgrade, or other purposes shown on the plans. All unsuitable material shall be disposed of as shown on the plans.

When the volume of the excavation exceeds that required to construct the embankments to the grades indicated, the excess shall be used to grade the areas of ultimate development or disposed as directed by the Engineer. When the volume of excavation is not sufficient for constructing the embankments to the grades indicated, the deficiency shall be obtained from borrow areas.

The grade shall be maintained so that the surface is well drained at all times. When necessary, temporary drains and drainage ditches shall be installed to intercept or divert surface water that may affect the work.

a. Selective grading. When selective grading is indicated on the plans, the more suitable material designated by the Engineer shall be used in constructing the embankment or in capping the pavement subgrade. If, at the time of excavation, it is not possible to place this material in its final location, it shall be stockpiled in approved areas so that it can be measured for payment as specified in paragraph 152-3.3.

b. Undercutting. Rock, shale, hardpan, loose rock, boulders, or other material unsatisfactory for safety areas, subgrades, roads, shoulders, or any areas intended for turf shall be excavated to a minimum depth of 12 inches (300 mm) below the subgrade or to the depth specified by the Engineer. Muck, peat, matted roots, or other yielding material, unsatisfactory for subgrade foundation, shall be removed to the depth specified. Unsuitable materials shall be disposed of off the airport. The cost is incidental to this item. This excavated material shall be paid for at the contract unit price per cubic yard for **undercut excavation**. The excavated area shall be backfilled with suitable material obtained from the grading operations or borrow areas and compacted to specified densities. The necessary backfill will constitute a part of the embankment. Where rock cuts are made, backfill with select material. Any pockets created in the rock surface shall be drained in accordance with the details shown on the plans.

c. Overbreak. Overbreak, including slides, is that portion of any material displaced or loosened beyond the finished work as planned or authorized by the Engineer. All overbreak shall be graded or removed by the Contractor and disposed of as directed by the Engineer. The Engineer shall determine if the displacement of such material was unavoidable and his or her decision shall be final. Payment will not be made for the removal and disposal of overbreak that the Engineer determines as avoidable. Unavoidable overbreak will be classified as “Unclassified Excavation.”

d. Removal of utilities. The removal of existing structures and utilities required to permit the orderly progress of work will be accomplished by someone other than the Contractor; for example, the utility unless otherwise shown on the plans. All existing foundations shall be excavated at least 2 feet (60 cm) below the top of subgrade or as indicated on the plans, and the material disposed of as directed by the Engineer. All foundations thus excavated shall be backfilled with suitable material and compacted as specified.

e. Compaction requirements. The subgrade under areas to be paved shall be compacted to a depth of **7 inches** and to a density of not less than **95** percent of the maximum density as determined by ASTM D1557. The material to be compacted shall be within ±2% of optimum

moisture content before being rolled to obtain the prescribed compaction (except for expansive soils).

The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. Stones or rock fragments larger than 4 inches (100 mm) in their greatest dimension will not be permitted in the top 6 inches (150 mm) of the subgrade. The finished grading operations, conforming to the typical cross-section, shall be completed and maintained at least 1,000 feet (300 m) ahead of the paving operations or as directed by the Engineer.

All loose or protruding rocks on the back slopes of cuts shall be pried loose or otherwise removed to the slope finished grade line. All cut-and-fill slopes shall be uniformly dressed to the slope, cross-section, and alignment shown on the plans or as directed by the Engineer.

Blasting shall not be allowed.

f. Proof rolling. After compaction is completed, the subgrade area shall be proof rolled with a heavy pneumatic-tired roller having four or more tires abreast, each tire loaded to a minimum of 30,000 pounds (13.6 metric tons) and inflated to a minimum of 125 psi (0.861 MPa) in the presence of the Engineer. Apply a minimum of 90% coverage, or as specified by the Engineer, to all paved areas. A coverage is defined as the application of one tire print over the designated area. Soft areas of subgrade that deflect more than 1 inch (25 mm) or show permanent deformation greater than 1 inch (25 mm) shall be removed and replaced with suitable material or reworked to conform to the moisture content and compaction requirements in accordance with these specifications.

152-2.3 Borrow excavation. Borrow areas within the airport property are indicated on the plans. Borrow excavation shall be made only at these designated locations and within the horizontal and vertical limits as staked or as directed by the Engineer.

When borrow sources are outside the boundaries of the airport property, it shall be the Contractor's responsibility to locate and obtain the borrow sources, subject to the approval of the Engineer. The Contractor shall notify the Engineer at least 15 days prior to beginning the excavation so necessary measurements and tests can be made. All borrow pits shall be opened up to expose the various strata of acceptable material to allow obtaining a uniform product. All unsuitable material shall be disposed of by the Contractor. Borrow pits shall be excavated to regular lines to permit accurate measurements, and they shall be drained and left in a neat, presentable condition with all slopes dressed uniformly.

152-2.4 Drainage excavation. Drainage excavation shall consist of excavating for drainage ditches such as intercepting; inlet or outlet ditches; for temporary levee construction; or for any other type as designed or as shown on the plans. The work shall be performed in sequence with the other construction. Intercepting ditches shall be constructed prior to starting adjacent excavation operations. All satisfactory material shall be placed in embankment fills; unsuitable material shall be placed in designated waste areas or as directed by the Engineer. All necessary work shall be performed true to final line, elevation, and cross-section. The Contractor shall maintain ditches constructed on the project to the required cross-section and shall keep them free of debris or obstructions until the project is accepted.

152-2.5 Preparation of embankment area. Where an embankment is to be constructed to a height of 4 feet (1.2 m) or less, all sod and vegetative matter shall be removed from the surface upon which the embankment is to be placed. The cleared surface shall be broken up by plowing or scarifying to a minimum depth of 6 inches (150 mm) and shall then be compacted as indicated in paragraph 152-2.6. When the height of fill is greater than 4 feet (1.2 m), sod not required to be

removed shall be thoroughly disked and recompacted to the density of the surrounding ground before construction of embankment.

Sloped surfaces steeper than one (1) vertical to four (4) horizontal shall be plowed, stepped, benched, or broken up so that the fill material will bond with the existing material. When the subgrade is part fill and part excavation or natural ground, the excavated or natural ground portion shall be scarified to a depth of 12 inches (300 mm) and compacted as specified for the adjacent fill.

No direct payment shall be made for the work performed under this section. The necessary clearing and grubbing and the quantity of excavation removed will be paid for under the respective items of work.

152-2.6 Formation of embankments. Embankments shall be formed in successive horizontal layers of not more than 8 inches (200 mm) in loose depth for the full width of the cross-section, unless otherwise approved by the Engineer.

The layers shall be placed, to produce a soil structure as shown on the typical cross-section or as directed by the Engineer. Materials such as brush, hedge, roots, stumps, grass and other organic matter, shall not be incorporated or buried in the embankment.

Earthwork operations shall be suspended at any time when satisfactory results cannot be obtained because of rain, freezing, or other unsatisfactory weather conditions in the field. Frozen material shall not be placed in the embankment nor shall embankment be placed upon frozen material. Material shall not be placed on surfaces that are muddy, frozen, or contain frost. The Contractor shall drag, blade, or slope the embankment to provide surface drainage at all times.

The material in each layer shall be within ±2% of optimum moisture content before rolling to obtain the prescribed compaction. To achieve a uniform moisture content throughout the layer, the material shall be moistened or aerated as necessary. Samples of all embankment materials for testing, both before and after placement and compaction, will be taken for each **1000 square yards**. Based on these tests, the Contractor shall make the necessary corrections and adjustments in methods, materials or moisture content to achieve the specified embankment density.

Rolling operations shall be continued until the embankment is compacted to not less than 95% of maximum density for noncohesive soils, and 90% of maximum density for cohesive soils as determined by ASTM **D1557**. Under all areas to be paved, the embankments shall be compacted to a depth of **7 inches** and to a density of not less than **95** percent of the maximum density as determined by ASTM **D1557**.

On all areas outside of the pavement areas, no compaction will be required on the top 4 inches (100 mm).

The in-place field density shall be determined in accordance with ASTM 6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The Contractor's laboratory shall perform all density tests in the Engineer's presence and provide the test results upon completion to the Engineer for acceptance.

Compaction areas shall be kept separate, and no layer shall be covered by another layer until the proper density is obtained.

During construction of the embankment, the Contractor shall route all construction equipment evenly over the entire width of the embankment as each layer is placed. Layer placement shall begin in the deepest portion of the embankment fill. As placement progresses, the layers shall be constructed approximately parallel to the finished pavement grade line.

When rock and other embankment material are excavated at approximately the same time, the rock shall be incorporated into the outer portion of the embankment and the other material shall be incorporated under the future paved areas. Stones or fragmentary rock larger than 4 inches (100 mm) in their greatest dimensions will not be allowed in the top 6 inches (150 mm) of the subgrade. Rockfill shall be brought up in layers as specified or as directed by the Engineer and the finer material shall be used to fill the voids with forming a dense, compact mass. Rock or boulders shall not be disposed of outside the excavation or embankment areas, except at places and in the manner designated on the plans or by the Engineer.

When the excavated material consists predominantly of rock fragments of such size that the material cannot be placed in layers of the prescribed thickness without crushing, pulverizing or further breaking down the pieces, such material may be placed in the embankment as directed in layers not exceeding 2 feet (60 cm) in thickness. Each layer shall be leveled and smoothed with suitable equipment by distribution of spalls and finer fragments of rock. The layer shall not be constructed above an elevation 4 feet (1.2 m) below the finished subgrade.

There will be no separate measurement of payment for compacted embankment. All costs incidental to placing in layers, compacting, discing, watering, mixing, sloping, and other operations necessary for construction of embankments will be included in the contract price for excavation, borrow, or other items.

152-2.7 Finishing and protection of subgrade. After the subgrade is substantially complete, the Contractor shall remove any soft or other unstable material over the full width of the subgrade that will not compact properly. All low areas, holes or depressions in the subgrade shall be brought to grade with suitable select material. Scarifying, blading, rolling and other methods shall be performed to provide a thoroughly compacted subgrade shaped to the lines and grades shown on the plans.

Grading of the subgrade shall be performed so that it will drain readily. The Contractor shall protect the subgrade from damage and limit hauling over the finished subgrade to only traffic essential for construction purposes. All ruts or rough places that develop in the completed subgrade shall be graded and recompacted.

No subbase, base, or surface course shall be placed on the subgrade until the subgrade has been approved by the Engineer.

152-2.8 Haul. All hauling will be considered a necessary and incidental part of the work. The Contractor shall include the cost 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.

152-2.9 Tolerances. 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 12-foot (3.7-m) straightedge applied parallel and at right angles to the centerline, it shall not show any deviation in excess of 1/2 inch (12 mm), or shall not be more than 0.05 feet (15 mm) from true grade as established by grade hubs. Any deviation in excess of these amounts shall be corrected by loosening, adding, or removing materials; reshaping; and recompacting.

On safety areas, intermediate and other designated areas, the surface shall be of such smoothness that it will not vary more than 0.10 feet (3 mm) from true grade as established by grade hubs. Any deviation in excess of this amount shall be corrected by loosening, adding or removing materials, and reshaping.

152-2.10 Topsoil. When topsoil is specified or required as shown on the plans or under Item T-905, it shall be salvaged from stripping or other grading operations. The topsoil shall meet the requirements of Item T-905. If, at the time of excavation or stripping, the topsoil cannot be placed

in its final section of finished construction, the material shall be stockpiled at approved locations. Stockpiles shall not be placed within **400** feet of runway pavement or **93** feet of taxiway pavement and shall not be placed on areas that subsequently will require any excavation or embankment fill. If, in the judgment of the Engineer, it is practical to place the salvaged topsoil at the time of excavation or stripping, the material shall be placed in its final position without stockpiling or further rehandling.

Upon completion of grading operations, stockpiled topsoil shall be handled and placed as directed, or as required in Item T-905.

No direct payment will be made for topsoil under Item P-152. The quantity removed and placed directly or stockpiled shall be paid for at the contract unit price per cubic yard for "Unclassified Excavation."

When stockpiling of topsoil and later rehandling of such material is directed by the Engineer, the material so rehandled shall be paid for at the contract unit price per cubic yard for "topsoiling," as provided in Item T-905.

METHOD OF MEASUREMENT

152-3.1 The quantity of excavation to be paid for shall be the number of cubic yards (cubic meters) measured in its original position. Measurement shall not include the quantity of materials excavated without authorization beyond normal slope lines, or the quantity of material used for purposes other than those directed.

~~**152-3.2** Borrow material shall be paid for on the basis of the number of cubic yards (cubic meters) measured in its original position at the borrow pit.~~

~~**152-3.3** Stockpiled material shall be paid for on the basis of the number of cubic yards (cubic meters) measured in the stockpiled position.~~

152-3.4 For payment specified by the cubic yard (cubic meter), measurement for all excavation shall be computed by the average end area method. The end area is that bound by the original ground line established by field cross-sections and the final theoretical pay line established by excavation cross-sections shown on the plans, subject to verification by the Engineer. After completion of all excavation operations and prior to the placing of base or subbase material, the final excavation shall be verified by the Engineer by means of field cross-sections taken randomly at intervals not exceeding 500 linear feet (150 m).

BASIS OF PAYMENT

152-4.1 "Unclassified excavation" payment shall be made at the contract unit price per cubic yard (cubic meter). This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

152-4.2 "Undercut excavation" payment shall be made at the contract unit price per cubic yard (cubic meter). This price shall be full compensation for furnishing all materials, labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-152.1	Unclassified Excavation - per cubic yard
Item P-152.2	Undercut Excavation - per cubic yard

TESTING REQUIREMENTS

ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2700 kN-m/m^3))
ASTM D2167	Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D6938	Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

END OF ITEM P-152

Item P-154 Subbase Course

DESCRIPTION

154-1.1 This item shall consist of a subbase course composed of granular materials constructed on a prepared subgrade or underlying course in accordance with these specifications, and in conformity with the dimensions and typical cross-section shown on the plans.

MATERIALS

154-2.1 Materials. The subbase material shall consist of hard durable particles or fragments of granular aggregates. This material will be mixed or blended with fine sand, clay, stone dust, or other similar binding or filler materials produced from approved sources. This mixture must be uniform and shall comply with the requirements of these specifications as to gradation, soil constants, and shall be capable of being compacted into a dense and stable subbase. The material shall be free from vegetative matter, lumps or excessive amounts of clay, and other objectionable or foreign substances. Pit-run material may be used, provided the material meets the gradation requirements specified.

Gradation Requirements

Sieve designation (square openings) as per ASTM C136 and ASTM D422	**Percentage by weight passing sieves**
3 inch (75 mm)	100
No. 10 (2.0 mm)	20-100
No. 40 (0.450 mm)	5-60
No. 200 (0.075 mm)	0-8

The portion of the material passing the No. 40 (0.450 mm) sieve shall have a liquid limit of not more than 25 and a plasticity index of not more than six (6) when tested in accordance with ASTM D4318.

154-2.2 Sampling and testing. Material used on the project shall be sampled per ASTM D75 and tested per ASTM C136 and ASTM C117. Results shall be furnished to the Engineer by the Contractor prior to the start of construction and once per day during construction.

CONSTRUCTION METHODS

154-3.1 General. The subbase course shall be placed where designated on the plans or as directed by the Engineer. The material shall be shaped and thoroughly compacted within the tolerances specified.

Granular subbases which, due to grain sizes or shapes, are not sufficiently stable to support the construction equipment without movement, shall be mechanically stabilized to the depth necessary to provide stability as directed by the Engineer. The mechanical stabilization shall

include the addition of a fine-grained medium to bind the particles of the subbase material sufficiently to furnish a bearing strength, so the course will not deform under construction equipment traffic. The addition of the binding medium to the subbase material shall not increase the soil constants of that material above the specified limits.

154-3.2 Operation in pits. The subbase material shall be obtained from pits or sources that have been approved by the Engineer. The material in the pits shall be excavated and handled to produce a uniform and satisfactory product. All work involved in clearing and stripping pits and handling unsuitable material encountered shall be performed by the Contractor. The cost of this work is incidental to this item.

154-3.3 Preparing underlying course. Prior to constructing the subbase course, clean the underlying course or subgrade of all foreign substances. The surface of the underlying course or subgrade shall meet specified compaction and surface tolerances. Correct ruts, or soft yielding spots, in the underlying courses and subgrade areas having inadequate compaction and deviations of the surface from the specified requirements by loosening and removing soft or unsatisfactory material and by adding approved material, reshaping to line and grade, and recompacting to specified density requirements. For cohesionless underlying courses or subgrades containing sands or gravels, as defined in ASTM D2487, the surface shall be stabilized prior to placement of the overlying course. Accomplish stabilization by mixing the overlying course material into the underlying course, and compacting by approved methods. The stabilized material shall be considered as part of the underlying course and shall meet all requirements for the underlying course. The finished underlying course shall not be disturbed by traffic or other operations and shall be maintained in a satisfactory condition until the overlying course is placed. The course shall be checked and accepted by the Engineer before placing and spreading operations are started.

To protect the subgrade and to ensure proper drainage, the spreading of the subbase shall begin along the centerline of the pavement on a crowned section or on the high side of pavements with a one-way slope.

154-3.4 Materials acceptance in existing condition. When the entire subbase material is in a uniform and satisfactory condition at approximately the required moisture content, the approved material may be moved directly to the spreading equipment for placing. The material may be obtained from gravel pits, stockpiles, or may be produced from a crushing and screening plant with proper blending. The materials from these sources shall meet the requirements for gradation, quality, and consistency. The intent of the specifications is to secure materials that will not require further mixing. The moisture content of the material shall be approximately that required to obtain maximum density. Any minor deficiency or excess in moisture content may be corrected by surface sprinkling or by aeration. Some mixing or aeration may be required prior to rolling to obtain the required moisture content. Blading or dragging, if necessary, shall be performed to obtain a smooth uniform surface true to line and grade.

154-3.5 Plant mixing. When materials from several sources will be blended and mixed, the subbase material shall be processed in a central mixing plant. The subbase material, together with any blended material, shall be thoroughly mixed with the required amount of water. After the mixing is complete, the material shall be transported to and spread on the underlying course without undue loss of moisture content.

154-3.6 General methods for placing. The subbase course shall be constructed in layers of not less than inches (75 mm) nor more than 8 inches (200 mm) of compacted thickness. The subbase material shall be deposited and spread evenly to a uniform thickness and width. The material, as spread, shall be of uniform gradation with no pockets of fine or coarse materials. The subbase, unless otherwise permitted by the Engineer, shall not be spread more than 2,000 square yards

(1700 sq m) in advance of the rolling. Any necessary sprinkling shall be kept within this limit. No material shall be placed in snow or on a soft, muddy, or frozen course.

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

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

154-3.7 Finishing and compacting. After spreading or mixing, the subbase material shall be thoroughly compacted by rolling and sprinkling, when necessary. Sufficient rollers shall be furnished to adequately handle the rate of placing and spreading of the subbase course.

The field density of the compacted material shall be at least 100% of the maximum density of laboratory specimens prepared from samples of the subbase material delivered to the jobsite. The laboratory specimens shall be compacted and tested in accordance with ASTM D1557. The in-place field density shall be determined in accordance with ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. The moisture content of the material at the start of compaction shall be within ±2% of the optimum moisture content. All testing shall be done by the Contractor's laboratory in the presence of the Engineer, and density test results shall be furnished upon completion to the Engineer for acceptance determination.

The course shall not be rolled when the underlying course is soft or yielding or when the rolling causes undulation in the subbase. When the rolling develops irregularities that exceed 3/8 inch (9 mm) when tested with a 12 feet (3.7 m) straightedge, the irregular surface shall be loosened and then refilled with the same kind of material as that used in constructing the course and again rolled as required above.

Along places inaccessible to rollers, the subbase material shall be tamped thoroughly with mechanical or hand tampers.

Sprinkling during rolling, if necessary, shall be by equipment approved by the Engineer. Water shall not be added in manner or quantity that allows free water to reach the underlying layer and cause it to become soft.

154-3.8 Surface tolerance. The surface of the top layer shall show no deviations in excess of 3/8 inch (9 mm) when tested with a 12-foot (3.7-m) straightedge. Take measurements in successive positions parallel to the centerline of the area to be paved. Measurements shall also be taken perpendicular to the centerline at **50** foot intervals. Correct deviations exceeding this amount by removing material and replacing with new material, or by reworking existing material and compacting it to meet these specifications.

154-3.9 Thickness control. The completed thickness of the course(s) shall be in accordance with the thickness and grade indicated on the drawings. The completed course shall not be more than 1/2 inch (12 mm) deficient in thickness nor more than 1/2 inch (12 mm) above or below the established grade. Where any of these tolerances are exceeded, correct such areas by scarifying, adding new material of proper gradation or removing material, and compacting, as directed. Where the measured thickness is 1/2 inch (12 mm) or more thicker than shown, the course will be considered as conforming with the specified thickness requirements plus 1/2 inch (12 mm). The average job thickness shall be the average of the job measurements as specified above but within 1/4 inch (6 mm) of the thickness shown. The thickness of the completed subbase course shall be determined by depth tests or sample holes taken at intervals so each test shall represent no more than 500 square yards.

154-3.10 Protection. Work on subbase course shall not be conducted during freezing temperatures nor when the subgrade is wet. When the subbase material contains frozen material or when the underlying course is frozen, the construction shall be stopped. The Contractor shall protect and maintain the subgrade from yielding until the subbase is accepted.

154-3.11 Maintenance. The Contractor shall maintain the completed course in a satisfactory condition until accepted by the Engineer.

METHOD OF MEASUREMENT

154-4.1 Subbase course shall be measured by the number of square yards of subbase course material placed, compacted, and accepted in the completed course. The quantity of subbase course material shall be measured in final position based upon depth tests or cores taken as directed by the Engineer, at the rate of one (1) depth test for each 500 square yard of subbase course. On individual depth measurements, thicknesses more than 1/2 inch (12 mm) in excess of that shown on the plans shall be considered as the specified thickness plus 1/2 inch (12 mm) in computing the yardage for payment. Subbase materials shall not be included in any other excavation quantities.

BASIS OF PAYMENT

154-5.1 Payment shall be made at the contract unit price per square yard for subbase course. This price shall be full compensation for furnishing all materials; for all preparation, hauling, and placing of these materials; and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-154	Subbase Course - per square yard

TESTING REQUIREMENTS

ASTM C117	Standard Test Method for Materials Finer Than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D422	Standard Test Method for Particle-Size Analysis of Soils
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2,700 kN-m/m^3))
ASTM D2487	Standard Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)

ASTM D4253	Standard Test Methods for Maximum Index Density and Unit Weight of Soils Using a Vibratory Table
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4718	Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

END OF ITEM P-154

Item P-156 Temporary Air and Water Pollution, Soil Erosion, and Siltation Control

DESCRIPTION

156-1.1 This item shall consist of temporary control measures as shown on the plans or as ordered by the Engineer during the life of a contract to control water pollution, soil erosion, and siltation through the use of silt fences, berms, dikes, dams, sediment basins, fiber mats, gravel, mulches, grasses, slope drains, and other erosion control devices or methods.

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

Temporary control may include work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas, and temporary plant sites.

Temporary control measures shall be design, installed and maintained to minimize the creation of wildlife attractants that have the potential to attract hazardous wildlife on or near public-use airports.

MATERIALS

156-2.1 Grass. Grass that will not compete with the grasses sown later for permanent cover per Item T-901shall be a quick-growing species (such as ryegrass, Italian ryegrass, or cereal grasses) suitable to the area providing a temporary cover. Selected grass species shall not create a wildlife attractant.

156-2.2 Mulches. Mulches may be hay, straw, fiber mats, netting, bark, wood chips, or other suitable material reasonably clean and free of noxious weeds and deleterious materials per ItemT-908. Mulches shall not create a wildlife attractant.

156-2.3 Fertilizer. Fertilizer shall be a standard commercial grade and shall conform to all Federal and state regulations and to the standards of the Association of Official Agricultural Chemists.

156-2.4 Slope drains. Slope drains may be constructed of pipe, fiber mats, rubble, Portland cement concrete, bituminous concrete, or other materials that will adequately control erosion.

156-2.5 Silt fence. The silt fence shall consist of polymeric filaments which are formed into a stable network such that filaments retain their relative positions. Synthetic filter fabric shall contain ultraviolet ray inhibitors and stabilizers to provide a minimum of six months of expected usable construction life. Silt fence shall meet the requirements of ASTM D6461.

156-2.6 Other. All other materials shall meet commercial grade standards and shall be approved by the Engineer before being incorporated into the project.

CONSTRUCTION REQUIREMENTS

156-3.1 General. In the event of conflict between these requirements and pollution control laws, rules, or regulations of other Federal, state, or local agencies, the more restrictive laws, rules, or regulations shall apply.

The Engineer shall be responsible for assuring compliance to the extent that construction practices, construction operations, and construction work are involved.

156-3.2 Schedule. Prior to the start of construction, the Contractor shall submit schedules for accomplishment of temporary and permanent erosion control work for clearing and grubbing; grading; construction; paving; and structures at watercourses. The Contractor shall also submit a proposed method of erosion and dust control on haul roads and borrow pits and a plan for disposal of waste materials. Work shall not be started until the erosion control schedules and methods of operation for the applicable construction have been accepted by the Engineer.

Typical methods of controlling dust and other air pollutants may include among others:

- Exposing the minimum area of erodible earth.
- Applying temporary mulch with or without seeding.
- Using water sprinkler trucks.
- Using covered haul trucks.
- Using dust palliatives or penetration asphalt on haul roads.
- Using plastic sheet coverings.

156-3.3 Construction details. The Contractor will be required to incorporate all permanent erosion control features into the project at the earliest practicable time as outlined in the accepted schedule. Except where future construction operations will damage slopes, the Contractor shall perform the permanent seeding and mulching and other specified slope protection work in stages, as soon as substantial areas of exposed slopes can be made available. Temporary erosion and pollution control measures will be used to correct conditions that develop during construction that were not foreseen during the design stage; that are needed prior to installation of permanent control features; or that are needed temporarily to control erosion that develops during normal construction practices, but are not associated with permanent control features on the project.

Where erosion may be a problem, clearing and grubbing operations should be scheduled and performed so that grading operations and permanent erosion control features can follow immediately if project conditions permit; otherwise, temporary erosion control measures may be required.

The Engineer shall limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with the Contractor's capability and progress in keeping the finish grading, mulching, seeding, and other such permanent control measures current with the accepted schedule. If seasonal limitations make such coordination unrealistic, temporary erosion control measures shall be taken immediately to the extent feasible and justified as directed by the Engineer.

The Contractor shall provide immediate permanent or temporary pollution control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, or other areas of water impoundment as directed by the Engineer. If temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or directed by the Engineer, the work shall be performed by the Contractor and the cost shall be incidental to this item.

The Engineer may increase or decrease the area of erodible earth material that can be exposed at any time based on an analysis of project conditions.

The erosion control features installed by the Contractor shall be acceptably maintained by the Contractor during the construction period.

Whenever construction equipment must cross watercourses at frequent intervals, temporary structures should be provided.

Pollutants such as fuels, lubricants, bitumen, raw sewage, wash water from concrete mixing operations, and other harmful materials shall not be discharged into any waterways, impoundments or into natural or manmade channels.

156-3.4 Installation, maintenance and removal of silt fences. Silt fences shall extend a minimum of 16 inches (41 cm) and a maximum of 34 inches (86 cm) above the ground surface. Posts shall be set no more than 10 feet (3 m) on center. Filter fabric shall be cut from a continuous roll to the length required minimizing joints where possible. When joints are necessary, the fabric shall be spliced at a support post with a minimum 12-inch (300-mm) overlap and securely sealed. A trench shall be excavated approximately 4 inches (100 mm) deep by 4 inches (100 mm) wide on the upslope side of the silt fence. The trench shall be backfilled and the soil compacted over the silt fence fabric. The Contractor shall remove and dispose of silt that accumulates during construction and prior to establishment of permanent erosion control. The fence shall be maintained in good working condition until permanent erosion control is established. Silt fence shall be removed upon approval of the Engineer.

METHOD OF MEASUREMENT

156-4.1 Temporary erosion and pollution control work required will be performed as scheduled or directed by the Engineer. Completed and accepted work will be measured as follows:

a. Installation and removal of silt fence will be measured by the linear foot.

156-4.2 Control work performed for protection of construction areas outside the construction limits, such as borrow and waste areas, haul roads, equipment and material storage sites, and temporary plant sites, will not be measured and paid for directly but shall be considered as a subsidiary obligation of the Contractor.

BASIS OF PAYMENT

156-5.1 Accepted quantities of temporary water pollution, soil erosion, and siltation control work ordered by the Engineer and measured as provided in paragraph 156-4.1 will be paid for under:

Item P-156 Temporary silt fence **-** per linear feet

Where other directed work falls within the specifications for a work item that has a contract price, the units of work shall be measured and paid for at the contract unit price bid for the various items.

Temporary control features not covered by contract items that are ordered by the Engineer will be paid for in accordance with Section 90-05 Payment for Extra work with exception to inlet protection which will be considered incidental to the project.

MATERIAL REQUIREMENTS

ASTM D6461 Standard Specification for Silt Fence Materials

AC 150/5200-33 Hazardous Wildlife Attractants

END OF ITEM P-156

Item P-209 Crushed Aggregate Base Course

DESCRIPTION

209-1.1 This item consists of a base course composed of crushed aggregate base constructed on a prepared course in accordance with these specifications and in conformity to the dimensions and typical cross-sections shown on the plans.

MATERIALS

209-2.1 Crushed aggregate base. Crushed aggregate shall consist of clean, sound, durable particles of crushed stone, crushed gravel, and shall be free from coatings of clay, silt, organic material, or other objectionable materials. Aggregates shall contain no clay lumps or balls. Fine aggregate passing the No. 4 (4.75 mm) sieve shall consist of fines from the coarse aggregate crushing operation. If necessary, fine aggregate may be added to produce the correct gradation. The fine aggregate shall be produced by crushing stone, gravel, that meet the coarse aggregate requirements for wear and soundness.

The coarse aggregate portion, defined as the material retained on the No. 4 (4.75 mm) sieve, shall not have a loss of greater than 45% when tested per ASTM C131. The sodium sulfate soundness loss shall not exceed 12%, or the magnesium sulfate soundness loss shall not exceed 18%, after five cycles, when tested in accordance with ASTM C88. The aggregate shall contain no more than 15%, by weight, of flat, elongated, or flat and elongated particles per ASTM D4791. A flat particle is one having a ratio of width to thickness greater than 3; an elongated particle is one having a ratio of length to width greater than three (3). The aggregate shall have at least 90% by weight of particles with at least two fractured faces and 100% with at least one fractured face per ASTM D5821. The area of each face shall be equal to at least 75% of the smallest mid-sectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces.

a. Sampling and testing for initial aggregate base requirements. Samples shall be taken by the Contractor in the presence of the Engineer. Material shall meet the requirements in paragraph 209-2.1 and 209-2.2. This sampling and testing will be the basis for approval of the aggregate base quality requirements.

209-2.2 Gradation requirements. The gradation of the aggregate base material shall meet the requirements of the gradation given in the following table when tested per ASTM C117 and ASTM C136. The gradation shall be well graded from coarse to fine as defined by ASTM D2487 and shall not vary from the lower limit on one sieve to the high limit on an adjacent sieve or vice versa. The fraction of material passing the No. 200 (0.075 mm) sieve shall not exceed one-half the fraction passing the No. 40 (0.45 mm) sieve.

Requirements For Gradation Of Aggregate Base

Sieve Size	Design Range Percentage by Weight	Contractor's Final Gradation	Job Control Grading Band Tolerances for Contractor's Final Gradation Percent
2 inch (50 mm)	100		0
1-1/2 inch (38 mm)	95-100		±5
1 inch (25 mm)	70-95		±8
3/4 inch (19 mm)	55-85		±8
No. 4 (4.75 mm)	30-60		±8
No. 40 (0.45 mm)	10-30		±5
No. 200 (0.075 mm)	0-8		±3

The "Job Control Grading Band Tolerances for Contractor's Final Gradation" in the table shall be applied to "Contractor's Final Gradation" to establish a job control grading band. The full tolerance still applies if application of the tolerances results in a job control grading band outside the design range.

a. Sampling and testing for gradation. Gradation tests shall be performed by the Contractor per ASTM C136 and sieve analysis on material passing the No. 200 sieve (75 mm) per ASTM C117. The Contractor shall take at least two aggregate base samples per lot to check the final gradation. Sampling shall be per ASTM D75. The lot will be consistent with the lot size used for density. The samples shall be taken from the in-place, un-compacted material in the presence of the Engineer. Sampling points and intervals will be designated by the Engineer.

CONSTRUCTION METHODS

209-3.1 Preparing underlying subgrade and/or subbase. The underlying subgrade and/or subbase shall be checked and accepted by the Engineer before base course placing and spreading operations begin. Re-proof rolling of the subgrade or proof rolling of the subbase in accordance with P-152, at the Contractor's expense, may be required by the Engineer if the Contractor fails to ensure proper drainage or protect the subgrade and/or subbase. Any ruts or soft, yielding areas due to improper drainage conditions, hauling, or any other cause, shall be corrected before the base course is placed. To ensure proper drainage, the spreading of the base shall begin along the centerline of the pavement on a crowned section or on the high side of the pavement with a one-way slope.

209-3.2 Production. The aggregate shall be uniformly blended and, when at a satisfactory moisture content per paragraph 209-3.4, the approved material may be transported directly to the spreading equipment.

209-3.3 Placing. The aggregate base material shall be placed on the prepared underlying subgrade and/or subbase and compacted in layers to the thickness shown on the plans. Work shall progress without interruption. The material shall be deposited and spread in lanes in a uniform layer without segregation to such loose depth that, when compacted, the layer shall have the specified thickness. The aggregate base course shall be constructed in layers of uniform

thickness of not less than 3 inches (75 mm) nor more than 6 inches (150 mm) of compacted thickness. The aggregate as spread shall be of uniform grading with no pockets of fine or coarse materials. The aggregate, unless otherwise permitted by the Engineer, shall not be spread more than 2,000 square yards (1700 sq m) in advance of the rolling. Any necessary sprinkling shall be kept within these limits. Care shall be taken to prevent cutting into the underlying layer during spreading. No material shall be placed in snow or on a soft, muddy, or frozen course. The aggregate base material shall be spread by spreader boxes or other approved devices. This equipment shall have positive thickness controls that spread the aggregate in the required amount to avoid or minimize the need for hand manipulation. Dumping from vehicles that require re-handling shall not be permitted. Hauling over the uncompacted base course shall not be permitted.

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

209-3.4 Compaction. Immediately after completion of the spreading operations, compact each layer of the base course, as specified, with approved compaction equipment. The number, type, and weight of rollers shall be sufficient to compact the material to the required density within the same day that the aggregate is placed on the subgrade. The moisture content of the material during placing operations shall be within ±2 percentage points of the optimum moisture content as determined by ASTM D6938 using Procedure A, the direct transmission method and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated per ASTM D6938.

209-3.5 Acceptance sampling and testing for density. Aggregate base course shall be accepted for density on a lot basis. A lot will consist of one day's production if it does not exceed 2,400 square yards (2000 sq m). A lot will consist of one-half day's production if a day's production consists of between 2,400 and 4,800 square yards (2000 and 4000 sq m). The Contractor's laboratory shall perform all density tests in the Engineer's presence and provide the test results upon completion daily to the Engineer for acceptance**.**

Each lot shall be divided into two equal sublots. One test shall be made for each sublot and shall consist of the average of two random locations for density determination. Sampling locations will be determined by the Engineer on a random basis per ASTM D3665.

Each lot will be accepted for density when the field density is at least 100% of the maximum density of laboratory specimens. The specimens shall be compacted and tested per ASTM D1557. The in-place field density shall be determined per ASTM D6938 using Procedure A, the direct transmission method, and ASTM D6938 shall be used to determine the moisture content of the material. The machine shall be calibrated in accordance with ASTM D6938. If the specified density is not attained, the entire lot shall be reworked and/or recompacted and two additional random tests made at the Contractor's expense. This procedure shall be followed until the specified density is reached.

209-3.6 Surface tolerances. After the course has been compacted, the surface shall be tested for smoothness and accuracy of grade and crown. Any portion lacking the required smoothness or failing in accuracy of grade or crown shall be scarified to a depth of at least 3 inches (75 mm), reshaped and recompacted to grade until the required smoothness and accuracy are obtained and approved by the Engineer. Any deviation in surface tolerances shall be corrected by the Contractor at the Contractor's expense. The smoothness and accuracy requirements specified here apply only to the top layer when base course is constructed in more than one layer.

a. Smoothness. The finished surface shall not vary more than 3/8 inch (9 mm) when tested with a 12-foot (3.7-m) straightedge applied parallel with and at right angles to the centerline. The

straightedge shall be moved continuously at half the length of the 12-foot (3.7-m) straightedge for the full length of each line on a 50-foot (15-m) grid.

b. Accuracy. The grade and crown shall be measured on a 50-foot (15-m) grid and shall be within +0 and -1/2 inch (12 mm) of the specified grade.

209-3.7 Thickness control. The thickness of the base course shall be within +0 and -1/2 inch (12 mm) of the specified thickness as determined by depth tests taken by the Contractor in the presence of the Engineer. Tests shall be taken at intervals representing no more than 300 square yards (250 sq m) per test. Sampling locations will be determined by the Engineer per ASTM D3665. Where the thickness is deficient by more than 1/2 inch (12 mm), the Contractor shall correct such areas at no additional cost by scarifying to a depth of at least 3 inches (75 mm), adding new material of proper gradation, and the material shall be blended and recompacted to grade. Additional test holes may be required to identify the limits of deficient areas. The Contractor shall replace, at his expense, base material where depth tests have been taken.

209-3.8 Protection. Perform construction when the atmospheric temperature is above 35°F (2°C). When the temperature falls below 35°F (2°C), protect all completed areas by approved methods against detrimental effects of freezing. Correct completed areas damaged by freezing, rainfall, or other weather conditions to meet specified requirements. When the aggregates contain frozen materials or when the underlying course is frozen or wet, the construction shall be stopped. Hauling equipment may be routed over completed portions of the base course, provided no damage results. Equipment shall be routed over the full width of the base course to avoid rutting or uneven compaction. The Engineer will stop all hauling over completed or partially completed base course when, in the Engineer's opinion, such hauling is causing damage. Any damage to the base course shall be repaired by the Contractor at the Contractor's expense.

209-3.9 Maintenance. The Contractor shall maintain the base course in a satisfactory condition until the full pavement section is completed and accepted by the Engineer. The surface shall be kept clean and free from foreign material and properly drained at all times. Maintenance shall include immediate repairs to any defects and shall be repeated as often as necessary to keep the area intact. Any base course that is not paved over prior to the onset of winter shall be retested to verify that it still complies with the requirements of this specification. Any area of base course that is damaged shall be reworked or replaced as necessary to comply with this specification.

Equipment used in the construction of an adjoining section may be routed over completed base course, if no damage results and the equipment is routed over the full width of the base course to avoid rutting or uneven compaction.

The Contractor shall remove all survey and grade hubs from the base courses prior to placing any bituminous surface course.

METHOD OF MEASUREMENT

209-4.1 The quantity of crushed aggregate base course will be determined by measurement of the number of square yards of material actually constructed and accepted by the Engineer as complying with the plans and specifications. Base materials shall not be included in any other excavation quantities.

BASIS OF PAYMENT

209-5.1 Payment shall be made at the contract unit price per square yard for crushed aggregate base course. This price shall be full compensation for furnishing all materials, for preparing and placing these materials, and for all labor, equipment tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-209.1	Crushed Aggregate Base Course, 4-Inch Depth - per square yard
Item P-209.2	Crushed Aggregate Base Course, 8-Inch Depth - per square yard

TESTING REQUIREMENTS

ASTM C29	Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM D75	Standard Practice for Sampling Aggregates
ASTM D422	Standard Test Method for Particle-Size Analysis of Soils
ASTM D698	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft^3 (600 kN-m/m^3))
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3 (2700 kN-m/m^3))
ASTM D2167	Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D4718	Standard Practice for Correction of Unit Weight and Water Content for Soils Containing Oversize Particles
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D6938	Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)

END OF ITEM P-209

Item P-401 Hot Mix Asphalt (HMA) Pavements

DESCRIPTION

401-1.1 This item shall consist of pavement courses composed of mineral aggregate and asphalt cement binder (asphalt binder) 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, and elevation required by the plans and shall be rolled, finished, and approved before the placement of the next course.

MATERIALS

401-2.1 Aggregate. Aggregates shall consist of crushed stone, crushed gravel, crushed slag, screenings, natural sand and mineral filler, as required. The aggregates should be free of ferrous sulfides, such as pyrite, that would cause "rust" staining that can bleed through pavement markings. The portion retained on the No. 4 (4.75 mm) sieve is coarse aggregate. The portion passing the No. 4 (4.75 mm) sieve and retained on the No. 200 (0.075 mm) sieve is fine aggregate, and the portion passing the No. 200 (0.075 mm) sieve is mineral filler.

a. Coarse aggregate. Coarse aggregate shall consist of sound, tough, durable particles, free from films of matter that would prevent thorough coating and bonding with the bituminous material and free from organic matter and other deleterious substances. The percentage of wear shall not be greater than 40% when tested in accordance with ASTM C131. The sodium sulfate soundness loss shall not exceed 12%, or the magnesium sulfate soundness loss shall not exceed 18%, after five cycles, when tested in accordance with ASTM C88. Clay lumps and friable particles shall not exceed 1.0% when tested in accordance with ASTM C142.

Aggregate shall contain at least 75 percent by weight of individual pieces having two or more fractured faces and 85 percent by weight having at least one fractured face. The area of each face shall be equal to at least 75% of the smallest midsectional area of the piece. When two fractured faces are contiguous, the angle between the planes of fractures shall be at least 30 degrees to count as two fractured faces. Fractured faces shall be achieved by crushing.

The aggregate shall not contain more than a total of 8%, by weight, of flat particles, elongated particles, and flat and elongated particles, when tested in accordance with ASTM D4791 with a value of 5:1.

b. Fine aggregate. Fine aggregate shall consist of clean, sound, tough, durable, angular shaped particles produced by crushing stone, slag, or gravel that meets the requirements for wear and soundness specified for coarse aggregate. The aggregate particles shall be free from coatings of clay, silt, or other objectionable matter.

The fine aggregate, including any blended material for the fine aggregate, shall have a plasticity index of not more than six (6) and a liquid limit of not more than 25 when tested in accordance with ASTM D4318.

The soundness loss shall not exceed 10% when sodium sulfate is used or 15% when magnesium sulfate is used, after five cycles, when tested per ASTM C88.

Clay lumps and friable particles shall not exceed 1.0%, by weight, when tested in accordance with ASTM C142.

Natural (non-manufactured) sand may be used to obtain the gradation of the aggregate blend or to improve the workability of the mix. The amount of sand to be added will be adjusted to produce mixtures conforming to requirements of this specification. If used, the natural sand shall meet the requirements of ASTM D1073 and shall have a plasticity index of not more than six (6) and a liquid limit of not more than 25 when tested in accordance with ASTM D4318.

The aggregate shall have sand equivalent values of 45 or greater when tested in accordance with ASTM D2419.

c. Sampling. ASTM D75 shall be used in sampling coarse and fine aggregate, and ASTM C183 shall be used in sampling mineral filler.

401-2.2 Mineral filler. If filler, in addition to that naturally present in the aggregate, is necessary, it shall meet the requirements of ASTM D242.

401-2.3 Asphalt cement binder. Asphalt cement binder shall conform to ASTM D6373 Performance Grade (PG) 76-22. A certificate of compliance from the manufacturer shall be included with the mix design submittal.

The supplier's certified test report with test data indicating grade certification for the asphalt binder shall be provided to the Engineer for each load at the time of delivery to the mix plant. A certified test report with test data indicating grade certification for the asphalt binder shall also be provided to the Engineer for any modification of the asphalt binder after delivery to the mix plant and before use in the HMA.

401-2.4 Preliminary material acceptance. Prior to delivery of materials to the job site, the Contractor shall submit certified test reports to the Engineer for the following materials:

a. Coarse aggregate:

(1) Percent of wear
(2) Soundness
(3) Clay lumps and friable particles
(4) Percent fractured faces
(5) Flat and elongated particles

b. Fine aggregate:

(1) Liquid limit and Plasticity index
(2) Soundness
(3) Clay lumps and friable particles
(4) Percent natural sand
(5) Sand equivalent

c. Mineral filler.

d. Asphalt binder. Test results for asphalt binder shall include temperature/viscosity charts for mixing and compaction temperatures.

The certifications shall show the appropriate ASTM tests for each material, the test results, and a statement that the material meets the specification requirement.

The Engineer may request samples for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

401-2.5 Anti-stripping agent. Any anti-stripping agent or additive if required shall be heat stable, shall not change the asphalt cement viscosity beyond specifications, shall contain no harmful ingredients, shall be added in recommended proportion by approved method, and shall be a material approved by the Department of Transportation of the State in which the project is located.

COMPOSITION

401-3.1 Composition of mixture. The HMA mix shall be composed of a mixture of well-graded aggregate, filler and anti-strip agent if required, and asphalt binder. The several aggregate fractions shall be sized, handled in separate size groups, and combined in such proportions that the resulting mixture meets the grading requirements of the job mix formula (JMF).

401-3.2 Job mix formula (JMF). No hot-mixed asphalt (HMA) for payment shall be produced until a JMF has been approved in writing by the Engineer. The asphalt mix-design and JMF shall be prepared by an accredited laboratory that meets the requirements of paragraph 401-3.4. The HMA shall be designed using procedures contained in Asphalt Institute MS-2 Mix Design Manual, 7th Edition. Samples shall be prepared at various asphalt contents and compacted using the gyratory compactor in accordance with ASTM D6925.

Tensile strength ratio (TSR) of the composite mixture, as determined by ASTM D4867, shall not be less than 75 when tested at a saturation of 70-80% or an anti-stripping agent shall be added to the HMA, as necessary, to produce a TSR of not less than 75 when tested at a saturation of 70-80%. If an anti-strip agent is required, it shall be provided by the Contractor at no additional cost to the Owner.

The JMF shall be submitted in writing by the Contractor at least 30 days prior to the start of paving operations. The JMF shall be developed within the same construction season using aggregates currently being produced.

The submitted JMF shall be stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items as a minimum:

a. Percent passing each sieve size for total combined gradation, individual gradation of all aggregate stockpiles and percent by weight of each stockpile used in the job mix formula.

b. Percent of asphalt cement.

c. Asphalt performance grade and type of modifier if used.

d. Number of gyrations.

e. Laboratory mixing temperature.

f. Laboratory compaction temperature.

g. Temperature-viscosity relationship of the PG asphalt cement binder showing acceptable range of mixing and compaction temperatures; and for modified binders include supplier recommended mixing and compaction temperatures.

h. Plot of the combined gradation on a 0.45 power gradation curve.

i. Graphical plots of air voids, voids in the mineral aggregate, and unit weight versus asphalt content.

j. Specific Gravity and absorption of each aggregate.

k. Percent natural sand.

l. Percent fractured faces.

m. Percent by weight of flat particles, elongated particles, and flat and elongated particles (and criteria).

n. Tensile Strength Ratio (TSR).

o. Anti-strip agent (if required).

p. Date the JMF was developed. Mix designs that are not dated or which are from a prior construction season shall not be accepted.

The Contractor shall submit to the Engineer the results of verification testing of three (3) asphalt samples prepared at the optimum asphalt content. The average of the results of this testing shall indicate conformance with the JMF requirements specified in Tables 1 and 3.

When the project requires asphalt mixtures of differing aggregate gradations, a separate JMF and the results of JMF verification testing shall be submitted for each mix.

The JMF for each mixture shall be in effect until a modification is approved in writing by the Engineer. Should a change in sources of materials be made, a new JMF must be submitted within 15 days and approved by the Engineer in writing before the new material is used. After the initial production JMF has been approved by the Engineer and a new or modified JMF is required for whatever reason, the subsequent cost of the Engineer's approval of the new or modified JMF, including a new test strip when required by the engineer, will be borne by the Contractor. There will be no time extension given or considerations for extra costs associated with the stoppage of production paving or restart of production paving due to the time needed for the Engineer to approve the initial, new or modified JMF.

Table 1. Gyratory Compaction Criteria

Test Property	Value
Number of compactor gyrations	75
Air voids (%)	3.5
Percent voids in mineral aggregate, minimum	See Table 2

Table 2. Minimum Percent Voids In Mineral Aggregate (VMA)

Aggregate (See Table 3)	Minimum VMA
Gradation 3	16%
Gradation 2	15%
Gradation 1	14%

The mineral aggregate shall be of such size that the percentage composition by weight, as determined by laboratory sieves, will conform to the gradation or gradations specified in Table 3 when tested in accordance with ASTM C136 and ASTM C117.

The gradations in Table 3 represent the limits that shall determine the suitability of aggregate for use from the sources of supply; 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 sieve, or vice versa.

Table 3. Aggregate - HMA Pavements

Sieve Size	Percentage by Weight Passing Sieve
	Gradation 1
1 inch (25 mm)	100
3/4 inch (19 mm)	76-98
1/2 inch (12 mm)	66-86
3/8 inch (9 mm)	57-77
No. 4 (4.75 mm)	40-60
No. 8 (2.36 mm)	26-46
No. 16 (1.18 mm)	17-37
No. 30 (0.60 mm)	11-27
No. 50 (0.30 mm)	7-19
No. 100 (0.15 mm)	6-16
No. 200 (0.075 mm)	3-6
Asphalt Percent:	
Stone or gravel	4.5-7.0
Slag	5.0-7.5

The aggregate gradations shown are based on aggregates of uniform specific gravity. The percentages passing the various sieves shall be corrected when aggregates of varying specific gravities are used, as indicated in the Asphalt Institute MS-2 Mix Design Manual, 7th Edition.

401-3.3 Reclaimed asphalt pavement (RAP). RAP shall not be used.

401-3.4 Job mix formula (JMF) laboratory. The Contractor's laboratory used to develop the JMF shall be accredited in accordance with ASTM D3666. The laboratory accreditation must be current and listed on the accrediting authority's website. All test methods required for developing the JMF must be listed on the lab accreditation. A copy of the laboratory's current accreditation and accredited test methods shall be submitted to the Engineer prior to start of construction.

401-3.5 Test section. Prior to full production, the Contractor shall prepare and place a quantity of HMA according to the JMF. The amount of HMA shall be sufficient to construct a test section 300 long and 20 wide, placed in two lanes, with a longitudinal cold joint, and shall be of the same depth specified for the construction of the course which it represents. A cold joint for this test section is an exposed construction joint at least four (4) hours old or whose mat has cooled to less than 160°F (71°C). The cold joint must be cut back using the same procedure that will be used during production in accordance with 401-4.13. 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 by the test section. The equipment used in construction of the test section shall be

the same type and weight to be used on the remainder of the course represented by the test section.

The test section shall be evaluated for acceptance as a single lot in accordance with the acceptance criteria in paragraph 401-5.1 and 401-5.2. The test section shall be divided into equal sublots. As a minimum the test section shall consist of three (3) sublots.

The test section shall be considered acceptable if (1) mat density, air voids, and joint density are 90% or more within limits, (2) gradation and asphalt content are within the action limits specified in paragraphs 401-6.5a and 5b, and (3) the voids in the mineral aggregate are within the limits of Table 2.

If the initial test section should prove to be unacceptable, the necessary adjustments to the JMF, plant operation, placing procedures, and/or rolling procedures shall be made. A second test section shall then be placed. If the second test section also does not meet specification requirements, both sections shall be removed at the Contractor's expense. Additional test sections, as required, shall be constructed and evaluated for conformance to the specifications. Any additional sections that are not acceptable shall be removed at the Contractor's expense. Full production shall not begin until an acceptable test section has been constructed and accepted in writing by the Engineer. Once an acceptable test section has been placed, payment for the initial test section and the section that meets specification requirements shall be made in accordance with paragraph 401-8.1.

Job mix control testing shall be performed by the Contractor at the start of plant production and in conjunction with the calibration of the plant for the JMF. If aggregates produced by the plant do not satisfy the gradation requirements or produce a mix that meets the JMF, it will be necessary to reevaluate and redesign the mix using plant-produced aggregates. Specimens shall be prepared and the optimum asphalt content determined in the same manner as for the original JMF tests.

Contractor will not be allowed to place the test section until the Contractor Quality Control Program, showing conformance with the requirements of Paragraph 401-6.1, has been approved, in writing, by the Engineer.

CONSTRUCTION METHODS

401-4.1 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 by the Engineer, if requested; however, all other requirements including compaction shall be met.

Table 4. Surface Temperature Limitations of Underlying Course

Mat Thickness	**Base Temperature (Minimum)**	
	°F	**°C**
3 inches (7.5 cm) or greater	40	4
Greater than 2 inches (50 mm) but less than 3 inches (7.5 cm)	45	7

401-4.2 HMA plant. Plants used for the preparation of HMA shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M156 with the following changes:

Requirements for all plants include:

a. Truck scales. The HMA shall be weighed on approved scales furnished by the Contractor, or on certified public scales at the Contractor's expense. Scales shall be inspected and sealed as often as the Engineer deems necessary to assure their accuracy. Scales shall conform to the requirements of the General Provisions, subsection 90-01.

In lieu of scales, and as approved by the Engineer, HMA weight may be determined by the use of an electronic weighing system equipped with an automatic printer that weighs the total HMA production and as often thereafter as requested by the Engineer.

b. Testing facilities. The Contractor shall ensure laboratory facilities are provided at the plant for the use of the Engineer. The lab shall have sufficient space and equipment so that both testing representatives (Engineer's and Contractor's) can operate efficiently. The lab shall meet the requirements of ASTM D3666 including all necessary equipment, materials, calibrations, current reference standards to comply with the specifications and a masonry saw with diamond blade for trimming pavement cores and samples.

The plant testing laboratory shall have a floor space area of not less than 200 square feet (18.5 sq m), with a ceiling height of not less than 7-1/2 feet (2 m). The laboratory shall be weather tight, sufficiently heated in cold weather, air-conditioned in hot weather to maintain temperatures for testing purposes of 70°F ±5°F (21°C ±2.3°C). The plant testing laboratory shall be located on the plant site to provide an unobstructed view, from one of its windows, of the trucks being loaded with the plant mix materials. In addition, the facility shall include the minimum:

(1) Adequate artificial lighting.

(2) Electrical outlets sufficient in number and capacity for operating the required testing equipment and drying samples.

(3) A minimum of two (2) Underwriter's Laboratories approved fire extinguishers of the appropriate types and class.

(4) Work benches for testing.

(5) Desk with chairs and file cabinet.

(6) Sanitary facilities convenient to testing laboratory.

(7) Exhaust fan to outside air.

(8) Sink with running water.

Failure to provide the specified facilities shall be sufficient cause for disapproving HMA plant operations.

Laboratory facilities shall be kept clean, and all equipment shall be maintained in proper working condition. The Engineer shall be permitted unrestricted access to inspect the Contractor's laboratory facility and witness quality control activities. The Engineer will advise the Contractor in writing of any noted deficiencies concerning the laboratory facility, equipment, supplies, or testing personnel and procedures. When the deficiencies are serious enough to be adversely affecting the test results, the incorporation of the materials into the work shall be suspended immediately and will not be permitted to resume until the deficiencies are satisfactorily corrected.

c. Inspection of plant. The Engineer, or Engineer's authorized representative, shall have access, at all times, to all areas of the plant for checking adequacy of equipment; inspecting

operation of the plant: verifying weights, proportions, and material properties; and checking the temperatures maintained in the preparation of the mixtures.

d. Storage bins and surge bins. The HMA stored in storage and surge bins shall meet the same requirements as HMA loaded directly into trucks and may be permitted under the following conditions:

(1) Stored in non-insulated bins for a period of time not to exceed three (3) hours.

(2) Stored in insulated bins for a period of time not to exceed eight (8) hours.

If the Engineer determines that there is an excessive amount of heat loss, segregation, or oxidation of the HMA due to temporary storage, no temporary storage will be allowed.

401-4.3 Hauling equipment. Trucks used for hauling HMA shall have tight, clean, and smooth metal beds. To prevent the HMA from sticking to the truck beds, the truck beds shall be lightly coated with a minimum amount of paraffin oil, lime solution, or other material approved by the Engineer. Petroleum products shall not be used for coating truck beds. Each truck shall have a suitable cover to protect the mixture from adverse weather. When necessary, to ensure that the mixture will be delivered to the site at the specified temperature, truck beds shall be insulated or heated and covers shall be securely fastened.

401-4.3.1 Material transfer vehicle (MTV). Material transfer vehicles used to transfer the material from the hauling equipment to the paver, shall use a self-propelled, material transfer vehicle with a swing conveyor that can deliver material to the paver without making contact with the paver. The MTV shall be able to move back and forth between the hauling equipment and the paver providing material transfer to the paver, while allowing the paver to operate at a constant speed. The Material Transfer Vehicle will have remixing and storage capability to prevent physical and thermal segregation.

401-4.4 HMA pavers. HMA pavers shall be self-propelled with an activated heated screed, capable of spreading and finishing courses of HMA that will meet the specified thickness, smoothness, and grade. The paver shall have sufficient power to propel itself and the hauling equipment without adversely affecting the finished surface.

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 HMA uniformly in front of the screed without segregation. The screed shall effectively produce a finished surface of the required evenness and texture without tearing, shoving, or gouging the mixture.

If, during construction, it is found that the spreading and finishing equipment in use leaves tracks or indented areas, or produces other blemishes in the pavement that are not satisfactorily corrected by the scheduled operations, the use of such equipment shall be discontinued and satisfactory equipment shall be provided by the Contractor.

401-4.4.1 Automatic grade controls. The HMA paver shall be equipped with a control system capable of automatically maintaining the specified screed elevation. The control system shall be automatically actuated from either a reference line and/or through a system of mechanical sensors or sensor-directed mechanisms or devices that will maintain the paver screed at a predetermined transverse slope and at the proper elevation to obtain the required surface. The transverse slope controller shall be capable of maintaining the screed at the desired slope within ±0.1%.

The controls shall be capable of working in conjunction with any of the following attachments:

a. Ski-type device of not less than 30 feet (9 m) in length.

b. Taut string-line (wire) set to grade.

c. Short ski or shoe.

d. Laser control.

401-4.5 Rollers. Rollers of the vibratory, steel wheel, and pneumatic-tired type shall be used. They shall be in good condition, capable of operating at slow speeds to avoid displacement of the HMA. The number, type, and weight of rollers shall be sufficient to compact the HMA to the required density while it is still in a workable condition.

All rollers shall be specifically designed and suitable for compacting HMA concrete and shall be properly used. Rollers that impair the stability of any layer of a pavement structure or underlying soils shall not be used. Depressions in pavement surfaces caused by rollers shall be repaired by the Contractor at their own expense.

The use of equipment that causes crushing of the aggregate will not be permitted.

401-4.6. Density device. The Contractor shall have on site a density gauge during all paving operations in order to assist in the determination of the optimum rolling pattern, type of roller and frequencies, as well as to monitor the effect of the rolling operations during production paving. The Contractor shall also supply a qualified technician during all paving operations to calibrate the gauge and obtain accurate density readings for all new HMA. These densities shall be supplied to the Engineer upon request at any time during construction. No separate payment will be made for supplying the density gauge and technician.

401-4.7 Preparation of asphalt binder. The asphalt binder shall be heated in a manner that will avoid local overheating and provide a continuous supply of the asphalt binder to the mixer at a uniform temperature. The temperature of unmodified asphalt binder delivered to the mixer shall be sufficient to provide a suitable viscosity for adequate coating of the aggregate particles, but shall not exceed 325°F (160°C) when added to the aggregate. The temperature of modified asphalt binder shall be no more than 350°F (175°C) when added to the aggregate.

401-4.8 Preparation of mineral aggregate. The aggregate for the HMA shall be heated and dried. The maximum temperature and rate of heating shall be such that no damage occurs to the aggregates. The temperature of the aggregate and mineral filler shall not exceed 350°F (175°C) when the asphalt binder is added. 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.

401-4.9 Preparation of HMA. The aggregates and the asphalt binder shall be weighed or metered and introduced into the mixer in the amount specified by the JMF. The combined materials shall be mixed until the aggregate obtains a uniform coating of asphalt binder and is thoroughly distributed throughout the mixture. Wet mixing time shall be the shortest time that will produce a satisfactory mixture, but not less than 25 seconds for batch plants. The wet mixing time for all plants shall be established by the Contractor, based on the procedure for determining the percentage of coated particles described in ASTM D2489, for each individual plant and for each type of aggregate used. The wet mixing time will be set to achieve 95% of coated particles. 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. The moisture content of all HMA upon discharge shall not exceed 0.5%.

401-4.10 Preparation of the underlying surface. Immediately before placing the HMA, the underlying course shall be cleaned of all dust and debris. A prime coat and tack coat shall be applied in accordance with Item P-602 and P-603, as shown on the plans.

401-4.11 Laydown plan, transporting, placing, and finishing. Prior to the placement of the HMA, the Contractor shall prepare a laydown plan for approval by the Engineer. This is to minimize the number of cold joints in the pavement. The laydown plan shall include the sequence of paving laydown by stations, width of lanes, temporary ramp locations, and laydown temperature. The laydown plan shall also include estimated time of completion for each portion of the work (that is, milling, paving, rolling, cooling, etc.). Modifications to the laydown plan shall be approved by the Engineer.

The HMA shall be transported from the mixing plant to the site in vehicles conforming to the requirements of paragraph 401-4.3. Deliveries shall be scheduled so that placing and compacting of HMA is uniform with minimum stopping and starting of the paver. Hauling over freshly placed material shall not be permitted until the material has been compacted, as specified, and allowed to cool to atmospheric temperature.

The Contractor shall use a material transfer vehicle to deliver HMA to the paver at his own risk.

The alignment and elevation of the paver shall be regulated from outside reference lines established for this purpose for the first lift of all runway and taxiway pavements. Successive lifts of HMA surface course may be placed using a ski, or laser control per paragraph 401-4.4.1, provided grades of the first lift of HMA surface course meet the tolerances of paragraphs 401-5.2b(6) as verified by a survey. Contractor shall survey each lift of HMA surface course and certify to Engineer that every lot of each lift meets the grade tolerances of paragraph 401-5.2b(6) before the next lift can be placed.

The initial placement and compaction of the HMA shall occur at a temperature suitable for obtaining density, surface smoothness, and other specified requirements but not less than 250°F (121°C).

Edges of existing HMA pavement abutting the new work shall be saw cut and carefully removed as shown on the drawings and coated with asphalt tack coat before new material is placed against it.

Upon arrival, the HMA shall be placed to the full width by a 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 conform to the grade and contour indicated. The speed of the paver shall be regulated to eliminate pulling and tearing of the HMA mat. Unless otherwise permitted, placement of the HMA shall begin along the centerline of a crowned section or on the high side of areas with a one-way slope. The HMA shall be placed in consecutive adjacent strips having a minimum width of 12.5 feet (m) except where edge lanes require less width to complete the area. Additional screed sections shall not be attached to widen paver to meet the minimum lane width requirements specified above unless additional auger sections are added to match. The longitudinal joint in one course shall offset the longitudinal joint in the course immediately below by at least 1 foot (30 cm); however, the joint in the surface top course shall be at the centerline of crowned pavements. Transverse joints in one course shall be offset by at least 10 feet (3 m) from transverse joints in the previous course.

Transverse joints in adjacent lanes shall be offset a minimum of 10 feet (3 m).

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

Areas of segregation in the surface course, as determined by the Engineer, shall be removed and replaced at the Contractor's expense. The area shall be removed by saw cutting and milling a minimum of 2 inches (50 mm) deep. The area to be removed and replaced shall be a minimum width of the paver and a minimum of 10 feet (3 m) long.

401-4.12 Compaction of HMA. After placing, the HMA shall be thoroughly and uniformly compacted by power rollers. The surface shall be compacted as soon as possible when the HMA has attained sufficient stability so that the rolling does not cause undue displacement, cracking or shoving. The sequence of rolling operations and the type of rollers used shall be at the discretion of the Contractor. The speed of the roller shall, at all times, be sufficiently slow to avoid displacement of the hot mixture and be effective in compaction. Any displacement occurring as a result of reversing the direction of the roller, or from any other cause, shall be corrected at once.

Sufficient rollers shall be furnished to handle the output of the plant. Rolling shall continue until the surface is of uniform texture, true to grade and cross-section, and the required field density is obtained. To prevent adhesion of the HMA to the roller, the wheels shall be equipped with a scraper and kept properly moistened but excessive water will not be permitted.

In areas not accessible to the roller, the mixture shall be thoroughly compacted with approved power driven tampers. Tampers shall weigh not less than 275 pounds (125 kg), have a tamping plate width not less than 15 inches (38 cm), be rated at not less than 4,200 vibrations per minute, and be suitably equipped with a standard tamping plate wetting device.

Any HMA that becomes loose and broken, mixed with dirt, contains check-cracking, or in any way defective shall be removed and replaced with fresh hot mixture and immediately compacted to conform to the surrounding area. This work shall be done at the Contractor's expense. Skin patching shall not be allowed.

401-4.13 Joints. The formation of all joints shall be made in such a manner as to ensure a continuous bond between the courses and obtain the required density. All joints shall have the same texture as other sections of the course and meet the requirements for smoothness and grade.

The roller shall not pass over the unprotected end of the freshly laid HMA 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. The tapered edge shall be cut back to its full depth and width on a straight line to expose a vertical face prior to placing the adjacent lane. In both methods, all contact surfaces shall be coated with an asphalt tack coat before placing any fresh HMA against the joint.

Longitudinal joints which have been left exposed for more than four (4) hours; the surface temperature has cooled to less than 175°F (80°C**)**; or are irregular, damaged, uncompacted or otherwise defective shall be cut back 3 inches (75 mm) to 6 inches (150 mm) to expose a clean, sound, uniform vertical surface for the full depth of the course. All cutback material shall be removed from the project. Asphalt tack coat or other product approved by the Engineer shall be applied to the clean, dry joint, prior to placing any additional fresh HMA against the joint. Any laitance produced from cutting joints shall be removed by vacuuming and washing. The cost of this work shall be considered incidental to the cost of the HMA.

401-4.14 Saw-cut grooving. If shown on the plans, saw cut grooves shall be provided as specified in Item P-621.

401-4.15 Diamond grinding. When required, diamond grinding shall be accomplished by sawing with saw blades impregnated with industrial diamond abrasive. The saw blades shall be assembled in a cutting head mounted on a machine designed specifically for diamond grinding

that will produce the required texture and smoothness level without damage to the pavement. The saw blades shall be 1/8-inch (3-mm) wide and there shall be a minimum of 55 to 60 blades per 12 inches (300 mm) of cutting head width; the actual number of blades will be determined by the Contractor and depend on the hardness of the aggregate. Each machine shall be capable of cutting a path at least 3 feet (0.9 m) wide. Equipment that causes ravels, aggregate fractures, spalls or disturbance to the pavement will not be permitted. The depth of grinding shall not exceed 1/2 inch (13mm) and all areas in which diamond grinding has been performed will be subject to the final pavement thickness tolerances specified. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. Areas that have been ground will be sealed with a P-608 surface treatment as directed by the Engineer. It may be necessary to seal a larger area to avoid surface treatment creating any conflict with runway or taxiway markings.

401-4.16 Nighttime paving requirements. Paving during nighttime construction shall require the following:

a. All paving machines, rollers, distribution trucks and other vehicles required by the Contractor for his operations shall be equipped with artificial illumination sufficient to safely complete the work.

b. Minimum illumination level shall be twenty (20) horizontal foot-candles and maintained in the following areas:

(1) An area of 30 feet (9 m) wide by 30 feet (9 m) long immediately behind the paving machines during the operations of the machines.

(2) An area 15 feet (4.5 m) wide by 30 feet (9 m) long immediately in front and back of all rolling equipment, during operation of the equipment.

(3) An area 15 feet (4.5 m) wide by 15 feet (4.5 m) long at any point where an area is being tack coated prior to the placement of pavement.

c. As partial fulfillment of the above requirements, the Contractor shall furnish and use, complete artificial lighting units with a minimum capacity of 3,000 watt electric beam lights, affixed to all equipment in such a way to direct illumination on the area under construction.

d. A lighting plan must be submitted by the Contractor and approved by the Engineer prior to the start of any nighttime work.

If the Contractor places any out of specification mix in the project work area, the Contractor is required to remove it at its own expense, to the satisfaction of the Engineer. If the Contractor has to continue placing non-payment HMA, as directed by the Engineer, to make the surfaces safe for aircraft operations, the Contractor shall do so to the satisfaction of the Engineer. It is the Contractor's responsibility to leave the facilities to be paved in a safe condition ready for aircraft operations. No consideration for extended closure time of the area being paved will be given. As a first order of work for the next paving shift, the Contractor shall remove all out of specification material and replace with approved material to the satisfaction of the Engineer. When the above situations occur, there will be no consideration given for additional construction time or payment for extra costs.

MATERIAL ACCEPTANCE

401-5.1 Acceptance sampling and testing. Unless otherwise specified, all acceptance sampling and testing necessary to determine conformance with the requirements specified in this section will be performed by the Engineer at no cost to the Contractor except that coring and profilograph testing as required in this section shall be completed and paid for by the Contractor.

Testing organizations performing these tests except profilograph shall be accredited in accordance with ASTM D3666. The laboratory accreditation must be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing must be listed on the lab accreditation. A copy of the laboratory's current accreditation and accredited test methods shall be submitted to the Engineer prior to start of construction. All equipment in Contractor furnished laboratories shall be calibrated by an independent testing organization prior to the start of operations at the Contractor's expense.

a. Hot mixed asphalt. Plant-produced HMA shall be tested for air voids on a lot basis. Sampling shall be from material deposited into trucks at the plant or from trucks at the job site. Samples shall be taken in accordance with ASTM D979.

A standard lot shall be equal to one day's production or 2000 tons (1814 metric tons) whichever is smaller. If the day's production is expected to exceed 2000 tons (1814 metric tons), but less than 4000 tons (3628 metric tons), the lot size shall be 1/2 day's production. If the day's production exceeds 4000 tons (3628 metric tons), the lot size shall be an equal sized fraction of the day's production, but shall not exceed 2000 tons (1814 metric tons).

Where more than one plant is simultaneously producing HMA for the job, the lot sizes shall apply separately for each plant.

(1) Sampling. Each lot will consist of four equal sublots. Sufficient HMA for preparation of test specimens for all testing will be sampled by the Engineer on a random basis, in accordance with the procedures contained in ASTM D3665. Samples will be taken in accordance with ASTM D979.

The sample of HMA may be put in a covered metal tin and placed in an oven for not less than 30 minutes nor more than 60 minutes to stabilize to compaction temperature. The compaction temperature of the specimens shall be as specified in the JMF.

(2) Testing. Air voids will be determined by the Engineer in accordance with ASTM D3203. One set of laboratory compacted specimens will be prepared for each sublot in accordance with ASTM D6925 at the number of gyrations required by paragraph 401-3.2, Table 1. Each set of laboratory compacted specimens will consist of three test specimens prepared from the same sample.

Prior to testing, the bulk specific gravity of each test specimen shall be measured by the Engineer in accordance with ASTM D2726 or ASTM D6752 (the same test procedure shall be selected throughout the specification) using the procedure for laboratory-prepared thoroughly dry specimens for use in computing air voids and pavement density.

For air voids determination, the theoretical maximum specific gravity of the mixture shall be measured one time for each sublot in accordance with ASTM D2041. The value used in the air voids computation for each sublot shall be based on theoretical maximum specific gravity measurement for the sublot.

(3) Acceptance. Acceptance of plant produced HMA for air voids shall be determined by the Engineer in accordance with the requirements of paragraph 401-5.2b.

b. In-place HMA. HMA placed in the field shall be tested for mat and joint density on a lot basis. A standard lot shall be equal to one day's production or 2000 tons (1814 metric tons) whichever is smaller. If the day's production is expected to exceed 2000 tons (1814 metric tons), but less than 4000 tons (3628 metric tons), the lot size shall be 1/2 day's production. If the day's production exceeds 4000 tons (3628 metric tons), the lot size shall be an equal sized fraction of the day's production, but shall not exceed 2000 tons (1814 metric tons).

(1) Mat density. The lot size shall be the same as that indicated in paragraph 401-5.1a and shall be divided into four equal sublots. One core of finished, compacted HMA shall be taken by the Contractor from each sublot. Core locations will be determined by the Engineer on a random basis in accordance with procedures contained in ASTM D3665. Cores for mat density shall not be taken closer than one foot (30 cm) from a transverse or longitudinal joint.

(2) Joint density. The lot size shall be the total length of longitudinal joints constructed by a lot of HMA as defined in paragraph 401-5.1a. The lot shall be divided into four equal sublots. One core of finished, compacted HMA shall be taken by the Contractor from each sublot. Core locations will be determined by the Engineer on a random basis in accordance with procedures contained in ASTM D3665. All cores for joint density shall be taken centered on the joint. The minimum core diameter for joint density determination shall be 5 inches (125 mm).

(3) Sampling. Samples shall be neatly cut with a diamond core drill bit. Samples will be taken in accordance with ASTM D979. The minimum diameter of the sample shall be 5 inches (125 mm). Samples that are clearly defective, as a result of sampling, shall be discarded and another sample taken. The Contractor shall furnish all tools, labor, and materials for cutting samples, cleaning, and filling the cored pavement. Cored pavement shall be cleaned and core holes shall be filled in a manner acceptable to the Engineer and within one day after sampling. Laitance produced by the coring operation shall be removed immediately.

The top most lift of HMA shall be completely bonded to the underlying layer. If any of the cores reveal that the surface is not bonded to the layer immediately below the surface then additional cores shall be taken as directed by the Engineer in accordance with paragraph 401-5.1b to determine the extent of any delamination. All delaminated areas shall be completely removed by milling to the limits and depth and replaced as directed by the Engineer at no additional cost.

(4) Testing. The bulk specific gravity of each cored sample will be measured by the Engineer in accordance with ASTM D2726 or ASTM D6752 (use same test procedure as previously selected). Samples will be taken in accordance with ASTM D979. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each sublot sample by the average bulk specific gravity of all laboratory prepared specimens for the lot, as determined in paragraph 401-5.1a(2). The bulk specific gravity used to determine the joint density at joints formed between different lots shall be the lowest of the bulk specific gravity values from the two different lots.

(5) Acceptance. Acceptance of field placed HMA for mat density will be determined by the Engineer in accordance with the requirements of paragraph 401-5.2b(1). Acceptance for joint density will be determined by the Engineer in accordance with the requirements of paragraph 401-5.2b(3).

c. Partial lots. When operational conditions cause a lot to be terminated before the specified number of tests have been made for the lot, or when the Contractor and Engineer agree in writing to allow overages or other minor tonnage placements to be considered as partial lots, the following procedure will be used to adjust the lot size and the number of tests for the lot.

The last batch produced where production is halted will be sampled, and its properties shall be considered as representative of the particular sublot from which it was taken. In addition, an agreed to minor placement will be sampled, and its properties shall be considered as representative of the particular sublot from which it was taken. Where three sublots are produced, they shall constitute a lot. Where one or two sublots are produced, they shall be incorporated into the next lot, and the total number of sublots shall be used in the acceptance plan calculation, that is, n = 5 or n = 6, for example. Partial lots at the end of asphalt production on the project shall be included with the previous lot. The lot size for field placed material shall correspond to that of the

plant material, except that, in no cases, shall less than three (3) cored samples be obtained, that is, n = 3.

401-5.2 Acceptance criteria.

a. General. Acceptance will be based on the following characteristics of the HMA and completed pavement as well as the implementation of the Contractor Quality Control Program and test results:

(1) Air voids
(2) Mat density
(3) Joint density
(4) Thickness
(5) Smoothness
(6) Grade

Mat density and air voids will be evaluated for acceptance in accordance with paragraph 401-5.2b(1). Joint density will be evaluated for acceptance in accordance with paragraph 401-5.2b(3).

Thickness will be evaluated by the Engineer for compliance in accordance with paragraph 401-5.2b(4). Acceptance for smoothness will be based on the criteria contained in paragraph 401-5.2b(5). Acceptance for grade will be based on the criteria contained in paragraph 401-5.2b(7).

The Engineer may at any time, reject and require the Contractor to dispose of any batch of HMA which is rendered unfit for use due to contamination, segregation, incomplete coating of aggregate, or improper mix temperature. Such rejection may be based on only visual inspection or temperature measurements. In the event of such rejection, the Contractor may take a representative sample of the rejected material in the presence of the Engineer, and if it can be demonstrated in the laboratory, in the presence of the Engineer, that such material was erroneously rejected, payment will be made for the material at the contract unit price.

b. Acceptance criteria.

(1) Mat density and air voids. Acceptance of each lot of plant produced material for mat density and air voids shall be based on the percentage of material within specification limits (PWL). If the PWL of the lot equals or exceeds 90%, the lot shall be acceptable. Acceptance and payment shall be determined in accordance with paragraph 401-8.1.

(2) Joint density. Acceptance of each lot of plant produced HMA for joint density shall be based on the PWL. If the PWL of the lot is equal to or exceeds 90%, the lot shall be considered acceptable. If the PWL is less than 90%, the Contractor shall evaluate the reason and act accordingly. If the PWL is less than 80%, the Contractor shall cease operations and until the reason for poor compaction has been determined. If the PWL is less than 71%, the pay factor for the lot used to complete the joint shall be reduced by five (5) percentage points. This lot pay factor reduction shall be incorporated and evaluated in accordance with paragraph 401-8.1.

(3) Thickness. Thickness of each lift of surface course shall be evaluated by the Engineer for compliance to the requirements shown on the plans. Measurements of thickness shall be made by the Engineer using the cores extracted for each sublot for density measurement. The maximum allowable deficiency at any point shall not be more than 1/4 inch (6 mm) less than the thickness indicated for the lift. Average thickness of lift, or combined lifts, shall not be less than the indicated thickness. Where the thickness tolerances are not met, the lot or sublot shall be corrected by the Contractor at his expense by removing the deficient area and replacing with new pavement. The Contractor, at his expense, may take additional cores as approved by the Engineer to circumscribe the deficient area.

(5) Smoothness. The final surface shall be free from roller marks. After the final rolling, but not later than 24 hours after placement, the surface of each lot shall be tested in both longitudinal and transverse directions for smoothness to reveal all surface irregularities exceeding the tolerances specified. The Contractor shall furnish paving equipment and employ methods that produce a surface for each pavement lot having an average profile index meeting the requirements of paragraph 401-8.1d when evaluated with a profilograph; and the finished surface course of the pavement shall not vary more than 1/4 inch (6mm) when evaluated with a 12-foot (3.7m) straightedge. When the surface course smoothness exceeds specification tolerances which cannot be corrected by diamond grinding of the surface course, full depth removal and replacement of surface course corrections shall be to the limit of the longitudinal placement. Corrections involving diamond grinding will be subject to the final pavement thickness tolerances specified. The Contractor shall apply a surface treatment per Item P-608 or P-609 to all areas that have been subject to grinding as directed by the Engineer.

(a) Transverse measurements. Transverse measurements will be taken for each lot placed. Transverse measurements will be taken perpendicular to the pavement centerline each 50 feet (15m) or more often as determined by the Engineer.

(i) Testing shall be continuous across all joints, starting with one-half the length of the straightedge at the edge of pavement section being tested and then moved ahead one-half the length of the straightedge for each successive measurement. Smoothness readings will not be made across grade changes or cross slope transitions; at these transition areas, the straightedge position shall be adjusted to measure surface smoothness and not design grade or cross slope transitions. The amount of surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between these two high points. High spots on final surface course > 1/4 inch (6mm) in transverse direction shall be corrected with diamond grinding per paragraph 401-4.15 or by removing and replacing full depth of surface course. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The area corrected by grinding should not exceed 10% of the total area and these areas shall be retested after grinding.

(ii) The joint between lots shall be tested separately to facilitate smoothness between lots. The amount of surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface, with half the straightedge on one side of the joint and the other half of the straightedge on the other side of the joint. Measure the maximum gap between the straightedge and the pavement surface in the area between these two high points. One measurement shall be taken at the joint every 50 feet (15m) or more often if directed by the Engineer. Deviations on final surface course > 1/4 inch (6mm) in transverse direction shall be corrected with diamond grinding per paragraph 401-4.15 or by removing and replacing full depth of surface course. Each measurement shall be recorded and a copy of the data shall be furnished to the Engineer at the end of each days testing.

(b) Longitudinal measurements. Longitudinal measurements will be taken for each lot placed. Longitudinal tests will be parallel to the centerline of paving; at the center of paving lanes when widths of paving lanes are less than 20 feet (6m); and at the third points of paving lanes when widths of paving lanes are 20 ft (6m) or greater.

(i) Longitudinal Short Sections. Longitudinal Short Sections are when the longitudinal lot length is less than 200 feet (60m) and areas not requiring a profilograph. When approved by the Engineer, the first and last 15 feet (4.5m) of the lot can also be considered as short sections for smoothness. The finished surface shall not vary more than 1/4 inch (6mm) when

evaluated with a 12-foot (3.7m) straightedge. Smoothness readings will not be made across grade changes or cross slope transitions; at these transition areas, the straightedge position shall be adjusted to measure surface smoothness and not design grade or cross slope transitions. Testing shall be continuous across all joints, starting with one-half the length of the straightedge at the edge of pavement section being tested and then moved ahead one-half the length of the straightedge for each successive measurement. The amount of surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between these two high points. Deviations on final surface course > 1/4 inch (6mm) in longitudinal direction will be corrected with diamond grinding per paragraph 401-4.15 or by removing and replacing full depth of surface course. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The area corrected by grinding should not exceed 10% of the total area and these areas shall be retested after grinding.

(ii) Profilograph Testing. Profilograph testing shall be performed by the contractor using approved equipment and procedures as described as ASTM E1274. The equipment shall utilize electronic recording and automatic computerized reduction of data to indicate “must grind” bumps and the Profile Index for the pavement using a 0.2 inch (5 mm) blanking band. The bump template must span one inch (25 mm) with an offset of 0.4 inches (10 mm). The profilograph must be calibrated prior to use and operated by a factory or State DOT approved operator. Profilograms shall be recorded on a longitudinal scale of one inch (25 mm) equals 25 feet (7.5 m) and a vertical scale of one inch (25 mm) equals one inch (25 mm). A copy of the reduced tapes shall be furnished to the Engineer at the end of each days testing.

The pavement must have an average profile index meeting the requirements of paragraph 401-8.1d. High spots, or “must grind” spots, on final surface course in longitudinal direction shall be corrected with diamond grinding per paragraph 401-4.15 or by removing and replacing full depth of surface course. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The area corrected by grinding should not exceed 10% of the total area and these areas shall be retested after grinding.

Where corrections are necessary, second profilograph runs shall be performed to verify that the corrections produced an average profile index of 15 inches (38 cm) per mile or less. If the initial average profile index was less than 15 inches (38 cm), only those areas representing greater than 0.4 inch (10 mm) deviation will be re-profiled for correction verification.

(iii) Final profilograph of runway. Final profilograph, full length of runway, shall be performed to facilitate testing of smoothness between lots. Profilograph testing shall be performed by the contractor using approved equipment and procedures as described as ASTM E1274.The pavement must have an average profile index meeting the requirements of paragraph 401-8.1d. The equipment shall utilize electronic recording and automatic computerized reduction of data to indicate “must grind” bumps and the Profile Index for the pavement using a 0.2 inch (5 mm) blanking band. The bump template must span one inch (25 mm) with an offset of 0.4 inches (10 mm). The profilograph must be calibrated prior to use and operated by a factory or State DOT approved, trained operator. Profilograms shall be recorded on a longitudinal scale of one inch (25 mm) equals 25 feet (7.5 m) and a vertical scale of one inch (25 mm) equals one inch (25 mm). A copy of the reduced tapes shall be furnished to the Engineer at the end of each days testing. Profilograph of final runway shall be performed one foot right and left of runway centerline and 15

feet (4.5 m) right and left of centerline. Any areas that indicate “must grind” will be corrected as directed by the Engineer.

Smoothness testing indicated in the above paragraphs except paragraph (iii) shall be performed within 24 hours of placement of material. Smoothness testing indicated in paragraph (iii) shall be performed within 48 hours of paving completion. The primary purpose of smoothness testing is to identify areas that may be prone to ponding of water which could lead to hydroplaning of aircraft. If the contractor’s machines and/or methods are producing significant areas that need corrective actions then production should be stopped until corrective measures can be implemented. If corrective measures are not implemented and when directed by the Engineer, production shall be stopped until corrective measures can be implemented.

(6) Grade. Grade shall be evaluated on the first day of placement and then as a minimum, every **as directed by the engineer** to allow adjustments to paving operations if measurements do not meet specification requirements. The Contractor must submit the survey data to the Engineer by the following day after measurements have been taken. The finished surface of the pavement shall not vary from the gradeline elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm). The finished grade of each lot will be determined by running levels at intervals of 50 feet (15 m) or less longitudinally and all breaks in grade transversely (not to exceed 50 feet (15 m)) to determine the elevation of the completed pavement. The Contractor shall pay the cost of surveying of the level runs that shall be performed by a licensed surveyor. The documentation, stamped and signed by a licensed surveyor, shall be provided by the Contractor to the Engineer. The lot size shall be 2000 square yards. When more than 15% of all the measurements within a lot are outside the specified tolerance, or if any one shot within the lot deviates 3/4 inch (19 mm) or more from planned grade, the Contractor shall remove the deficient area to the depth of the final course plus 1/2 inch (12 mm) of pavement and replace with new material. Skin patching shall not be permitted. Isolated high points may be ground off provided the course thickness complies with the thickness specified on the plans. The surface of the ground pavement shall have a texture consisting of grooves between 0.090 and 0.130 inches (2 and 3.5 mm) wide. The peaks and ridges shall be approximately 1/32 inch (1 mm) higher than the bottom of the grooves. The pavement shall be left in a clean condition. The removal of all of the slurry resulting from the grinding operation shall be continuous The grinding operation should be controlled so the residue from the operation does not flow across other lanes of pavement. High point grinding will be limited to 15 square yards (12.5 m^2). Areas in excess of 15 square yards (12.5 m^2) will require removal and replacement of the pavement in accordance with the limitations noted above. The Contractor shall apply a surface treatment per P-608 to all areas that have been subject to grinding.

c. Percentage of material within specification limits (PWL). The PWL shall be determined in accordance with procedures specified in Section 110 of the General Provisions. The specification tolerance limits (L) for lower and (U) for upper are contained in Table 5.

TEST PROPERTY	**Specification Tolerance**	
	L	**U**
Air Voids Total Mix (%)	2	5
Mat Density (%)	96.3	101.3
Joint Density (%)	93.3	-

d. Outliers. All individual tests for mat density and air voids shall be checked for outliers (test criterion) in accordance with ASTM E178, at a significance level of 5%. Outliers shall be

discarded, and the PWL shall be determined using the remaining test values.The criteria in Table 5 is based on production processes which have a variability with the following standard deviations: Surface Course Mat Density (%), 1.30; Base Course Mat Density (%), 1.55; Joint Density (%), 2.1.

The Contractor should note that (1) 90 PWL is achieved when consistently producing a surface course with an average mat density of at least 98% with 1.30% or less variability, (2) 90 PWL is achieved when consistently producing a base course with an average mat density of at least 97.5% with 1.55% or less variability, and (3) 90 PWL is achieved when consistently producing joints with an average joint density of at least 96% with 2.1% or less variability.

401-5.3 Resampling pavement for mat density.

a. General. Resampling of a lot of pavement will only be allowed for mat density, and then, only if the Contractor requests same, in writing, within 48 hours after receiving the written test results from the Engineer. A retest will consist of all the sampling and testing procedures contained in paragraphs 401-5.1b and 401-5.2b(1). Only one resampling per lot will be permitted.

(1) A redefined PWL shall be calculated for the resampled lot. The number of tests used to calculate the redefined PWL shall include the initial tests made for that lot plus the retests.

(2) The cost for resampling and retesting shall be borne by the Contractor.

b. Payment for resampled lots. The redefined PWL for a resampled lot shall be used to calculate the payment for that lot in accordance with Table 6.

c. Outliers. Check for outliers in accordance with ASTM E178, at a significance level of 5%.

~~**401-5.4 Leveling course**. Any course used for trueing and leveling shall meet the aggregate gradation in Table 3, paragraph 401-3.2. The trueing and leveling course shall meet the requirements of paragraph 401-3.2, 401-5.2b(1) for air voids, but shall not be subject to the density requirements of paragraph 401-5.2b(1) for mat density and 401-5.2b(3) for joint density. The leveling course shall be compacted with the same effort used to achieve density of the test section. The trueing and leveling course shall not exceed the maximum lift thickness associated with each gradation in Table 3, paragraph 401-3.2. The leveling course is the first variable thickness lift of an overlay placed prior to subsequent courses.~~

CONTRACTOR QUALITY CONTROL

401-6.1 General. The Contractor shall develop a Quality Control Program in accordance with Section 100 of the General Provisions. The program shall address all elements that affect the quality of the pavement including, but not limited to:

a. Mix design

b. Aggregate grading

c. Quality of materials

d. Stockpile management

e. Proportioning

f. Mixing and transportation

g. Placing and finishing

h. Joints

i. Compaction

j. Surface smoothness

k. Personnel

l. Laydown plan

The Contractor shall perform quality control sampling, testing, and inspection during all phases of the work and shall perform them at a rate sufficient to ensure that the work conforms to the contract requirements, and at minimum test frequencies required by paragraph 401-6.3 and Section 100 of the General Provisions. As a part of the process for approving the Contractor's plan, the Engineer may require the Contractor's technician to perform testing of samples to demonstrate an acceptable level of performance.

No partial payment will be made for materials that are subject to specific quality control requirements without an approved plan.

401-6.2 Contractor testing laboratory. The lab shall meet the requirements of ASTM D3666 including all necessary equipment, materials, and current reference standards to comply with the specifications.

401-6.3 Quality control testing. The Contractor shall perform all quality control tests necessary to control the production and construction processes applicable to these specifications and as set forth in the approved Quality Control Program. The testing program shall include, but not necessarily be limited to, tests for the control of asphalt content, aggregate gradation, temperatures, aggregate moisture, field compaction, and surface smoothness. A Quality Control Testing Plan shall be developed as part of the Quality Control Program.

a. Asphalt content. A minimum of two asphalt content tests shall be performed per lot in accordance with ASTM D6307 or ASTM D2172 if the correction factor in ASTM D6307 is greater than 1.0. The asphalt content for the lot will be determined by averaging the test results.

b. Gradation. Aggregate gradations shall be determined a minimum of twice per lot from mechanical analysis of extracted aggregate in accordance with ASTM D5444, ASTM C136, and ASTM C117.

c. Moisture content of aggregate. The moisture content of aggregate used for production shall be determined a minimum of once per lot in accordance with ASTM C566.

d. Moisture content of HMA. The moisture content shall be determined once per lot in accordance with ASTM D1461 (preferred) or AASHTO T329.

e. Temperatures. Temperatures shall be checked, at least four times per lot, at necessary locations to determine the temperatures of the dryer, the asphalt binder in the storage tank, the HMA at the plant, and the HMA at the job site.

f. In-place density monitoring. The Contractor shall conduct any necessary testing to ensure that the specified density is being achieved. A nuclear gauge may be used to monitor the pavement density in accordance with ASTM D2950.

g. Additional testing. Any additional testing that the Contractor deems necessary to control the process may be performed at the Contractor's option.

h. Monitoring. The Engineer reserves the right to monitor any or all of the above testing.

401-6.4 Sampling. When directed by the Engineer, the Contractor shall sample and test any material that appears inconsistent with similar material being sampled, unless such material is

voluntarily removed and replaced or deficiencies corrected by the Contractor. All sampling shall be in accordance with standard procedures specified.

401-6.5 Control charts. The Contractor shall maintain linear control charts both for individual measurements and range (that is, difference between highest and lowest measurements) for aggregate gradation, asphalt content, and VMA. The VMA for each sublot will be calculated and monitored by the Quality Control laboratory.

Control charts shall be posted in a location satisfactory to the Engineer and shall be kept current. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and Suspension Limits applicable to each test parameter, and the Contractor's test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the Contractor's projected data during production indicates a problem and the Contractor is not taking satisfactory corrective action, the Engineer may suspend production or acceptance of the material.

a. Individual measurements. Control charts for individual measurements shall be established to maintain process control within tolerance for aggregate gradation, asphalt content, and VMA. The control charts shall use the job mix formula target values as indicators of central tendency for the following test parameters with associated Action and Suspension Limits:

Control Chart Limits For Individual Measurements		
Sieve	**Action Limit**	**Suspension Limit**
3/4 inch (19 mm)	±6%	±9%
1/2 inch (12 mm)	±6%	±9%
3/8 inch (9 mm)	±6%	±9%
No. 4 (4.75 mm)	±6%	±9%
No. 16 (1.18 mm)	±5%	±7.5%
No. 50 (0.30 mm)	±3%	±4.5%
No. 200 (0.075 mm)	±2%	±3%
Asphalt Content	±0.45%	±0.70%
VMA	-1.00%	-1.50%

b. Range. Control charts for range shall be established to control process variability for the test parameters and Suspension Limits listed below. The range shall be computed for each lot as the difference between the two test results for each control parameter. The Suspension Limits specified below are based on a sample size of n = 2. Should the Contractor elect to perform more than two tests per lot, the Suspension Limits shall be adjusted by multiplying the Suspension Limit by 1.18 for n = 3 and by 1.27 for n = 4.

Control Chart Limits Based On Range (Based On n = 2)	
Sieve	**Suspension Limit**
1/2 inch (12 mm)	11%
3/8 inch (9 mm)	11%
No. 4 (4.75 mm)	11%
No. 16 (1.18 mm)	9%
No. 50 (0.30 mm)	6%
No. 200 (0.075 mm)	3.5%
Asphalt Content	0.8%

c. Corrective Action. The Contractor Quality Control Program shall indicate that appropriate action shall be taken when the process is believed to be out of tolerance. The Plan shall contain sets of rules to gauge when a process is out of control and detail what action will be taken to bring the process into control. As a minimum, a process shall be deemed out of control and production stopped and corrective action taken, if:

(1) One point falls outside the Suspension Limit line for individual measurements or range; or

(2) Two points in a row fall outside the Action Limit line for individual measurements.

401-6.6 Quality control reports. The Contractor shall maintain records and shall submit reports of quality control activities daily, in accordance with the Contractor Quality Control Program described in General Provisions, Section 100.

METHOD OF MEASUREMENT

401-7.1 Measurement. HMA shall be measured by the number of tons (kg) of HMA used in the accepted work. Recorded batch weights or truck scale weights will be used to determine the basis for the tonnage.

BASIS OF PAYMENT

401-8.1 Payment. Payment for a lot of HMA meeting all acceptance criteria as specified in paragraph 401-5.2 shall be made based on results of tests for smoothness, mat density and air voids. Payment for acceptable lots shall be adjusted according to paragraph 401-8.1a for mat density and air voids and 401-8.1c for smoothness, subject to the limitation that:

a. The total project payment for plant mix bituminous concrete pavement shall not exceed 100 percent of the product of the contract unit price and the total number of tons (kg) of HMA used in the accepted work (See Note 1 under Table 6).

b. The price shall be compensation for furnishing all materials, for all preparation, mixing, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

c. Basis of adjusted payment. The pay factor for each individual lot shall be calculated in accordance with Table 6. A pay factor shall be calculated for both mat density and air voids. The

lot pay factor shall be the higher of the two values when calculations for both mat density and air voids are 100% or higher. The lot pay factor shall be the product of the two values when only one of the calculations for either mat density or air voids is 100% or higher. The lot pay factor shall be the lower of the two values when calculations for both mat density and air voids are less than 100%. If PWL for joint density is less than 71 percent then the lot pay factor shall be reduced by 5% but be no higher than 95%.

For each lot accepted, the adjusted contract unit price shall be the product of the lot pay factor for the lot and the contract unit price. Payment shall be subject to the total project payment limitation specified in paragraph 401-8.1. Payment in excess of 100% for accepted lots of HMA shall be used to offset payment for accepted lots of bituminous concrete pavement that achieve a lot pay factor less than 100%.

Table 6. Price adjustment schedule[1]

Percentage of material within specification limits (PWL)	**Lot pay factor (percent of contract unit price)**
96 – 100	106
90 – 95	PWL + 10
75 – 89	0.5 PWL + 55
55 – 74	1.4 PWL – 12
Below 55	Reject [2]

[1] Although it is theoretically possible to achieve a pay factor of 106% for each lot, actual payment above 100% shall be subject to the total project payment limitation specified in paragraph 401-8.1.

[2] The lot shall be removed and replaced. However, the Engineer may decide to allow the rejected lot to remain. In that case, if the Engineer and Contractor agree in writing that the lot shall not be removed, it shall be paid for at 50% of the contract unit price and the total project payment shall be reduced by the amount withheld for the rejected lot.

d. Profilograph smoothness. When the final average profile index (subsequent to any required corrective action) does not exceed 7 inches per mile (18 cm per 1.6 km), payment will be made at the contract unit price for the completed pavement. If the final average profile index (subsequent to any required corrective action) exceeds 7 inches per mile (18 cm per 1.6 km), but does not exceed 15 inches per mile (38 cm per 1.6 m), the Contractor may elect to accept a contract unit price adjustment in lieu of reducing the profile index.

e. Basis of adjusted payment for smoothness. Price adjustment for pavement smoothness will be made in accordance with Table 7. The adjustment will apply to the total tonnage of HMA within a lot of pavement and shall be applied with the following equation:

(Tons of asphalt concrete in lot) × (lot pay factor) × (unit price per ton) × (smoothness pay factor) = payment for lot

Table 7. Profilograph Average Profile Index Smoothness Pay Factor

Inches/miles per 1/10 mile	Short Sections	Pay Factor
0.0 - 7	00.0 - 15.0	100%
7.1 - 9	15.1 - 16	98%
9.1 - 11	16.1 - 17	96%
11.1 - 13	17.1 - 18	94%
13.1 - 14	18.1 - 20	92%
14.1 - 15	20.1 - 22	90%
15.1 and up	22.1 and up	Corrective work required[1]

[1] The Contractor shall correct pavement areas not meeting these tolerances by removing and replacing the defective work. If the Contractor elects to construct an overlay to correct deficiencies, the minimum thickness of the overlay should be at least three times the maximum aggregate size (approximately four (4) times the nominal maximum aggregate size). The corrective overlay shall not violate grade Criteria and butt joints shall be constructed by sawing and removing the original pavement in compliance with the thickness/ maximum aggregate size ratio. Skin patching shall not be permitted.

HMA placed above the specified grade shall not be included in the quantities for payment.

401-8.1.1. Payment. Payment will be made under:

Item P-401 Bituminous Asphalt Surface Course (PG 76-22, Gradation 2) - per ton

TESTING REQUIREMENTS

ASTM C29 Standard Test Method for Bulk Density (“Unit Weight”) and Voids in Aggregate

ASTM C88 Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

ASTM C117 Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing

ASTM C127 Standard Test Method for Density, Relative Density (Specific Gravity) and Absorption of Coarse Aggregate

ASTM C131 Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

ASTM C136 Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates

ASTM C183 Standard Practice for Sampling and the Amount of Testing of Hydraulic Cement

ASTM C566 Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying

ASTM D75	Standard Practice for Sampling Aggregates
ASTM D979	Standard Practice for Sampling Bituminous Paving Mixtures
ASTM D1073	Standard Specification for Fine Aggregate for Bituminous Paving Mixtures
ASTM D2172	Standard Test Method for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures
ASTM D1461	Standard Test Method for Moisture or Volatile Distillates in Bituminous Paving Mixtures
ASTM D2041	Standard Test Method for Theoretical Maximum Specific Gravity and Density of Bituminous Paving Mixtures
ASTM D2419	Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM D2489	Standard Practice for Estimating Degree of Particle Coating of Bituminous-Aggregate Mixtures
ASTM D2726	Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures
ASTM D2950	Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods
ASTM D3203	Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D3666	Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials
ASTM D4318	Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM D4867	Standard Test Method for Effect of Moisture on Asphalt Concrete Paving Mixtures
ASTM D5444	Standard Test Method for Mechanical Size Analysis of Extracted Aggregate
ASTM D6084	Standard Test Method for Elastic Recovery of Bituminous Materials by Ductilometer
ASTM D6307	Standard Test Method for Asphalt Content of Hot Mix Asphalt by Ignition Method
ASTM D6752	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic Vacuum Sealing Method
ASTM D6926	Standard Practice for Preparation of Bituminous Specimens Using Marshall Apparatus

ASTM D6925	Standard Test Method for Preparation and Determination of the Relative Density of Hot Mix Asphalt (HMA) Specimens by Means of the SuperPave Gyratory Compactor.
ASTM E11	Standard Specification for Woven Wire Test Sieve Cloth and Test Sieves
ASTM E178	Standard Practice for Dealing with Outlying Observations
ASTM E1274	Standard Test Method for Measuring Pavement Roughness Using a Profilograph
AASHTO T030	Standard Method of Test for Mechanical Analysis of Extracted Aggregate
AASHTO T110	Standard Method of Test for Moisture or Volatile Distillates in Hot Mix Asphalt (HMA)
AASHTO T275	Standard Method of Test for Bulk Specific Gravity (Gmb) of Compacted Hot Mix Asphalt (HMA) Using Paraffin-Coated Specimens
AASHTO M156	Standard Specification for Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
AASHTO T329	Standard Method of Test for Moisture Content of Hot Mix Asphalt (HMA) by Oven Method

Asphalt Institute Handbook MS-26,
Asphalt Binder

Asphalt Institute MS-2Mix Design Manual, 7th Edition

MATERIAL REQUIREMENTS

ASTM D242	Standard Specification for Mineral Filler for Bituminous Paving Mixtures
ASTM D946	Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction
ASTM D3381	Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction
ASTM D4552	Standard Practice for Classifying Hot-Mix Recycling Agents
ASTM D6373	Standard Specification for Performance Graded Asphalt Binder

END OF ITEM P-401

Item P-501 Portland Cement Concrete (PCC) Pavement

DESCRIPTION

501-1.1 This work shall consist of pavement composed of portland cement concrete (PCC), with reinforcement and without reinforcement constructed on a prepared underlying surface in accordance with these specifications and shall conform to the lines, grades, thickness, and typical cross-sections shown on the plans.

MATERIALS

501-2.1 Aggregates.

a. Reactivity. Fine and Coarse aggregates to be used in all concrete shall be evaluated and tested by the Contractor for alkali-aggregate reactivity in accordance with both ASTM C1260 and ASTM C1567. Aggregate and mix proportion reactivity tests shall be performed for each project.

(1) Coarse and fine aggregate shall be tested separately in accordance with ASTM C1260. The aggregate shall be considered innocuous if the expansion of test specimens, tested in accordance with ASTM C1260, does not exceed 0.10% at 28 days (30 days from casting).

(2) Combined coarse and fine aggregate shall be tested in accordance with ASTM C1567, modified for combined aggregates, using the proposed mixture design proportions of aggregates, cementitious materials, and/or specific reactivity reducing chemicals. If lithium nitrate is proposed for use with or without supplementary cementitious materials, the aggregates shall be tested in accordance with Corps of Engineers (COE) Concrete Research Division (CRD) C662. If lithium nitrate admixture is used, it shall be nominal 30% ±0.5% weight lithium nitrate in water.

(3) If the expansion of the proposed combined materials test specimens, tested in accordance with ASTM C1567, modified for combined aggregates, or COE CRD C662, does not exceed 0.10% at 28 days, the proposed combined materials will be accepted. If the expansion of the proposed combined materials test specimens is greater than 0.10% at 28 days, the aggregates will not be accepted unless adjustments to the combined materials mixture can reduce the expansion to less than 0.10% at 28 days, or new aggregates shall be evaluated and tested.

b. Fine aggregate. Fine aggregate shall conform to the requirements of ASTM C33. Grading of the fine aggregate, as delivered to the mixer, shall conform to the requirements of ASTM C33 and shall have a fineness modulus of not less than 2.50 nor more than 3.40. The soundness loss shall not exceed 10% when sodium sulfate is used or 15% when magnesium sulfate is used, after five cycles, when tested per ASTM C88.

The amount of deleterious material in the fine aggregate shall not exceed the following limits:

Limits for Deleterious Substances in Fine Aggregate for Concrete

Deleterious material	**ASTM**	**Percentage by Mass**
Clay Lumps and friable particles	ASTM C142	1.0
Material finer than 0.075mm (No. 200 sieve)	ASTM C117	3.0
Lightweight particles	ASTM C123 using a medium with a density of Sp. Gr. of 2.0	0.5
Total of all deleterious Material		3.0

c. Coarse aggregate. Gradation, within the separated size groups, shall meet the coarse aggregate grading requirements of ASTM C33 when tested in accordance with ASTM C136. When the nominal maximum size of the aggregate is greater than one inch (25 mm), the aggregates shall be furnished in two size groups.

Aggregates delivered to the mixer shall consist of crushed stone, crushed or uncrushed gravel, air-cooled iron blast furnace slag, crushed recycled concrete pavement, or a combination. The aggregates should be free of ferrous sulfides, such as pyrite, that would cause “rust” staining that can bleed through pavement markings. Steel blast furnace slag shall not be permitted. The aggregate shall be composed of clean, hard, uncoated particles. Dust and other coating shall be removed from the aggregates by washing.

The percentage of wear shall be no more than 40% when tested in accordance with ASTM C131.

The quantity of flat, elongated, and flat and elongated particles in any size group coarser than 3/8 sieve (9 mm) shall not exceed 8% by weight when tested in accordance with ASTM D4791. A flat particle is defined as one having a ratio of width to thickness greater than 5. An elongated particle is one having a ratio of length to width greater than 5.

The soundness loss shall not exceed 12% when sodium sulfate is used or 18% when magnesium sulfate is used, after five cycles, when tested per ASTM C88.

The amount of deleterious material in the coarse aggregate shall not exceed the following limits:

Limits for Deleterious Substances in Coarse Aggregate for Concrete

Deleterious material	**ASTM**	**Percentage by Mass**
Clay Lumps and friable particles	ASTM C142	1.0
Material finer than No. 200 sieve (0.075mm)	ASTM C117	1.0
Lightweight particles	ASTM C123 using a medium with a density of Sp. Gr. of 2.0	0.5
Chert (less than 2.40 Sp Gr.)	ASTM C123 using a medium with a density of Sp. Gr. of 2.40)	1.0
Total of all deleterious Material		3.0

Table 1. Gradation For Coarse Aggregate (ASTM C33)

Sieve Designations (square openings)		**Percentage by Weight Passing Sieves**		
		From 1-1/2 inch to No. 4 (38 mm - 4.75 mm)		**From 1 inch to No. 4 (25.0 mm-4.75 mm)**
		#4 1-1/2 inch - 3/4 inch	**#67 3/4 inch - No. 4**	**#57 1 inch - No. 4**
inch	**mm**			
2-1/2	60	---	---	---
2	50	100	---	---
1-1/2	38	90-100	---	100
1	25	20-55	100	95-100
3/4	19	0-15	90-100	---
1/2	13	---	---	25-60
3/8	9	0-5	20-55	---
No. 4	4.75	---	0-10	0-10
No. 8	2.36	---	0-5	0-5

NOTE: The gradation to be selected by the Contractor shall meet one of the above gradations as approved by the engineer.

(1) Aggregate susceptibility to durability (D) cracking.

Coarse aggregate may be accepted from sources that have a 20 year service history for the same gradation to be supplied with no durability issues. Aggregates that do not have a record of 20 years of service without major repairs (less than 5% of slabs replaced) in similar conditions without D-cracking shall not be used unless it meets the following:

(a) Material currently being produced shall have a durability factor ≥ 95 using ASTM C666 procedure B. Coarse aggregates that are crushed granite, calcite cemented sandstone, quartzite, basalt, diabase, rhyolite or trap rock are considered to meet the D-cracking test but must meet all other quality tests. Aggregates meeting State Highway Department material specifications may be acceptable.

(b) The Contractor shall submit a current certification that the aggregate does not have a history of D-cracking and that the aggregate meets the state specifications for use in PCC pavement for use on interstate highways. Certifications, tests and any history reports must be for the same gradation as being proposed for use on the project. Certifications which are not dated or which are over one (1) year old or which are for different gradations will not be accepted. Test results will only be accepted when tests were performed by a State Department of Transportation (DOT) materials laboratory or an accredited laboratory.

(2) Combined aggregate gradation. If substituted for the grading requirements specified for coarse aggregate and for fine aggregate and when approved by the Engineer, the combined aggregate grading shall meet the following requirements:

(a) The materials selected and the proportions used shall be such that when the Coarseness Factor (CF) and the Workability Factor (WF) are plotted on a diagram as described in d. below, the point thus determined shall fall within the parallelogram described therein.

(b) The CF shall be determined from the following equation:

CF = (cumulative percent retained on the 3/8 in. sieve)(100) / (cumulative percent retained on the No. 8 sieve)

(c) The Workability Factor WF is defined as the percent passing the No. 8 (2.36 mm) sieve based on the combined gradation. However, WF shall be adjusted, upwards only, by 2.5 percentage points for each 94 pounds (42 kg) of cementitious material per cubic meter yard greater than 564 pounds per cubic yard (335 kg per cubic meter).

(d) A diagram shall be plotted using a rectangular scale with WF on the Y-axis with units from 20 (bottom) to 45 (top), and with CF on the X-axis with units from 80 (left side) to 30 (right side). On this diagram a parallelogram shall be plotted with corners at the following coordinates (CF-75, WF-28), (CF-75, WF-40), (CF-45, WF-32.5), and (CF-45, WF-44.5). If the point determined by the intersection of the computed CF and WF does not fall within the above parallelogram, the grading of each size of aggregate used and the proportions selected shall be changed as necessary.

501-2.2 Cement. Cement shall conform to the requirements of ASTM C150 Type III.

If aggregates are deemed innocuous when tested in accordance with paragraph 501-2.1.a.1 and accepted in accordance with paragraph 501-2.1.a.2, higher equivalent alkali content in the cement may be allowed if approved by the Engineer and FAA. If cement becomes partially set or contains lumps of caked cement, it shall be rejected. Cement salvaged from discarded or used bags shall not be used.

501-2.3 Cementitious materials.

a. Fly ash. Fly ash shall meet the requirements of ASTM C618, with the exception of loss of ignition, where the maximum shall be less than 6%. Fly ash for use in mitigating alkali-silica reactivity shall have a Calcium Oxide (CaO) content of less than 13% and a total available alkali content less than 3% per ASTM C311. Fly ash produced in furnace operations using liming materials or soda ash (sodium carbonate) as an additive shall not be acceptable. The Contractor shall furnish the previous three most recent, consecutive ASTM C618 reports for each source of fly ash proposed in the mix design, and shall furnish each additional report as they become

available during the project. The reports can be used for acceptance or the material may be tested independently by the Engineer.

b. Slag cement (ground granulated blast furnace (GGBF)). Slag cement shall conform to ASTM C989, Grade 100 or Grade 120. Slag cement shall be used only at a rate between 25% and 55% of the total cementitious material by mass.

c. Raw or calcined natural pozzolan. Natural pozzolan shall be raw or calcined and conform to ASTM C618, Class N, including the optional requirements for uniformity and effectiveness in controlling Alkali-Silica reaction and shall have a loss on ignition not exceeding 6%. Class N pozzolan for use in mitigating Alkali-Silica Reactivity shall have a total available alkali content less than 3%.

501-2.4 Joint seal. The joint seal for the joints in the concrete pavement shall meet the requirements of Item P-605 and shall be of the type specified in the plans.

501-2.5 Isolation joint filler. Premolded joint filler for isolation joints shall conform to the requirements of ASTM D1752, Type II and shall be where shown on the plans. The filler for each joint shall be furnished in a single piece for the full depth and width required for the joint, unless otherwise specified by the Engineer. When the use of more than one piece is required for a joint, the abutting ends shall be fastened securely and held accurately to shape by stapling or other positive fastening means satisfactory to the Engineer.

501-2.6 Steel reinforcement. Reinforcing shall consist of Welded Wire Fabric conforming to the requirements of ASTM A1064, or bar mats conforming with the requirements of ASTM A184 or ASTM A704.

501-2.7 Dowel and tie bars. Dowel bars shall be plain steel bars conforming to ASTM A615 and shall be free from burring or other deformation restricting slippage in the concrete. Before delivery to the construction site each dowel bar shall be epoxy coated per ASTM A1078. The dowels shall be coated with a bond-breaker recommended by the manufacturer. Dowel sleeves or inserts are not permitted. Grout retention rings shall be fully circular metal or plastic devices capable of supporting the dowel until the grout hardens.

Tie bars shall be deformed steel bars and conform to the requirements of ASTM A615. Tie bars designated as Grade 60 in ASTM A615 or ASTM A706 shall be used for construction requiring bent bars.

501-2.8 Water. Water used in mixing or curing shall be potable, clean, free of oil, salt, acid, alkali, sugar, vegetable, or other substances injurious to the finished product, except that non-potable water, or water from concrete production operations, may be used if it meets the requirements of ASTM C1602.

501-2.9 Material for curing concrete. Curing materials shall conform to one of the following specifications:

a. Liquid membrane-forming compounds for curing concrete shall conform to the requirements of ASTM C309, Type 2, Class B, or Class A if wax base only.

b. White polyethylene film for curing concrete shall conform to the requirements of ASTM C171.

c. White burlap-polyethylene sheeting for curing concrete shall conform to the requirements of ASTM C171.

d. Waterproof paper for curing concrete shall conform to the requirements of ASTM C171.

501-2.10 Admixtures. The Contractor shall submit certificates indicating that the material to be furnished meets all of the requirements indicated below. In addition, the Engineer may require the Contractor to submit complete test data from an approved laboratory showing that the material to be furnished meets all of the requirements of the cited specifications. Subsequent tests may be made of samples taken by the Engineer from the supply of the material being furnished or proposed for use on the work to determine whether the admixture is uniform in quality with that approved.

a. Air-entraining admixtures. Air-entraining admixtures shall meet the requirements of ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions. The air-entrainment agent and any water reducer admixture shall be compatible.

b. Water-reducing admixtures. Water-reducing admixture shall meet the requirements of ASTM C494, Type A, B, or D. ASTM C494, Type F and G high range water reducing admixtures and ASTM C1017 flowable admixtures shall not be used.

c. Other admixtures. The use of set retarding, and set-accelerating admixtures shall be approved by the Engineer. Retarding shall meet the requirements of ASTM C494, Type A, B, or D and set-accelerating shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.

d. Lithium Nitrate. The lithium admixture shall be a nominal 30% aqueous solution of Lithium Nitrate, with a density of 10 pounds/gallon (1.2 kg/L), and shall have the approximate chemical form as shown below:

Constituent	Limit (Percent by Mass)
LiNO3 (Lithium Nitrate)	30 ±0.5
SO4 (Sulfate Ion)	0.1 (max)
Cl (Chloride Ion)	0.2 (max)
Na (Sodium Ion)	0.1 (max)
K (Potassium Ion)	0.1 (max)

Provide a trained manufacturer's representative to supervise the lithium nitrate admixture dispensing and mixing operations.

501-2.11 Epoxy-resin. All epoxy-resin materials shall be two-component materials conforming to the requirements of ASTM C881, Class as appropriate for each application temperature to be encountered, except that in addition, the materials shall meet the following requirements:

a. Material for use for embedding dowels and anchor bolts shall be Type IV, Grade 3.

b. Material for use as patching materials for complete filling of spalls and other voids and for use in preparing epoxy resin mortar shall be Type III, Grade as approved.

c. Material for use for injecting cracks shall be Type IV, Grade 1.

d. Material for bonding freshly mixed Portland cement concrete or mortar or freshly mixed epoxy resin concrete or mortar to hardened concrete shall be Type V, Grade as approved.

501-2.12 Material acceptance. Prior to use of materials, the Contractor shall submit certified test reports to the Engineer for those materials proposed for use during construction. The certification shall show the appropriate ASTM test for each material, the test results, and a statement that the material passed or failed.

The Engineer may request samples for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

MIX DESIGN

501-3.1. General. No concrete shall be placed until the mix design has been submitted to the Engineer for review and the Engineer has taken appropriate action. The Engineer's review shall not relieve the Contractor of the responsibility to select and proportion the materials to comply with this section.

501-3.2 Proportions. The laboratory preparing the mix design shall be accredited in accordance with ASTM C1077. The mix design for all Portland cement concrete placed under P-501 shall be stamped or sealed by the responsible professional Engineer of the laboratory. Concrete shall be proportioned to achieve a 48-hour flexural strength that meets or exceeds the acceptance criteria contained in paragraph 501-5.2 for a flexural strength of 650 psi per ASTM C78. The mix shall be developed using the procedures contained in the Portland Cement Association's (PCA) publication, "Design and Control of Concrete Mixtures".

The minimum cementitious material shall be adequate to ensure a workable, durable mix. The minimum cementitious material (cement plus fly ash, or slag cement) shall be 470 pounds per cubic yard. The ratio of water to cementitious material, including free surface moisture on the aggregates but not including moisture absorbed by the aggregates shall not be more than 0.45 by weight.

Flexural strength test specimens shall be prepared in accordance with ASTM C192 and tested in accordance with ASTM C78. The mix determined shall be workable concrete having a maximum allowable slump between one and two inches (25mm and 50 mm) as determined by ASTM C143. For slip-form concrete, the slump shall be between 1/2 inch (12 mm) and 1-1/2 inch (38 mm). At the start of the project, the Contractor shall determine a maximum allowable slump for slip-form pavement which will produce in-place pavement to control the edge slump. The selected slump shall be applicable to both pilot and fill-in lanes.

Before the start of paving operations and after approval of all material to be used in the concrete, the Contractor shall submit a mix design showing the proportions and flexural strength obtained from the concrete at seven (7) and 28 days. The mix design shall include copies of test reports, including test dates, and a complete list of materials including type, brand, source, and amount of cement, fly ash, ground slag, coarse aggregate, fine aggregate, water, and admixtures. The mix design shall be submitted to the Engineer at least 30 days prior to the start of operations. The submitted mix design shall not be more than 90 days old. Production shall not begin until the mix design is approved in writing by the Engineer.

If a change in sources is made, or admixtures added or deleted from the mix, a new mix design must be submitted to the Engineer for approval.

The results of the mix design shall include a statement giving the maximum nominal coarse aggregate size and the weights and volumes of each ingredient proportioned on a one cubic yard (meter) basis. Aggregate quantities shall be based on the mass in a saturated surface dry condition. The recommended mixture proportions shall be accompanied by test results demonstrating that the proportions selected will produce concrete of the qualities indicated. Trial mixtures having proportions, slumps, and air content suitable for the work shall be based on methodology described in PCA's publication, Design and Control of Concrete Mixtures, modified as necessary to accommodate flexural strength.

The submitted mix design shall be stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items as a minimum:

a. Coarse, fine, and combined aggregate gradations and plots including fineness modulus of the fine aggregate.

b. Reactivity Test Results.

c. Coarse aggregate quality test results, including deleterious materials.

d. Fine aggregate quality test results, including deleterious materials.

e. Mill certificates for cement and supplemental cementitious materials.

f. Certified test results for all admixtures, including Lithium Nitrate if applicable.

g. Specified flexural strength, slump, and air content.

h. Recommended proportions/volumes for proposed mixture and trial water-cementitious materials ratio, including actual slump and air content.

i. Flexural and compressive strength summaries and plots, including all individual beam and cylinder breaks.

j. Correlation ratios for acceptance testing and Contractor Quality Control testing, when applicable.

k. Historical record of test results documenting production standard deviation, when applicable.

501-3.3 Cementitious materials.

a. Fly ash. When fly ash is used as a partial replacement for cement, the replacement rate shall be determined from laboratory trial mixes, and shall be between 20 and 30% by weight of the total cementitious material. If fly ash is used in conjunction with slag cement the maximum replacement rate shall not exceed 10% by weight of total cementitious material.

b. Slag cement (ground granulated blast furnace (GGBF)). Slag cement may be used. The slag cement, or slag cement plus fly ash if both are used, may constitute between 25 to 55% of the total cementitious material by weight. If the concrete is to be used for slipforming operations and the air temperature is expected to be lower than 55°F (13°C) the percent slag cement shall not exceed 30% by weight.

c. Raw or calcined natural pozzolan. Natural pozzolan may be used in the mix design. When pozzolan is used as a partial replacement for cement, the replacement rate shall be determined from laboratory trial mixes, and shall be between 20 and 30% by weight of the total cementitious material. If pozzolan is used in conjunction with slag cement the maximum replacement rate shall not exceed 10% by weight of total cementitious material.

501-3.4 Admixtures.

a. Air-entraining admixtures. Air-entraining admixture are to be added in such a manner that will ensure uniform distribution of the agent throughout the batch. The air content of freshly mixed air-entrained concrete shall be based upon trial mixes with the materials to be used in the work adjusted to produce concrete of the required plasticity and workability. The percentage of air in the mix shall be 2.5%. Air content shall be determined by testing in accordance with ASTM C231 for gravel and stone coarse aggregate and ASTM C173 for slag and other highly porous coarse aggregate.

b. Water-reducing admixtures. Water-reducing admixtures shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements. Tests shall be conducted on trial mixes, with the materials to be used in the work, in accordance with ASTM C494.

c. Other admixtures. Set controlling, and other approved admixtures shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements. Tests shall be conducted on trial mixes, with the materials to be used in the work, in accordance with ASTM C 494.

d. Lithium nitrate. Lithium nitrate shall be added to the mix in the manner recommended by the manufacturer and in the amount necessary to comply with the specification requirements in accordance with paragraph 501-2.10d.

501-3.5 Concrete mix design laboratory. The Contractor's laboratory used to develop the concrete mix design shall be accredited in accordance with ASTM C1077. The laboratory accreditation must be current and listed on the accrediting authority's website. All test methods required for developing the concrete mix design must be listed on the lab accreditation. A copy of the laboratory's current accreditation and accredited test methods shall be submitted to the Engineer prior to start of construction

CONSTRUCTION METHODS

501-4.1 Equipment. Equipment necessary for handling materials and performing all parts of the work shall be approved by the Engineer, but does not relieve the Contractor of the responsibility for the proper operation of equipment and maintaining the equipment in good working condition. The equipment shall be at the jobsite sufficiently ahead of the start of paving operations to be examined thoroughly and approved.

a. Batch plant and equipment. The batch plant and equipment shall conform to the requirements of ASTM C94.

b. Mixers and transportation equipment.

(1) General. Concrete may be mixed at a central plant, or wholly or in part in truck mixers. Each mixer shall have attached in a prominent place a manufacturer's nameplate showing the capacity of the drum in terms of volume of mixed concrete and the speed of rotation of the mixing drum or blades.

(2) Central plant mixer. Central plant mixers shall conform to the requirements of ASTM C94. The mixer shall be examined daily for changes in condition due to accumulation of hard concrete or mortar or wear of blades. The pickup and throwover blades shall be replaced when they have worn down 3/4 inch (19 mm) or more. The Contractor shall have a copy of the manufacturer's design on hand showing dimensions and arrangement of blades in reference to original height and depth.

(3) Truck mixers and truck agitators. Truck mixers used for mixing and hauling concrete and truck agitators used for hauling central-mixed concrete shall conform to the requirements of ASTM C94.

(4) Nonagitator trucks. Nonagitating hauling equipment shall conform to the requirements of ASTM C94.

(5) Transfer and spreading equipment. Equipment for transferring concrete from the transporting equipment to the paving lane in front of the paver shall be specially manufactured, self-propelled transfer equipment which will accept the concrete outside the paving lane and will transfer and spread it evenly across the paving lane in front of the paver and strike off the surface evenly to a depth which permits the paver to operate efficiently.

c. Finishing equipment. The standard method of constructing concrete pavements shall be with an approved slip-form paving equipment designed and operated to spread, consolidate,

screed, and float-finish the freshly placed concrete in one complete pass of the machine so that the end result is a dense and homogeneous pavement which is achieved with a minimum of hand finishing. The paver-finisher shall be a heavy duty, self-propelled machine designed specifically for paving and finishing high quality concrete pavements. It shall weigh at least 2,200 lbs per foot (3274 kg/m) of paving lane width and powered by an engine having at least 6.0 horsepower per foot of lane width.

On projects requiring less than 500 square yard (418 sq m) of cement concrete pavement or requiring individual placement areas of less than 500 square yard (418 sq m), or irregular areas at locations inaccessible to slip-form paving equipment, concrete pavement may be placed with approved placement and finishing equipment using stationary side forms. Hand screeding and float finishing may only be used on small irregular areas as allowed by the Engineer.

d. Vibrators. Vibrator shall be the internal type. Operating frequency for internal vibrators shall be between 8,000 and 12,000 vibrations per minute. Average amplitude for internal vibrators shall be 0.025-0.05 inch (0.06 - 0.13 cm).

The number, spacing, and frequency shall be as necessary to provide a dense and homogeneous pavement and meet the recommendations of American Concrete Institute (ACI) 309, Guide for Consolidation of Concrete. Adequate power to operate all vibrators shall be available on the paver. The vibrators shall be automatically controlled so that they shall be stopped as forward motion ceases. The Contractor shall provide an electronic or mechanical means to monitor vibrator status. The checks on vibrator status shall occur a minimum of two times per day or when requested by the Engineer.

Hand held vibrators may be used in irregular areas only, but shall meet the recommendations of ACI 309R, Guide for Consolidation of Concrete.

e. Concrete saws. The Contractor shall provide sawing equipment adequate in number of units and power to complete the sawing to the required dimensions. The Contractor shall provide at least one standby saw in good working order and a supply of saw blades at the site of the work at all times during sawing operations. Early-entry saws may be used, subject to demonstration and approval of the Engineer.

f. Side forms. Straight side forms shall be made of steel and shall be furnished in sections not less than 10 feet (3 m) in length. Forms shall have a depth equal to the pavement thickness at the edge, and a base width equal to or greater than the depth. Flexible or curved forms of proper radius shall be used for curves of 100-foot (31 m) radius or less. Forms shall be provided with adequate devices for secure settings so that when in place they will withstand, without visible spring or settlement, the impact and vibration of the consolidating and finishing equipment. Forms with battered top surfaces and bent, twisted or broken forms shall not be used. Built-up forms shall not be used, except as approved by the Engineer. The top face of the form shall not vary from a true plane more than 1/8 inch (3 mm) in 10 feet (3 m), and the upstanding leg shall not vary more than 1/4 inch (6 mm). The forms shall contain provisions for locking the ends of abutting sections together tightly for secure setting. Wood forms may be used under special conditions, when approved by the Engineer.

g. Pavers. The paver shall be fully energized, self-propelled, and designed for the specific purpose of placing, consolidating, and finishing the concrete pavement, true to grade, tolerances, and cross-section. It shall be of sufficient weight and power to construct the maximum specified concrete paving lane width as shown in the plans, at adequate forward speed, without transverse, longitudinal or vertical instability or without displacement. The paver shall be equipped with electronic or hydraulic horizontal and vertical control devices.

501-4.2 Form setting. Forms shall be set sufficiently in advance of the concrete placement to ensure continuous paving operation. After the forms have been set to correct grade, the underlying surface shall be thoroughly tamped, either mechanically or by hand, at both the inside and outside edges of the base of the forms. Forms shall be staked into place sufficiently to maintain the form in position for the method of placement.

Form sections shall be tightly locked and shall be free from play or movement in any direction. The forms shall not deviate from true line by more than 1/8 inch (3 mm) at any joint. Forms shall be so set that they will withstand, without visible spring or settlement, the impact and vibration of the consolidating and finishing equipment. Forms shall be cleaned and oiled prior to the placing of concrete.

The alignment and grade elevations of the forms shall be checked and corrections made by the Contractor immediately before placing the concrete.

501-4.3 Conditioning of underlying surface. The compacted underlying surface on which the pavement will be placed shall be widened approximately 3 feet (1 m) to extend beyond the paving machine track to support the paver without any noticeable displacement. After the underlying surface has been placed and compacted to the required density, the areas that will support the paving machine and the area to be paved shall be trimmed or graded to the plan grade elevation and profile by means of a properly designed machine. The grade of the underlying surface shall be controlled by a positive grade control system using lasers, stringlines, or guide wires. If the density of the underlying surface is disturbed by the trimming operations, it shall be corrected by additional compaction and retested at the option of the Engineer before the concrete is placed except when stabilized subbases are being constructed. If damage occurs on a stabilized subbase, it shall be corrected full depth by the Contractor. If traffic is allowed to use the prepared grade, the grade shall be checked and corrected immediately before the placement of concrete. The prepared grade shall be moistened with water, without saturating, immediately ahead of concrete placement to prevent rapid loss of moisture from concrete. The underlying surface shall be protected so that it will be entirely free of frost when concrete is placed.

501-4.4 Conditioning of underlying surface, side-form and fill-in lane construction. The prepared underlying surface shall be moistened with water, without saturating, immediately ahead of concrete placement to prevent rapid loss of moisture from the concrete. Damage caused by hauling or usage of other equipment shall be corrected and retested at the option of the Engineers. If damage occurs to a stabilized subbase, it shall be corrected full depth by the Contractor. A template shall be provided and operated on the forms immediately in advance of the placing of all concrete. The template shall be propelled only by hand and not attached to a tractor or other power unit. Templates shall be adjustable so that they may be set and maintained at the correct contour of the underlying surface. The adjustment and operation of the templates shall be such as will provide an accurate retest of the grade before placing the concrete thereon. All excess material shall be removed and wasted. Low areas shall be filled and compacted to a condition similar to that of the surrounding grade. The underlying surface shall be protected so that it will be entirely free from frost when the concrete is placed. The use of chemicals to eliminate frost in the underlying surface shall not be permitted.

The template shall be maintained in accurate adjustment, at all times by the Contractor, and shall be checked daily.

501-4.5 Handling, measuring, and batching material. The batch plant site, layout, equipment, and provisions for transporting material shall assure a continuous supply of material to the work. Stockpiles shall be constructed in such a manner that prevents segregation and intermixing of

deleterious materials. Aggregates from different sources shall be stockpiled, weighed and batched separately at the concrete batch plant.

Aggregates that have become segregated or mixed with earth or foreign material shall not be used. All aggregates produced or handled by hydraulic methods, and washed aggregates, shall be stockpiled or binned for draining at least 12 hours before being batched. Rail shipments requiring more than 12 hours will be accepted as adequate binning only if the car bodies permit free drainage.

Batching plants shall be equipped to proportion aggregates and bulk cement, by weight, automatically using interlocked proportioning devices of an approved type. When bulk cement is used, the Contractor shall use a suitable method of handling the cement from weighing hopper to transporting container or into the batch itself for transportation to the mixer, such as a chute, boot, or other approved device, to prevent loss of cement. The device shall be arranged to provide positive assurance that the cement content specified is present in each batch.

501-4.6 Mixing concrete. The concrete may be mixed at the work site, in a central mix plant or in truck mixers. The mixer shall be of an approved type and capacity. Mixing time shall be measured from the time all materials, except water, are emptied into the drum. All concrete shall be mixed and delivered to the site in accordance with the requirements of ASTM C94.

Mixed concrete from the central mixing plant shall be transported in truck mixers, truck agitators, or non-agitating trucks. The elapsed time from the addition of cementitious material to the mix until the concrete is deposited in place at the work site shall not exceed 30 minutes when the concrete is hauled in non-agitating trucks, nor 90 minutes when the concrete is hauled in truck mixers or truck agitators. Retempering concrete by adding water or by other means will not be permitted. With transit mixers additional water may be added to the batch materials and additional mixing performed to increase the slump to meet the specified requirements provided the addition of water is performed within 45 minutes after the initial mixing operations and provided the water/cementitious ratio specified in the approved mix design is not exceeded, and approved by the Engineer.

501-4.7 Limitations on mixing and placing. No concrete shall be mixed, placed, or finished when the natural light is insufficient, unless an adequate and approved artificial lighting system is operated.

a. Cold weather. Unless authorized in writing by the Engineer, mixing and concreting operations shall be discontinued when a descending air temperature in the shade and away from artificial heat reaches 40°F (4°C) and shall not be resumed until an ascending air temperature in the shade and away from artificial heat reaches 35°F (2°C).

The aggregate shall be free of ice, snow, and frozen lumps before entering the mixer. The temperature of the mixed concrete shall not be less than 50°F (10°C) at the time of placement. Concrete shall not be placed on frozen material nor shall frozen aggregates be used in the concrete.

When concreting is authorized during cold weather, water and/or the aggregates may be heated to not more than 150°F (66°C). The apparatus used shall heat the mass uniformly and shall be arranged to preclude the possible occurrence of overheated areas which might be detrimental to the materials.

b. Hot weather. During periods of hot weather when the maximum daily air temperature exceeds 85°F (30°C), the following precautions shall be taken.

The forms and/or the underlying surface shall be sprinkled with water immediately before placing the concrete. The concrete shall be placed at the coolest temperature practicable, and in

no case shall the temperature of the concrete when placed exceed 90°F (32°C). The aggregates and/or mixing water shall be cooled as necessary to maintain the concrete temperature at or not more than the specified maximum.

The finished surfaces of the newly laid pavement shall be kept damp by applying a water-fog or mist with approved spraying equipment until the pavement is covered by the curing medium. When necessary, wind screens shall be provided to protect the concrete from an evaporation rate in excess of 0.2 psf (0.98 kg/m^2 per hour) per hour. When conditions are such that problems with plastic cracking can be expected, and particularly if any plastic cracking begins to occur, the Contractor shall immediately take such additional measures as necessary to protect the concrete surface. Such measures shall consist of wind screens, more effective fog sprays, and similar measures commencing immediately behind the paver. If these measures are not effective in preventing plastic cracking, paving operations shall be immediately stopped.

Information regarding hot weather concreting practices may be found in ACI 305R, Hot Weather Concreting.

c. Temperature management program. Prior to the start of paving operation for each day of paving, the Contractor shall provide the Engineer with a Temperature Management Program for the concrete to be placed to assure that uncontrolled cracking is avoided. As a minimum the program shall address the following items:

(1) Anticipated tensile strains in the fresh concrete as related to heating and cooling of the concrete material.

(2) Anticipated weather conditions such as ambient temperatures, wind velocity, and relative humidity; and anticipated evaporation rate using Figure 11-8, PCA, Design and Control of Concrete Mixtures.

(3) Anticipated timing of initial sawing of joint.

(4) Anticipated number and type of saws to be used.

501-4.8 Placing concrete. At any point in concrete conveyance, the free vertical drop of the concrete from one point to another or to the underlying surface shall not exceed 3 feet (1 m). The finished concrete product must be dense and homogeneous, without segregation and conforming to the standards in this specification. Backhoes and grading equipment shall not be used to distribute the concrete in front of the paver. Front end loaders will not be used. All concrete shall be consolidated without voids or segregation, including under and around all load-transfer devices, joint assembly units, and other features embedded in the pavement. Hauling equipment or other mechanical equipment can be permitted on adjoining previously constructed pavement when the concrete strength reaches a flexural strength of 550 psi (3792 kPa), based on the average of four field cured specimens per 2,000 cubic yards (1,530 cubic meters) of concrete placed. Also, subgrade and subbase planers, concrete pavers, and concrete finishing equipment may be permitted to ride upon the edges of previously constructed pavement when the concrete has attained a minimum flexural strength of 400 psi (2757 kPa).

The Contractor shall have available materials for the protection of the concrete during inclement weather. Such protective materials shall consist of rolled polyethylene sheeting at least 4 mils (0.1 mm) thick of sufficient length and width to cover the plastic concrete slab and any edges. The sheeting may be mounted on either the paver or a separate movable bridge from which it can be unrolled without dragging over the plastic concrete surface. When rain appears imminent, all paving operations shall stop and all available personnel shall begin covering the surface of the unhardened concrete with the protective covering.

a. Slip-form construction. The concrete shall be distributed uniformly into final position by a self-propelled slip-form paver without delay. The alignment and elevation of the paver shall be regulated from outside reference lines established for this purpose. The paver shall vibrate the concrete for the full width and depth of the strip of pavement being placed and the vibration shall be adequate to provide a consistency of concrete that will stand normal to the surface with sharp well defined edges. The sliding forms shall be rigidly held together laterally to prevent spreading of the forms. The plastic concrete shall be effectively consolidated by internal vibration with transverse vibrating units for the full width of the pavement and/or a series of equally placed longitudinal vibrating units. The space from the outer edge of the pavement to longitudinal unit shall not exceed 9 inches (23 cm) for slipform and at the end of the dowels for the fill-in lanes. The spacing of internal units shall be uniform and shall not exceed 18 inches (0.5 m).

The term internal vibration means vibrating units located within the specified thickness of pavement section.

The rate of vibration of each vibrating unit shall be within 8000 to 12000 cycles per minute and the amplitude of vibration shall be sufficient to be perceptible on the surface of the concrete along the entire length of the vibrating unit and for a distance of at least one foot (30 cm). The frequency of vibration or amplitude shall vary proportionately with the rate of travel to result in a uniform density and air content. The paving machine shall be equipped with a tachometer or other suitable device for measuring and indicating the actual frequency of vibrations.

The concrete shall be held at a uniform consistency. The slip-form paver shall be operated with as nearly a continuous forward movement as possible and all operations of mixing, delivering, and spreading concrete shall be coordinated to provide uniform progress with stopping and starting of the paver held to a minimum. If for any reason, it is necessary to stop the forward movement of the paver, the vibratory and tamping elements shall also be stopped immediately. No tractive force shall be applied to the machine, except that which is controlled from the machine.

When concrete is being placed adjacent to an existing pavement, that part of the equipment which is supported on the existing pavement shall be equipped with protective pads on crawler tracks or rubber-tired wheels on which the bearing surface is offset to run a sufficient distance from the edge of the pavement to avoid breaking the pavement edge.

Not more than 15% of the total free edge of each 500 foot (150 m) segment of pavement, or fraction thereof, shall have an edge slump exceeding 1/4 inch (6 mm), and none of the free edge of the pavement shall have an edge slump exceeding 3/8 inch (9 mm). (The total free edge of 500 feet (150 m) of pavement will be considered the cumulative total linear measurement of pavement edge originally constructed as nonadjacent to any existing pavement; that is, 500 feet (150 m) of paving lane originally constructed as a separate lane will have 1,000 feet (300 m) of free edge, 500 feet (150 m) of fill-in lane will have no free edge, etc.). The area affected by the downward movement of the concrete along the pavement edge shall be limited to not more than 18 inches (0.5 m) from the edge. When excessive edge slump cannot be corrected before the concrete has hardened, the area with excessive edge slump shall be removed and replaced at the expense of the Contractor as directed by the Engineer.

b. Side-form construction. Side form sections shall be straight, free from warps, bends, indentations, or other defects. Defective forms shall be removed from the work. Metal side forms shall be used except at end closures and transverse construction joints where straight forms of other suitable material may be used.

Side forms may be built up by rigidly attaching a section to either top or bottom of forms. If such build-up is attached to the top of metal forms, the build-up shall also be metal.

Width of the base of all forms shall be equal to or greater than the specified pavement thickness.

Side forms shall be of sufficient rigidity, both in the form and in the interlocking connection with adjoining forms, that springing will not occur under the weight of subgrading and paving equipment or from the pressure of the concrete. The Contractor shall provide sufficient forms so that there will be no delay in placing concrete due to lack of forms.

Before placing side forms, the underlying material shall be at the proper grade. Side forms shall have full bearing upon the foundation throughout their length and width of base and shall be placed to the required grade and alignment of the finished pavement. They shall be firmly supported during the entire operation of placing, compacting, and finishing the pavement.

Forms shall be drilled in advance of being placed to line and grade to accommodate tie bars where these are specified.

Immediately in advance of placing concrete and after all subbase operations are completed, side forms shall be trued and maintained to the required line and grade for a distance sufficient to prevent delay in placing.

Side forms shall remain in place at least 12 hours after the concrete has been placed, and in all cases until the edge of the pavement no longer requires the protection of the forms. Curing compound shall be applied to the concrete immediately after the forms have been removed.

Side forms shall be thoroughly cleaned and oiled each time they are used and before concrete is placed against them.

Concrete shall be spread, screeded, shaped and consolidated by one or more self-propelled machines. These machines shall uniformly distribute and consolidate concrete without segregation so that the completed pavement will conform to the required cross-section with a minimum of handwork.

The number and capacity of machines furnished shall be adequate to perform the work required at a rate equal to that of concrete delivery.

Concrete for the full paving width shall be effectively consolidated by internal vibrators without causing segregation. Internal type vibrators' rate of vibration shall be not less than 7,000 cycles per minute. Amplitude of vibration shall be sufficient to be perceptible on the surface of the concrete more than one foot (30 cm) from the vibrating element. The Contractor shall furnish a tachometer or other suitable device for measuring and indicating frequency of vibration.

Power to vibrators shall be connected so that vibration ceases when forward or backward motion of the machine is stopped.

The provisions relating to the frequency and amplitude of internal vibration shall be considered the minimum requirements and are intended to ensure adequate density in the hardened concrete.

c. Consolidation. Concrete shall be consolidated with the specified type of lane-spanning, gang-mounted, mechanical, immersion type vibrating equipment mounted in front of the paver, supplemented, in rare instances as specified, by hand-operated vibrators. The vibrators shall be inserted into the concrete to a depth that will provide the best full-depth consolidation but not closer to the underlying material than inches (50 mm). Excessive vibration shall not be permitted. If the vibrators cause visible tracking in the paving lane, the paving operation shall be stopped and equipment and operations modified to prevent it. Concrete in small, odd-shaped slabs or in isolated locations inaccessible to the gang-mounted vibration equipment shall be vibrated with an approved hand-operated immersion vibrator operated from a bridge spanning the area. Vibrators

shall not be used to transport or spread the concrete. Hand-operated vibrators shall not be operated in the concrete at one location for more than 20 seconds. Insertion locations for hand-operated vibrators shall be between 6 to 15 inches (150 to 400 mm) on centers. For each paving train, at least one additional vibrator spud, or sufficient parts for rapid replacement and repair of vibrators shall be maintained at the paving site at all times. Any evidence of inadequate consolidation (honeycomb along the edges, large air pockets, or any other evidence) shall require the immediate stopping of the paving operation and adjustment of the equipment or procedures as approved by the Engineer.

If a lack of consolidation of the concrete is suspected by the Engineer, referee testing may be required. Referee testing of hardened concrete will be performed by the Engineer by cutting cores from the finished pavement after a minimum of 24 hours curing. Density determinations will be made by the Engineer based on the water content of the core as taken. ASTM C642 shall be used for the determination of core density in the saturated-surface dry condition. When required, referee cores will be taken at the minimum rate of one for each 500 cubic yards (382 m^2) of pavement, or fraction. The Contractor shall be responsible for all referee testing cost if they fail to meet the required density.

The average density of the cores shall be at least 97% of the original mix design density, with no cores having a density of less than 96% of the original mix design density. Failure to meet the referee tests will be considered evidence that the minimum requirements for vibration are inadequate for the job conditions. Additional vibrating units or other means of increasing the effect of vibration shall be employed so that the density of the hardened concrete conforms to the above requirements.

501-4.9 Strike-off of concrete and placement of reinforcement. Following the placing of the concrete, it shall be struck off to conform to the cross-section shown on the plans and to an elevation that when the concrete is properly consolidated and finished, the surface of the pavement shall be at the elevation shown on the plans. When reinforced concrete pavement is placed in two layers, the bottom layer shall be struck off to such length and depth that the sheet of reinforcing steel fabric or bar mat may be laid full length on the concrete in its final position without further manipulation. The reinforcement shall then be placed directly upon the concrete, after which the top layer of the concrete shall be placed, struck off, and screeded. If any portion of the bottom layer of concrete has been placed more than 30 minutes without being covered with the top layer or if initial set has taken place, it shall be removed and replaced with freshly mixed concrete at the Contractor's expense. When reinforced concrete is placed in one layer, the reinforcement may be positioned in advance of concrete placement or it may be placed in plastic concrete by mechanical or vibratory means after spreading.

Reinforcing steel, at the time concrete is placed, shall be free of mud, oil, or other organic matter that may adversely affect or reduce bond. Reinforcing steel with rust, mill scale or a combination of both will be considered satisfactory, provided the minimum dimensions, weight, and tensile properties of a hand wire-brushed test specimen are not less than the applicable ASTM specification requirements.

501-4.10 Joints. Joints shall be constructed as shown on the plans and in accordance with these requirements. All joints shall be constructed with their faces perpendicular to the surface of the pavement and finished or edged as shown on the plans. Joints shall not vary more than 1/2 inch (12 mm) from their designated position and shall be true to line with not more than 1/4 inch (6 mm) variation in 10 feet (3 m). The surface across the joints shall be tested with a 12 feet (3 m) straightedge as the joints are finished and any irregularities in excess of 1/4 inch (6 mm) shall be corrected before the concrete has hardened. All joints shall be so prepared, finished, or cut to provide a groove of uniform width and depth as shown on the plans.

a. Construction. Longitudinal construction joints shall be slip-formed or formed against side forms as shown in the plans.

Transverse construction joints shall be installed at the end of each day's placing operations and at any other points within a paving lane when concrete placement is interrupted for more than 30 minutes or it appears that the concrete will obtain its initial set before fresh concrete arrives. The installation of the joint shall be located at a planned contraction or expansion joint. If placing of the concrete is stopped, the Contractor shall remove the excess concrete back to the previous planned joint.

b. Contraction. Contraction joints shall be installed at the locations and spacing as shown on the plans. Contraction joints shall be installed to the dimensions required by forming a groove or cleft in the top of the slab while the concrete is still plastic or by sawing a groove into the concrete surface after the concrete has hardened. When the groove is formed in plastic concrete the sides of the grooves shall be finished even and smooth with an edging tool. If an insert material is used, the installation and edge finish shall be according to the manufacturer's instructions. The groove shall be finished or cut clean so that spalling will be avoided at intersections with other joints. Grooving or sawing shall produce a slot at least 1/8 inch (3 mm) wide and to the depth shown on the plans.

c. Isolation (expansion). Isolation joints shall be installed as shown on the plans. The premolded filler of the thickness as shown on the plans, shall extend for the full depth and width of the slab at the joint, except for space for sealant at the top of the slab. The filler shall be securely staked or fastened into position perpendicular to the proposed finished surface. A cap shall be provided to protect the top edge of the filler and to permit the concrete to be placed and finished. After the concrete has been placed and struck off, the cap shall be carefully withdrawn leaving the space over the premolded filler. The edges of the joint shall be finished and tooled while the concrete is still plastic. Any concrete bridging the joint space shall be removed for the full width and depth of the joint.

d. Tie bars. Tie bars shall consist of deformed bars installed in joints as shown on the plans. Tie bars shall be placed at right angles to the centerline of the concrete slab and shall be spaced at intervals shown on the plans. They shall be held in position parallel to the pavement surface and in the middle of the slab depth. When tie bars extend into an unpaved lane, they may be bent against the form at longitudinal construction joints, unless threaded bolt or other assembled tie bars are specified. Tie bars shall not be painted, greased, or enclosed in sleeves. When slip-form operations call for tie bars, two-piece hook bolts can be installed.

e. Dowel bars. Dowel bars or other load-transfer units of an approved type shall be placed across joints as shown on the plans. They shall be of the dimensions and spacings as shown and held rigidly in the middle of the slab depth in the proper horizontal and vertical alignment by an approved assembly device to be left permanently in place. The dowel or load-transfer and joint devices shall be rigid enough to permit complete assembly as a unit ready to be lifted and placed into position. The dowels shall be coated with a bond-breaker or other lubricant recommended by the manufacturer and approved by the Engineer.

f. Dowels bars at longitudinal construction joints shall be bonded in drilled holes.

g. Placing dowels and tie bars. The method used in installing and holding dowels in position shall ensure that the error in alignment of any dowel from its required horizontal and vertical alignment after the pavement has been completed will not be greater than 1/8 inch per feet (3 mm per 0.3 m). Except as otherwise specified below, horizontal spacing of dowels shall be within a tolerance of ±5/8 inch (16 mm). The vertical location on the face of the slab shall be within a tolerance of ±1/2 inch (12 mm). The vertical alignment of the dowels shall be measured parallel

to the designated top surface of the pavement, except for those across the crown or other grade change joints. Dowels across crowns and other joints at grade changes shall be measured to a level surface. Horizontal alignment shall be checked perpendicular to the joint edge. The horizontal alignment shall be checked with a framing square. Dowels shall not be placed closer than 0.6 times the dowel bar length to the planned joint line. If the last regularly spaced longitudinal dowel is closer than that dimension, it shall be moved away from the joint to a location 0.6 times the dowel bar length, but not closer than 6 inches (150 mm) to its nearest neighbor. The portion of each dowel intended to move within the concrete or expansion cap shall be wiped clean and coated with a thin, even film of lubricating oil or light grease before the concrete is placed. Dowels shall be installed as specified in the following subparagraphs.

(1) Contraction joints. Dowels and tie bars in longitudinal and transverse contraction joints within the paving lane shall be held securely in place, as indicated, by means of rigid metal frames or basket assemblies of an approved type. The basket assemblies shall be held securely in the proper location by means of suitable pins or anchors. Do not cut or crimp the dowel basket tie wires. At the Contractor's option, in lieu of the above, dowels and tie bars in contraction joints shall be installed near the front of the paver by insertion into the plastic concrete using approved equipment and procedures. Approval will be based on the results of a preconstruction demonstration, showing that the dowels and tie bars are installed within specified tolerances.

(2) Construction joints. Install dowels and tie bars by the cast-in- place or the drill-and-dowel method. Installation by removing and replacing in preformed holes will not be permitted. Dowels and tie bars shall be prepared and placed across joints where indicated, correctly aligned, and securely held in the proper horizontal and vertical position during placing and finishing operations, by means of devices fastened to the forms. The spacing of dowels and tie bars in construction joints shall be as indicated.

(3) Dowels installed in isolation joints and other hardened concrete. Install dowels for isolation joints and in other hardened concrete by bonding the dowels into holes drilled into the hardened concrete. The concrete shall have cured for seven (7) days or reached a minimum flexural strength of 450 psi (3.1 MPa) before drilling commences. Holes 1/8 inch (3 mm) greater in diameter than the dowels shall be drilled into the hardened concrete using rotary-core drills. Rotary-percussion drills may be used, provided that excessive spalling does not occur to the concrete joint face. Modification of the equipment and operation shall be required if, in the Engineer's opinion, the equipment and/or operation is causing excessive damage. Depth of dowel hole shall be within a tolerance of ±1/2 inch (12 mm) of the dimension shown on the drawings. On completion of the drilling operation, the dowel hole shall be blown out with oil-free, compressed air. Dowels shall be bonded in the drilled holes using epoxy resin. Epoxy resin shall be injected at the back of the hole before installing the dowel and extruded to the collar during insertion of the dowel so as to completely fill the void around the dowel. Application by buttering the dowel will not be permitted. The dowels shall be held in alignment at the collar of the hole, after insertion and before the grout hardens, by means of a suitable metal or plastic grout retention ring fitted around the dowel. Dowels required to be installed in any joints between new and existing concrete shall be grouted in holes drilled in the existing concrete, all as specified above.

h. Sawing of joints. Joints shall be cut as shown on the plans. Equipment shall be as described in paragraph 501-4.1. The circular cutter shall be capable of cutting a groove in a straight line and shall produce a slot at least 1/8 inch (3 mm) wide and to the depth shown on the plans. The top of the slot shall be widened by sawing to provide adequate space for joint sealers as shown on the plans. Sawing shall commence, without regard to day or night, as soon as the concrete has hardened sufficiently to permit cutting without chipping, spalling, or tearing and before uncontrolled shrinkage cracking of the pavement occurs and shall continue without interruption until all joints have been sawn. The joints shall be sawn at the required spacing. All

slurry and debris produced in the sawing of joints shall be removed by vacuuming and washing. Curing compound or system shall be reapplied in the initial sawcut and maintained for the remaining cure period.

501-4.11 Finishing. Finishing operations shall be a continuing part of placing operations starting immediately behind the strike-off of the paver. Initial finishing shall be provided by the transverse screed or extrusion plate. The sequence of operations shall be transverse finishing, longitudinal machine floating if used, straightedge finishing, texturing, and then edging of joints. Finishing shall be by the machine method. The hand method shall be used only on isolated areas of odd slab widths or shapes and in the event of a breakdown of the mechanical finishing equipment. Supplemental hand finishing for machine finished pavement shall be kept to an absolute minimum. Any machine finishing operation which requires appreciable hand finishing, other than a moderate amount of straightedge finishing, shall be immediately stopped and proper adjustments made or the equipment replaced. Any operations which produce more than 1/8 inch (3 mm) of mortar-rich surface (defined as deficient in plus U.S. No. 4 (4.75 mm) sieve size aggregate) shall be halted immediately and the equipment, mixture, or procedures modified as necessary. Compensation shall be made for surging behind the screeds or extrusion plate and settlement during hardening and care shall be taken to ensure that paving and finishing machines are properly adjusted so that the finished surface of the concrete (not just the cutting edges of the screeds) will be at the required line and grade. Finishing equipment and tools shall be maintained clean and in an approved condition. At no time shall water be added to the surface of the slab with the finishing equipment or tools, or in any other way, except for fog (mist) sprays specified to prevent plastic shrinkage cracking.

a. Machine finishing with slipform pavers. The slipform paver shall be operated so that only a very minimum of additional finishing work is required to produce pavement surfaces and edges meeting the specified tolerances. Any equipment or procedure that fails to meet these specified requirements shall immediately be replaced or modified as necessary. A self-propelled non-rotating pipe float may be used while the concrete is still plastic, to remove minor irregularities and score marks. Only one pass of the pipe float shall be allowed. If there is concrete slurry or fluid paste on the surface that runs over the edge of the pavement, the paving operation shall be immediately stopped and the equipment, mixture, or operation modified to prevent formation of such slurry. Any slurry which does run down the vertical edges shall be immediately removed by hand, using stiff brushes or scrapers. No slurry, concrete or concrete mortar shall be used to build up along the edges of the pavement to compensate for excessive edge slump, either while the concrete is plastic or after it hardens.

b. Machine finishing with fixed forms. The machine shall be designed to straddle the forms and shall be operated to screed and consolidate the concrete. Machines that cause displacement of the forms shall be replaced. The machine shall make only one pass over each area of pavement. If the equipment and procedures do not produce a surface of uniform texture, true to grade, in one pass, the operation shall be immediately stopped and the equipment, mixture, and procedures adjusted as necessary.

c. Other types of finishing equipment. Clary screeds, other rotating tube floats, or bridge deck finishers are not allowed on mainline paving, but may be allowed on irregular or odd-shaped slabs, and near buildings or trench drains, subject to the Engineer’s approval.

Bridge deck finishers shall have a minimum operating weight of 7500 pounds (3400 kg) and shall have a transversely operating carriage containing a knock-down auger and a minimum of two immersion vibrators. Vibrating screeds or pans shall be used only for isolated slabs where hand finishing is permitted as specified, and only where specifically approved.

d. Hand finishing. Hand finishing methods will not be permitted, except under the following conditions: (1) in the event of breakdown of the mechanical equipment, hand methods may be used to finish the concrete already deposited on the grade and (2) in areas of narrow widths or of irregular dimensions where operation of the mechanical equipment is impractical. Use hand finishing operations only as specified below.

(1) Equipment and screed. In addition to approved mechanical internal vibrators for consolidating the concrete, provide a strike-off and tamping screed and a longitudinal float for hand finishing. The screed shall be at least one foot (30 cm) longer than the width of pavement being finished, of an approved design, and sufficiently rigid to retain its shape, and shall be constructed of metal or other suitable material shod with metal. The longitudinal float shall be at least 10 feet (3 m) long, of approved design, and rigid and substantially braced, and shall maintain a plane surface on the bottom. Grate tampers (jitterbugs) shall not be used.

(2) Finishing and floating. As soon as placed and vibrated, the concrete shall be struck off and screeded to the crown and cross-section and to such elevation above grade that when consolidated and finished, the surface of the pavement will be at the required elevation. In addition to previously specified complete coverage with handheld immersion vibrators, the entire surface shall be tamped with the strike-off and tamping template, and the tamping operation continued until the required compaction and reduction of internal and surface voids are accomplished. Immediately following the final tamping of the surface, the pavement shall be floated longitudinally from bridges resting on the side forms and spanning but not touching the concrete. If necessary, additional concrete shall be placed, consolidated and screeded, and the float operated until a satisfactory surface has been produced. The floating operation shall be advanced not more than half the length of the float and then continued over the new and previously floated surfaces.

e. Straightedge testing and surface correction. After the pavement has been struck off and while the concrete is still plastic, it shall be tested for trueness with a Contractor furnished 12-foot (3.7-m) straightedge swung from handles 3 feet (1 m) longer than one-half the width of the slab. The straightedge shall be held in contact with the surface in successive positions parallel to the centerline and the whole area gone over from one side of the slab to the other, as necessary. Advancing shall be in successive stages of not more than one-half the length of the straightedge. Any excess water and laitance in excess of 1/8 inch (3 mm) thick shall be removed from the surface of the pavement and wasted. Any depressions shall be immediately filled with freshly mixed concrete, struck off, consolidated, and refinished. High areas shall be cut down and refinished. Special attention shall be given to assure that the surface across joints meets the smoothness requirements of paragraph 501-5.2e(3). Straightedge testing and surface corrections shall continue until the entire surface is found to be free from observable departures from the straightedge and until the slab conforms to the required grade and cross-section. The use of long-handled wood floats shall be confined to a minimum; they may be used only in emergencies and in areas not accessible to finishing equipment. This straight-edging is not a replacement for the straightedge testing of paragraph 501-5.2e(3), Smoothness.

501-4.12 Surface texture. The surface of the pavement shall be finished with either a brush or broom, burlap drag, or artificial turf finish for all newly constructed concrete pavements. It is important that the texturing equipment not tear or unduly roughen the pavement surface during the operation. Any imperfections resulting from the texturing operation shall be corrected to the satisfaction of the Engineer.

a. Brush or broom finish. If the pavement surface texture is to be a type of brush or broom finish, it shall be applied when the water sheen has practically disappeared. The equipment shall operate transversely across the pavement surface, providing corrugations that are uniform in appearance and approximately 1/16 inch (2 mm) in depth.

501-4.13 Curing. Immediately after finishing operations are completed and marring of the concrete will not occur, the entire surface of the newly placed concrete shall be cured for a 7-day cure period in accordance with one of the methods below. Failure to provide sufficient cover material of whatever kind the Contractor may elect to use, or lack of water to adequately take care of both curing and other requirements, shall be cause for immediate suspension of concreting operations. The concrete shall not be left exposed for more than 1/2 hour during the curing period.

When a two-sawcut method is used to construct the contraction joint, the curing compound shall be applied to the sawcut immediately after the initial cut has been made. The sealant reservoir shall not be sawed until after the curing period has been completed. When the one cut method is used to construct the contraction joint, the joint shall be cured with wet rope, wet rags, or wet blankets. The rags, ropes, or blankets shall be kept moist for the duration of the curing period.

a. Impervious membrane method. The entire surface of the pavement shall be sprayed uniformly with white pigmented curing compound immediately after the finishing of the surface and before the set of the concrete has taken place. The curing compound shall not be applied during rainfall. Curing compound shall be applied by mechanical sprayers under pressure at the rate of one gallon (4 liters) to not more than 150 sq ft (14 sq m). The spraying equipment shall be of the fully atomizing type equipped with a tank agitator. At the time of use, the compound shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. During application the compound shall be stirred continuously by mechanical means. Hand spraying of odd widths or shapes and concrete surfaces exposed by the removal of forms will be permitted. When hand spraying is approved by the Engineer, a double application rate shall be used to ensure coverage. The curing compound shall be of such character that the film will harden within 30 minutes after application. Should the film become damaged from any cause, including sawing operations, within the required curing period, the damaged portions shall be repaired immediately with additional compound or other approved means. Upon removal of side forms, the sides of the exposed slabs shall be protected immediately to provide a curing treatment equal to that provided for the surface. Curing shall be applied immediately after the bleed water is gone from the surface.

~~**b. White burlap-polyethylene sheets.** The surface of the pavement shall be entirely covered with the sheeting. The sheeting used shall be such length (or width) that it will extend at least twice the thickness of the pavement beyond the edges of the slab. The sheeting shall be placed so that the entire surface and both edges of the slab are completely covered. The sheeting shall be placed and weighted to remain in contact with the surface covered, and the covering shall be maintained fully saturated and in position for seven (7) days after the concrete has been placed.~~

~~**c. Water method.** The entire area shall be covered with burlap or other water absorbing material. The material shall be of sufficient thickness to retain water for adequate curing without excessive runoff. The material shall be kept wet at all times and maintained for seven (7) days. When the forms are stripped, the vertical walls shall also be kept moist. It shall be the responsibility of the Contractor to prevent ponding of the curing water on the subbase.~~

d. Concrete protection for cold weather. The concrete shall be maintained at an ambient temperature of at least 50°F (10°C) for a period of 72 hours after placing and at a temperature above freezing for the remainder of the curing time. The Contractor shall be responsible for the quality and strength of the concrete placed during cold weather; and any concrete damaged shall be removed and replaced at the Contractor's expense.

e. Concrete protection for hot weather. Concrete should be continuous moisture cured for the entire curing period and shall commence as soon as the surfaces are finished and continue for at least 24 hours. However, if moisture curing is not practical beyond 24 hours, the concrete

surface shall be protected from drying with application of a liquid membrane-forming curing compound while the surfaces are still damp. Other curing methods may be approved by the Engineer.

501-4.14 Removing forms. Unless otherwise specified, forms shall not be removed from freshly placed concrete until it has hardened sufficiently to permit removal without chipping, spalling, or tearing. After the forms have been removed, the sides of the slab shall be cured as per the methods indicated in paragraph 501-4.13. Major honeycombed areas shall be considered as defective work and shall be removed and replaced in accordance with paragraph 501-5.2(f).

501-4.15 S**aw-cut grooving.** If shown on the plans, grooved surfaces shall be provided in accordance with the requirements of Item P-621.

501-4.16 Sealing joints. The joints in the pavement shall be sealed in accordance with Item P-605.

501-4.17 Protection of pavement. The Contractor shall protect the pavement and its appurtenances against both public traffic and traffic caused by the Contractor's employees and agents until accepted by the Engineer. This shall include watchmen to direct traffic and the erection and maintenance of warning signs, lights, pavement bridges, crossovers, and protection of unsealed joints from intrusion of foreign material, etc. Any damage to the pavement occurring prior to final acceptance shall be repaired or the pavement replaced at the Contractor's expense.

Aggregates, rubble, or other similar construction materials shall not be placed on airfield pavements. Traffic shall be excluded from the new pavement by erecting and maintaining barricades and signs until the concrete is at least seven (7) days old, or for a longer period if directed by the Engineer.

In paving intermediate lanes between newly paved pilot lanes, operation of the hauling and paving equipment will be permitted on the new pavement after the pavement has been cured for seven (7) days and the joints have been sealed or otherwise protected, and the concrete has attained a minimum field cured flexural strength of 550 psi (37928 kPa) and approved means are furnished to prevent damage to the slab edge.

All new and existing pavement carrying construction traffic or equipment shall be continuously kept completely clean, and spillage of concrete or other materials shall be cleaned up immediately upon occurrence.

Damaged pavements shall be removed and replaced at the Contractor's expense. Slabs shall be removed to the full depth, width, and length of the slab.

501-4.18 Opening to construction traffic. The pavement shall not be opened to traffic until test specimens molded and cured in accordance with ASTM C31 have attained a flexural strength of 550 lb / square inch (3.8 kPa) when tested in accordance with ASTM C78. If such tests are not conducted, the pavement shall not be opened to traffic until 14 days after the concrete was placed. Prior to opening the pavement to construction traffic, all joints shall either be sealed or protected from damage to the joint edge and intrusion of foreign materials into the joint. As a minimum, backer rod or tape may be used to protect the joints from foreign matter intrusion.

501-4.19 Repair, removal, or replacement of slabs.

a. General. New pavement slabs that are broken or contain cracks or are otherwise defective or unacceptable shall be removed and replaced or repaired, as directed by the Engineer and as specified hereinafter at no cost to the Owner. Spalls along joints shall be repaired as specified. Removal of partial slabs is not permitted. Removal and replacement shall be full depth, shall be full width of the slab, and the limit of removal shall be normal to the paving lane and to each

original transverse joint. The Engineer will determine whether cracks extend full depth of the pavement and may require cores to be drilled on the crack to determine depth of cracking. Such cores shall be 4 inch (100 mm) diameter, shall be drilled by the Contractor and shall be filled by the Contractor with a well consolidated concrete mixture bonded to the walls of the hole with epoxy resin, using approved procedures. Drilling of cores and refilling holes shall be at no expense to the Owner. All epoxy resin used in this work shall conform to ASTM C881, Type V. Repair of cracks as described in this section shall not be allowed if in the opinion of the Engineer the overall condition of the pavement indicates that such repair is unlikely to achieve an acceptable and durable finished pavement. No repair of cracks shall be allowed in any panel that demonstrates segregated aggregate with an absence of coarse aggregate in the upper 1/8 inch (3 mm) of the pavement surface.

b. Shrinkage cracks. Shrinkage cracks, which do not exceed 4 inches (100 mm) in depth, shall be cleaned and then pressure injected with epoxy resin, Type IV, Grade 1, using procedures as approved by the Engineer. Care shall be taken to assure that the crack is not widened during epoxy resin injection. All epoxy resin injection shall take place in the presence of the Engineer. Shrinkage cracks, which exceed 4 inches (100 mm) in depth, shall be treated as full depth cracks in accordance with paragraphs 4.19b and 4.19c.

c. Slabs with cracks through interior areas. Interior area is defined as that area more than 6 inches (150 mm) from either adjacent original transverse joint. The full slab shall be removed and replaced at no cost to the Owner, when there are any full depth cracks, or cracks greater than 4 inches (100 mm) in depth, that extend into the interior area.

d. Cracks close to and parallel to joints. All cracks essentially parallel to original joints, extending full depth of the slab, and lying wholly within 6 inches (150 mm) either side of the joint shall be treated as specified here. Any crack extending more than 6 inches (150 mm) from the joint shall be treated as specified above in subparagraph c.

(1) Full depth cracks present, original joint not opened. When the original un-cracked joint has not opened, the crack shall be sawed and sealed, and the original joint filled with epoxy resin as specified below. The crack shall be sawed with equipment specially designed to follow random cracks. The reservoir for joint sealant in the crack shall be formed by sawing to a depth of 3/4 inches (19 mm), ±1/16 inch (2 mm), and to a width of 5/8 inch (16 mm), ±1/8 inch (3 mm). Any equipment or procedure which causes raveling or spalling along the crack shall be modified or replaced to prevent such raveling or spalling. The joint sealant shall be a liquid sealant as specified. Installation of joint seal shall be as specified for sealing joints or as directed. If the joint sealant reservoir has been sawed out, the reservoir and as much of the lower saw cut as possible shall be filled with epoxy resin, Type IV, Grade 2, thoroughly tooled into the void using approved procedures.

If only the original narrow saw cut has been made, it shall be cleaned and pressure injected with epoxy resin, Type IV, Grade 1, using approved procedures. If filler type material has been used to form a weakened plane in the transverse joint, it shall be completely sawed out and the saw cut pressure injected with epoxy resin, Type IV, Grade 1, using approved procedures. Where a parallel crack goes part way across paving lane and then intersects and follows the original joint which is cracked only for the remained of the width, it shall be treated as specified above for a parallel crack, and the cracked original joint shall be prepared and sealed as originally designed.

(2) Full depth cracks present, original joint also cracked. At a joint, if there is any place in the lane width where a parallel crack and a cracked portion of the original joint overlap, the entire slab containing the crack shall be removed and replaced for the full lane width and length.

e. Removal and replacement of full slabs. Where it is necessary to remove full slabs, unless there are dowels present, all edges of the slab shall be cut full depth with a concrete saw. All saw cuts shall be perpendicular to the slab surface. If dowels, or tie bars are present along any edges, these edges shall be sawed full depth just beyond the end of the dowels or tie bars. These joints shall then be carefully sawed on the joint line to within one inch (25 mm) of the depth of the dowel or tie bar.

The main slab shall be further divided by sawing full depth, at appropriate locations, and each piece lifted out and removed. Suitable equipment shall be used to provide a truly vertical lift, and approved safe lifting devices used for attachment to the slabs. The narrow strips along doweled edges shall be carefully broken up and removed using light, hand-held jackhammers, 30 lb (14 kg) or less, or other approved similar equipment.

Care shall be taken to prevent damage to the dowels, tie bars, or to concrete to remain in place. The joint face below dowels shall be suitably trimmed so that there is not abrupt offset in any direction greater than 1/2 inch (12 mm) and no gradual offset greater than one inch (25 mm) when tested in a horizontal direction with a 12-foot (3.7-m) straightedge.

No mechanical impact breakers, other than the above hand-held equipment shall be used for any removal of slabs. If underbreak between 1-1/2 and 4 inches (38 and 100 mm) deep occurs at any point along any edge, the area shall be repaired as directed before replacing the removed slab. Procedures directed will be similar to those specified for surface spalls, modified as necessary.

If underbreak over 4 inches (100 mm) deep occurs, the entire slab containing the underbreak shall be removed and replaced. Where there are no dowels or tie bars, or where they have been damaged, dowels or tie bars of the size and spacing as specified for other joints in similar pavement shall be installed by epoxy grouting them into holes drilled into the existing concrete using procedures as specified. Original damaged dowels or tie bars shall be cut off flush with the joint face. Protruding portions of dowels shall be painted and lightly oiled. All four (4) edges of the new slab shall contain dowels or original tie bars.

Placement of concrete shall be as specified for original construction. Prior to placement of new concrete, the underlying material (unless it is stabilized) shall be re-compacted and shaped as specified in the appropriate section of these specifications. The surfaces of all four joint faces shall be cleaned of all loose material and contaminants and coated with a double application of membrane forming curing compound as bond breaker. Care shall be taken to prevent any curing compound from contacting dowels or tie bars. The resulting joints around the new slab shall be prepared and sealed as specified for original construction.

f. Repairing spalls along joints. Where directed, spalls along joints of new slabs, and along parallel cracks used as replacement joints, shall be repaired by first making a vertical saw cut at least one inch (25 mm) outside the spalled area and to a depth of at least 2 inch (50 mm). Saw cuts shall be straight lines forming rectangular areas. The concrete between the saw cut and the joint, or crack, shall be chipped out to remove all unsound concrete and at least 1/2 inch (12 mm) of visually sound concrete. The cavity thus formed shall be thoroughly cleaned with high-pressure water jets supplemented with compressed air to remove all loose material. Immediately before filling the cavity, a prime coat of epoxy resin, Type III, Grade I, shall be applied to the dry cleaned surface of all sides and bottom of the cavity, except any joint face. The prime coat shall be applied in a thin coating and scrubbed into the surface with a stiff-bristle brush. Pooling of epoxy resin shall be avoided. The cavity shall be filled with low slump Portland cement concrete or mortar or with epoxy resin concrete or mortar. Concrete shall be used for larger spalls, generally those more than 1/2 cu. ft. (0.014 m^3) in size, and mortar shall be used for the smaller ones. Any spall less

than 0.1 cu. ft. (0.003 m^3) shall be repaired only with epoxy resin mortar or a Grade III epoxy resin. Portland cement concrete and mortar mixtures shall be proportioned as directed and shall be mixed, placed, consolidated, and cured as directed. Epoxy resin mortars shall be made with Type III, Grade 1, epoxy resin, using proportions and mixing and placing procedures as recommended by the manufacturer and approved by the Engineer. The epoxy resin materials shall be placed in the cavity in layers not over 2 inches (50 mm) thick. The time interval between placement of additional layers shall be such that the temperature of the epoxy resin material does not exceed 140°F (60°C) at any time during hardening. Mechanical vibrators and hand tampers shall be used to consolidate the concrete or mortar. Any repair material on the surrounding surfaces of the existing concrete shall be removed before it hardens. Where the spalled area abuts a joint, an insert or other bond-breaking medium shall be used to prevent bond at the joint face. A reservoir for the joint sealant shall be sawed to the dimensions required for other joints, or as required to be routed for cracks. The reservoir shall be thoroughly cleaned and sealed with the sealer specified for the joints. If any spall penetrates half the depth of the slab or more, the entire slab shall be removed and replaced as previously specified If any spall would require over 25% of the length of any single joint to be repaired, the entire slab shall be removed and replaced. Repair of spalls as described in this section shall not be allowed if in the opinion of the Engineer the overall condition of the pavement indicates that such repair is unlikely to achieve an acceptable and durable finished pavement. No repair of spalls shall be allowed in any panel that demonstrates segregated aggregate with a significant absence of coarse aggregate in the upper one-eight (1/8th) inch of the pavement surface.

g. Diamond grinding of PCC surfaces. Diamond grinding of the hardened concrete with an approved diamond grinding machine should not be performed until the concrete is 14 days or more old and concrete has reached full minimum strength. When required, diamond grinding shall be accomplished by sawing with saw blades impregnated with industrial diamond abrasive. The saw blades shall be assembled in a cutting head mounted on a machine designed specifically for diamond grinding that will produce the required texture and smoothness level without damage to the pavement. The saw blades shall be 1/8-inch (3-mm) wide and there shall be a minimum of 55 to 60 blades per 12 inches (300 mm) of cutting head width; the actual number of blades will be determined by the Contractor and depend on the hardness of the aggregate. Each machine shall be capable of cutting a path at least 3 feet (0.9 m) wide. Equipment that causes ravels, aggregate fractures, spalls or disturbance to the joints will not be permitted. The area corrected by diamond grinding the surface of the hardened concrete should not exceed 10% of the total area of any sublot. The depth of diamond grinding shall not exceed 1/2 inch (13 mm) and all areas in which diamond grinding has been performed will be subject to the final pavement thickness tolerances specified. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. All pavement areas requiring plan grade or surface smoothness corrections in excess of the limits specified above, may require removing and replacing in conformance with paragraph 501-4.19.

501-4.20 Existing concrete pavement removal and repair.

All operations shall be carefully controlled to prevent damage to the concrete pavement and to the underlying material to remain in place. All saw cuts shall be made perpendicular to the slab surface.

a. Removal of existing pavement slab.

When it is necessary to remove existing concrete pavement and leave adjacent concrete in place, unless there are dowels present, the joint between the removal area and adjoining pavement to stay in place, including dowels or tie bars, shall first be cut full depth with a standard diamond-type concrete saw. If dowels are present at this joint, the saw cut shall be made full

depth just beyond the end of dowels. The edge shall then be carefully sawed on the joint line to within one inch (25 mm) of the top of the dowel. Next, a full depth saw cut shall be made parallel to the joint at least 24 inches (600 mm) from the joint and at least 12 inches (300 mm) from the end of any dowels. All pavement between this last saw cut and the joint line shall be carefully broken up and removed using hand-held jackhammers, 30 lb (14 kg) or less, or the approved light-duty equipment which will not cause stress to propagate across the joint saw cut and cause distress in the pavement which is to remain in place. Where dowels are present, care shall be taken to produce an even, vertical joint face below the dowels. If the Contractor is unable to produce such a joint face, or if underbreak or other distress occurs, the Contractor shall saw the dowels flush with the joint. The Contractor shall then install new dowels, of the size and spacing used for other similar joints, by epoxy resin bonding them in holes drilled in the joint face as specified in paragraph 501-4.10g. All this shall be at no additional cost to the Owner. The joint face shall be sawed or otherwise trimmed so that there is no abrupt offset in any direction greater than 1/2 inches (12 mm) and no gradual offset greater than one inch (25 mm) when tested in a horizontal direction with a 12-foot (3.7-m) straightedge.

b. Edge repair.

The edge of existing concrete pavement against which new pavement abuts shall be protected from damage at all times. Areas that are damaged during construction shall be repaired at no cost to the Owner.

(1) Spall repair. Spalls shall be repaired where indicated and where directed by the Engineer. Repair materials and procedures shall be as previously specified in subparagraph 501-4.19f.

(2) Underbreak repair. All underbreak shall be repaired. First, all delaminated and loose material shall be carefully removed. Next, the underlying material shall be recompacted, without addition of any new material. Finally, the void shall be completely filled with paving concrete, thoroughly consolidated. Care shall be taken to produce an even joint face from top to bottom. Prior to placing concrete, the underlying material shall be thoroughly moistened. After placement, the exposed surface shall be heavily coated with curing compound.

(3) Underlying material. The underlying material adjacent to the edge and under the existing pavement which is to remain in place shall be protected from damage or disturbance during removal operations and until placement of new concrete, and shall be shaped as shown on the drawings or as directed. Sufficient material shall be kept in place outside the joint line to prevent disturbance (or sloughing) of material under the pavement that is to remain in place. Any material under the portion of the concrete pavement to remain in place, which is disturbed or loses its compaction shall be carefully removed and replaced with concrete as specified in paragraph 501-4.20b(2). The underlying material outside the joint line shall be thoroughly compacted and moist when new concrete is placed.

MATERIAL ACCEPTANCE

501-5.1 Acceptance sampling and testing. All acceptance sampling and testing necessary to determine conformance with the requirements specified in this section, with the exception of coring for thickness determination, will be performed by the Engineer at no cost to the Contractor. The Contractor shall bear the cost of providing curing facilities for the strength specimens, per paragraph 501-5.1a(3), and coring and filling operations, per paragraph 501-5.1b(1). Testing organizations performing these tests shall be accredited in accordance with ASTM C1077. The laboratory accreditation must be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing must be listed on the lab accreditation. A

copy of the laboratory's current accreditation and accredited test methods shall be submitted to the Engineer prior to start of construction.

Concrete shall be accepted for strength and thickness on a lot basis.

A lot shall consist of a day's production not to exceed 6,000 square yards.

a. Flexural strength.

(1) Sampling. Each lot shall be divided into four equal sublots. One sample shall be taken for each sublot from the plastic concrete delivered to the job site. Sampling locations shall be determined by the Engineer in accordance with random sampling procedures contained in ASTM D3665. The concrete shall be sampled in accordance with ASTM C172.

(2) Testing. Two (2) specimens shall be made from each sample. Specimens shall be made in accordance with ASTM C31 and the flexural strength of each specimen shall be determined in accordance with ASTM C78. The flexural strength for each sublot shall be computed by averaging the results of the two test specimens representing that sublot.

Immediately prior to testing for flexural strength, the beam shall be weighed and measured for determination of a sample unit weight. Measurements shall be made for each dimension; height, depth, and length, at the mid-point of the specimen and reported to the nearest 1/10 inch (3 mm). The weight of the specimen shall be reported to the nearest 0.1 pound (45 gm). The sample unit weight shall be calculated by dividing the sample weight by the calculated volume of the sample. This information shall be reported as companion information to the measured flexural strength for each specimen.

The samples will be transported while in the molds. The curing, except for the initial cure period, will be accomplished using the immersion in saturated lime water method.

Slump, air content, and temperature tests will also be conducted by the quality assurance laboratory for each set of strength test samples, per ASTM C31.

(3) Curing. The Contractor shall provide adequate facilities for the initial curing of beams. During the 24 hours after molding, the temperature immediately adjacent to the specimens must be maintained in the range of 60° to 80°F (16° to 27°C), and loss of moisture from the specimens must be prevented. The specimens may be stored in tightly constructed wooden boxes, damp sand pits, temporary buildings at construction sites, under wet burlap in favorable weather, or in heavyweight closed plastic bags, or using other suitable methods, provided the temperature and moisture loss requirements are met.

(4) Acceptance. Acceptance of pavement for flexural strength will be determined by the Engineer in accordance with paragraph 501-5.2b.

b. Pavement thickness.

(1) Sampling. Each lot shall be divided into four equal sublots and one core shall be taken by the Contractor for each sublot. Sampling locations shall be determined by the Engineer in accordance with random sampling procedures contained in ASTM D3665. Areas, such as thickened edges, with planned variable thickness, shall be excluded from sample locations.

Cores shall be neatly cut with a core drill. The Contractor shall furnish all tools, labor, and materials for cutting samples and filling the cored hole. Core holes shall be filled by the Contractor with a non-shrink grout approved by the Engineer within one day after sampling.

(2) Testing. The thickness of the cores shall be determined by the Engineer by the average caliper measurement in accordance with ASTM C174.

(3) Acceptance. Acceptance of pavement for thickness shall be determined by the Engineer in accordance with paragraph 501-5.2c.

c. Partial lots. When operational conditions cause a lot to be terminated before the specified number of tests have been made for the lot, or when the Contractor and Engineer agree in writing to allow overages or minor placements to be considered as partial lots, the following procedure will be used to adjust the lot size and the number of tests for the lot.

Where three sublots have been produced, they shall constitute a lot. Where one or two sublots have been produced, they shall be incorporated into the next lot or the previous lot and the total number of sublots shall be used in the acceptance criteria calculation, that is, n=5 or n=6.

d. Outliers. All individual flexural strength tests within a lot shall be checked for an outlier (test criterion) in accordance with ASTM E178, at a significance level of 5%. Outliers shall be discarded, and the percentage of material within specification limits (PWL) shall be determined using the remaining test values.

501-5.2 Acceptance criteria.

a. General. Acceptance will be based on the following characteristics of the completed pavement discussed in paragraph 501-5.2e:

(1) Flexural strength

(2) Thickness

(3) Smoothness

(4) Grade

(5) Edge slump

Flexural strength and thickness shall be evaluated for acceptance on a lot basis using the method of estimating PWL. Acceptance using PWL considers the variability (standard deviation) of the material and the testing procedures, as well as the average (mean) value of the test results to calculate the percentage of material that is above the lower specification tolerance limit (L).

Acceptance for flexural strength will be based on the criteria contained in accordance with paragraph 501-5.2e(1). Acceptance for thickness will be based on the criteria contained in paragraph 501-5.2e(2). Acceptance for smoothness will be based on the criteria contained in paragraph 501-5.2e(3). Acceptance for grade will be based on the criteria contained in paragraph 501-5.2e(4).

The Engineer may at any time, notwithstanding previous plant acceptance, reject and require the Contractor to dispose of any batch of concrete mixture which is rendered unfit for use due to contamination, segregation, or improper slump. Such rejection may be based on only visual inspection. In the event of such rejection, the Contractor may take a representative sample of the rejected material in the presence of the Engineer, and if it can be demonstrated in the laboratory, in the presence of the Engineer, that such material was erroneously rejected, payment will be made for the material at the contract unit price.

b. Flexural strength. Acceptance of each lot of in-place pavement for flexural strength shall be based on PWL. The Contractor shall target production quality to achieve 90 PWL or higher.

c. Pavement thickness. Acceptance of each lot of in-place pavement shall be based on PWL. The Contractor shall target production quality to achieve 90 PWL or higher.

d. Percentage of material within limits (PWL). The PWL shall be determined in accordance with procedures specified in Section 110 of the General Provisions.

The lower specification tolerance limit (L) for flexural strength and thickness shall be:

Lower Specification Tolerance Limit (L)

Flexural Strength	0.93 × strength specified in paragraph 501-3.1
Thickness	Lot Plan Thickness in inches, - 0.50 in

e. Acceptance criteria.

(1) Flexural Strength. If the PWL of the lot equals or exceeds 90%, the lot shall be acceptable. Acceptance and payment for the lot shall be determined in accordance with paragraph 501-8.1.

(2) Thickness. If the PWL of the lot equals or exceeds 90%, the lot shall be acceptable. Acceptance and payment for the lot shall be determined in accordance with paragraph 501-8.1.

(3) Smoothness. As soon as the concrete has hardened sufficiently, but not later than 48 hours after placement, the surface of each lot shall be tested in both longitudinal and transverse directions for smoothness to reveal all surface irregularities exceeding the tolerances specified. The Contractor shall furnish paving equipment and employ methods that produce a surface for each section of pavement having an average profile index meeting the requirements of paragraph 501-8.1c when evaluated with a profilograph; and the finished surface of the pavement shall not vary more than 1/4 inch (6mm) when evaluated with a 12-foot (3.7m) straightedge. When the surface smoothness exceeds specification tolerances which cannot be corrected by diamond grinding of the pavement, full depth removal and replacement of pavement shall be to the limit of the longitudinal placement. Corrections involving diamond grinding will be subject to the final pavement thickness tolerances specified.

(a) Transverse measurements. Transverse measurements will be taken for each lot placed. Transverse measurements will be taken perpendicular to the pavement centerline each 50 feet (15m) or more often as determined by the Engineer.

(i) Testing shall be continuous across all joints, starting with one-half the length of the straight edge at the edge of pavement section being tested and then moved ahead one-half the length of the straight edge for each successive measurement. Smoothness readings will not be made across grade changes or cross slope transitions; at these transition areas, the straightedge position shall be adjusted to measure surface smoothness and not design grade or cross slope transitions. The amount of surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between these two high points. Deviations on final pavement > 1/4 inch (6mm) in transverse direction shall be corrected with diamond grinding per paragraph 501-4.19g or by removing and replacing full depth of pavement. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The area corrected by grinding should not exceed 10% of the total area and these areas shall be retested after grinding.

(ii) The joint between lots shall be tested separately to facilitate smoothness between lots. The amount of surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface, with half the straightedge on one side of the joint and the other half of the straightedge on the other side of the joint. Measure the maximum gap between the straightedge and the pavement surface in the area between these two high points. One measurement shall be taken at the joint every 50 feet (15m) or more often if directed by the Engineer. Maximum gap on final pavement surface > 1/4 inch (6mm) in transverse direction shall be corrected with diamond grinding per paragraph 501-4.19g or by removing and

replacing full depth of surface. Each measurement shall be recorded and a copy of the data shall be furnished to the Engineer at the end of each days testing.

(b) Longitudinal measurements. Longitudinal measurements will be taken for each lot placed. Longitudinal tests will be parallel to the centerline of paving; at the center of paving lanes when widths of paving lanes are less than 20 feet (6m); and at the one third points of paving lanes when widths of paving lanes are 20 ft (6m) or greater.

(i) Longitudinal Short Sections. Longitudinal Short Sections are when the longitudinal lot length is less than 200 feet (60m) and areas not requiring a profilograph. When approved by the Engineer, the first and last 15 feet (4.5m) of the lot can also be considered as short sections for smoothness. The finished surface shall not vary more than 1/4 inch (6mm) when evaluated with a 12-foot (3.7m) straightedge. Smoothness readings will not be made across grade changes or cross slope transitions, at these transition areas, the straightedge position shall be adjusted to measure surface smoothness and not design grade or cross slope transitions. Testing shall be continuous across all joints, starting with one-half the length of the straight edge at the edge of pavement section being tested and then moved ahead one-half the length of the straight edge for each successive measurement. The amount of surface irregularity shall be determined by placing the freestanding (unleveled) straightedge on the pavement surface and allowing it to rest upon the two highest spots covered by its length, and measuring the maximum gap between the straightedge and the pavement surface in the area between these two high points. Deviations on final pavement surface > 1/4 inch (6mm) in longitudinal direction will be corrected with diamond grinding per paragraph 501-4.19g or by removing and replacing full depth of surface. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The area corrected by grinding should not exceed 10% of the total area and these areas shall be retested after grinding.

(ii) Profilograph Testing. Profilograph testing shall be performed by the contractor using approved equipment and procedures as described as ASTM E1274. The equipment shall utilize electronic recording and automatic computerized reduction of data to indicate “must grind” bumps and the Profile Index for the pavement using a 0.2 inch (5 mm) blanking band. The bump template must span one inch (25 mm) with an offset of 0.4 inches (10 mm). The profilograph must be calibrated prior to use and operated by a factory or State DOT approved operator. Profilograms shall be recorded on a longitudinal scale of one inch (25 mm) equals 25 feet (7.5 m) and a vertical scale of one inch (25 mm) equals one inch (25 mm). A copy of the reduced tapes shall be furnished to the Engineer at the end of each days testing.

The pavement must have an average profile index meeting the requirements of paragraph 501-8.1c. Deviations on final surface in longitudinal direction shall be corrected with diamond grinding per paragraph 501-4.19g or by removing and replacing full depth of pavement. Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The area corrected by grinding should not exceed 10% of the total area and these areas shall be retested after grinding.

Where corrections are necessary, second profilograph runs shall be performed to verify that the corrections produced an average profile index of 15 inches (38 cm) per mile or less. If the initial average profile index was less than 15 inches (38 cm), only those areas representing greater than 0.4 inch (10 mm) deviation will be re-profiled for correction verification.

(iii) Final profilograph of runway. Final profilograph, full length of runway, shall be performed to facilitate testing of smoothness between lots. Profilograph testing shall be performed by the contractor using approved equipment and procedures as described as ASTM E1274. The pavement must have an average profile index meeting the requirements of paragraph 501-8.1c. The equipment shall utilize electronic recording and automatic computerized reduction of data to

indicate “must grind” bumps and the Profile Index for the pavement using a 0.2 inch (5 mm) blanking band. The bump template must span one inch (25 mm) with an offset of 0.4 inches (10 mm). The profilograph must be calibrated prior to use and operated by a factory or State DOT approved, trained operator. Profilograms shall be recorded on a longitudinal scale of one inch (25 mm) equals 25 feet (7.5 m) and a vertical scale of one inch (25 mm) equals one inch (25 mm). A copy of the reduced tapes shall be furnished to the Engineer at the end of each days testing. Profilograph of final runway shall be performed one foot right and left of runway centerline and 15 feet right and left of centerline. Any areas that indicate “must grind” will be corrected as directed by the Engineer.

Smoothness testing indicated in the above paragraphs except paragraph (iii) shall be performed within 48 hours of placement of material. Smoothness texting indicated in paragraph (iii) shall be performed within 48 hours final paving completion. The primary purpose of smoothness testing is to identify areas that may be prone to ponding of water which could lead to hydroplaning of aircraft. If the contractor’s machines and/or methods are producing significant areas that need corrective actions then production should be stopped until corrective measures can be implemented. If corrective measures are not implemented and when directed by the Engineer, production shall be stopped until corrective measures can be implemented.

(4) Grade. An evaluation of the surface grade shall be made by the Engineer for compliance to the tolerances contained below. The finish grade will be determined by running levels at intervals of 50 feet (15 m) or less longitudinally and all breaks in grade transversely (not to exceed 50 feet (15 m)) to determine the elevation of the completed pavement. The Contractor shall pay the costs of surveying the level runs, and this work shall be performed by a licensed surveyor. The documentation, stamped and signed by a licensed surveyor, shall be provided by the Contractor to the Engineer.

(a) Lateral deviation. Lateral deviation from established alignment of the pavement edge shall not exceed ±0.10 feet (30 mm) in any lane.

(b) Vertical deviation. Vertical deviation from established grade shall not exceed ±0.04 feet (12 mm) at any point.

(5) Edge slump. When excessive edge slump cannot be corrected before the concrete has hardened, the area with excessive edge slump shall be removed and replaced at the expense of the Contractor as directed by the Engineer in accordance with paragraph 501-4.8a.

f. Removal and replacement of concrete. Any area or section of concrete that is removed and replaced shall be removed and replaced back to planned joints. The Contractor shall replace damaged dowels and the requirements for doweled longitudinal construction joints in paragraph 501-4.10 shall apply to all contraction joints exposed by concrete removal. Removal and replacement shall be in accordance with paragraph 501-4.20.

CONTRACTOR QUALITY CONTROL

501-6.1 Quality control program. The Contractor shall develop a Quality Control Program in accordance with Section 100 of the General Provisions. The program shall address all elements that affect the quality of the pavement including but not limited to:

a. Mix Design

b. Aggregate Gradation

c. Quality of Materials

d. Stockpile Management

e. Proportioning

f. Mixing and Transportation

g. Placing and Consolidation

h. Joints

i. Dowel Placement and Alignment

j. Flexural or Compressive Strength

k. Finishing and Curing

l. Surface Smoothness

501-6.2 Quality control testing. The Contractor shall perform all quality control tests necessary to control the production and construction processes applicable to this specification and as set forth in the Quality Control Program. The testing program shall include, but not necessarily be limited to, tests for aggregate gradation, aggregate moisture content, slump, and air content.

A Quality Control Testing Plan shall be developed as part of the Quality Control Program.

a. Fine aggregate.

(1) Gradation. A sieve analysis shall be made at least twice daily in accordance with ASTM C136 from randomly sampled material taken from the discharge gate of storage bins or from the conveyor belt.

(2) Moisture content. If an electric moisture meter is used, at least two direct measurements of moisture content shall be made per week to check the calibration. If direct measurements are made in lieu of using an electric meter, two tests shall be made per day. Tests shall be made in accordance with ASTM C70 or ASTM C566.

b. Coarse Aggregate.

(1) Gradation. A sieve analysis shall be made at least twice daily for each size of aggregate. Tests shall be made in accordance with ASTM C136 from randomly sampled material taken from the discharge gate of storage bins or from the conveyor belt.

(2) Moisture content. If an electric moisture meter is used, at least two direct measurements of moisture content shall be made per week to check the calibration. If direct measurements are made in lieu of using an electric meter, two tests shall be made per day. Tests shall be made in accordance with ASTM C566.

c. Slump. Four slump tests shall be performed for each lot of material produced in accordance with the lot size defined in paragraph 501-5.1. One test shall be made for each sublot. Slump tests shall be performed in accordance with ASTM C143 from material randomly sampled from material discharged from trucks at the paving site. Material samples shall be taken in accordance with ASTM C172.

d. Air content. Four air content tests, shall be performed for each lot of material produced in accordance with the lot size defined in paragraph 501-5.1. One test shall be made for each sublot. Air content tests shall be performed in accordance with ASTM C231 for gravel and stone coarse aggregate and ASTM C173 for slag or other porous coarse aggregate, from material randomly sampled from trucks at the paving site. Material samples shall be taken in accordance with ASTM C172.

e. Four unit weight and yield tests shall be made in accordance with ASTM C138. The samples shall be taken in accordance with ASTM C172 and at the same time as the air content tests.

501-6.3 Control charts. The Contractor shall maintain linear control charts for fine and coarse aggregate gradation, slump, moisture content and air content.

Control charts shall be posted in a location satisfactory to the Engineer and shall be kept up to date at all times. As a minimum, the control charts shall identify the project number, the contract item number, the test number, each test parameter, the Action and suspension Limits, or Specification limits, applicable to each test parameter, and the Contractor's test results. The Contractor shall use the control charts as part of a process control system for identifying potential problems and assignable causes before they occur. If the Contractor's projected data during production indicates a potential problem and the Contractor is not taking satisfactory corrective action, the Engineer may halt production or acceptance of the material.

a. Fine and coarse aggregate gradation. The Contractor shall record the running average of the last five gradation tests for each control sieve on linear control charts. Specification limits contained in the Lower Specification Tolerance Limit (L) table above and the Control Chart Limits table below shall be superimposed on the Control Chart for job control.

b. Slump and air content. The Contractor shall maintain linear control charts both for individual measurements and range (that is, difference between highest and lowest measurements) for slump and air content in accordance with the following Action and Suspension Limits.

Control Chart Limits

Control Parameter	**Individual Measurements**		**Range Suspension Limit**
	Action Limit	**Suspension Limit**	
Slip Form:			
Slump	+0 to -1 inch (0-25 mm)	+0.5 to -1.5 inch (13-38 mm)	±1.5 inch (38 mm)
Air Content	±1.2%	±1.8%	±2.5%
Side Form:			
Slump	+0.5 to -1 inch (13-25 mm)	+1 to -1.5 inch (25-38 mm)	±1.5 inch (38 mm)
Air Content	±1.2%	±1.8%	±2.5%

The individual measurement control charts shall use the mix design target values as indicators of central tendency.

501-6.4 Corrective action. The Contractor Quality Control Program shall indicate that appropriate action shall be taken when the process is believed to be out of control. The Contractor Quality Control Program shall detail what action will be taken to bring the process into control and shall contain sets of rules to gauge when a process is out of control. As a minimum, a process shall be deemed out of control and corrective action taken if any one of the following conditions exists.

a. Fine and coarse aggregate gradation. When two consecutive averages of five tests are outside of the specification limits in paragraph 501-2.1, immediate steps, including a halt to production, shall be taken to correct the grading.

b. Fine and coarse aggregate moisture content. Whenever the moisture content of the fine or coarse aggregate changes by more than 0.5%, the scale settings for the aggregate batcher and water batcher shall be adjusted.

c. Slump. The Contractor shall halt production and make appropriate adjustments whenever:

(1) one point falls outside the Suspension Limit line for individual measurements or range

OR

(2) two points in a row fall outside the Action Limit line for individual measurements.

d. Air content. The Contractor shall halt production and adjust the amount of air-entraining admixture whenever:

(1) one point falls outside the Suspension Limit line for individual measurements or range

OR

(2) two points in a row fall outside the Action Limit line for individual measurements.

Whenever a point falls outside the Action Limits line, the air-entraining admixture dispenser shall be calibrated to ensure that it is operating correctly and with good reproducibility.

METHOD OF MEASUREMENT

501-7.1 Portland cement concrete pavement shall be measured by the number of square yards of either plain or reinforced pavement as specified in-place, completed and accepted.

BASIS OF PAYMENT

501-8.1 Payment. Payment for concrete pavement meeting all acceptance criteria as specified in paragraph 501-5.2 Acceptance Criteria shall be based on results of smoothness, strength and thickness tests. Payment for acceptable lots of concrete pavement shall be adjusted in accordance with paragraph 501-8.1a for strength and thickness and 501-8.1c for smoothness, subject to the limitation that:

The total project payment for concrete pavement shall not exceed 100 percent of the product of the contract unit price and the total number of square yards of concrete pavement used in the accepted work (See Note 1 under the Price Adjustment Schedule table below).

Payment shall be full compensation for all labor, materials, tools, equipment, and incidentals required to complete the work as specified herein and on the drawings.

a. Basis of adjusted payment. The pay factor for each individual lot shall be calculated in accordance with the Price Adjustment Schedule table below. A pay factor shall be calculated for both flexural strength and thickness. The lot pay factor shall be the higher of the two values when calculations for both flexural strength and thickness are 100% or higher. The lot pay factor shall be the product of the two values when only one of the calculations for either flexural strength or thickness is 100% or higher. The lot pay factor shall be the lower of the two values when calculations for both flexural strength and thickness are less than 100%.

Price Adjustment Schedule[1]

Percentage of Materials Within Specification Limits (PWL)	**Lot Pay Factor (Percent of Contract Unit Price)**
96 – 100	106
90 – 95	PWL + 10
75 – 90	0.5 PWL + 55
55 – 74	1.4 PWL – 12
Below 55	Reject[2]

[1] Although it is theoretically possible to achieve a pay factor of 106% for each lot, actual payment in excess of 100% shall be subject to the total project payment limitation specified in paragraph 501-8.1.

[2] The lot shall be removed and replaced. However, if the Engineer and the FAA have decided to allow the rejected lot to remain in accordance with Section 50-02 after the Engineer and Contractor agree in writing that the lot shall not be removed, it shall be paid for at 50% of the contract unit price and the total project payment limitation shall be reduced by the amount withheld for the rejected lot.

For each lot accepted, the adjusted contract unit price shall be the product of the lot pay factor for the lot and the contract unit price. Payment shall be subject to the total project payment limitation specified in paragraph 501-8.1. Payment in excess of 100% for accepted lots of concrete pavement shall be used to offset payment for accepted lots of concrete pavement that achieve a lot pay factor less than 100%.

b. Payment. Payment shall be made under:

Item P-501 PCC Pavement, 10.5-Inch Depth – per square yard

c. Basis of adjusted payment for smoothness. Price adjustment for pavement smoothness will apply to the total area of concrete within a section of pavement and shall be applied in accordance the following equation and schedule:

(Square yard in section) × (original unit price per square yard) × PFm = reduction in payment for area within section

Average Profile Index (Inches Per Mile) Pavement Strength Rating			**Contract Unit Price Adjustment (PFm)**
Over 30,000 lb	**30,000 lb or Less**	**Short Sections**	
0 - 7	0 - 10	0 - 15	0.00
7.1 - 9	10.1 - 11	15.1 - 16	0.02
9.1 - 11	11.1 - 12	16.1 - 17	0.04
11.1 - 13	12.1 - 13	17.1 - 18	0.06
13.1 - 14	13.1 - 14	18.1 - 20	0.08
14.1 - 15	14.1 - 15	20.1 - 22	0.10
15.1 and up	15.1 and up	22.1 and up	Corrective work required

TESTING REQUIREMENTS

ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C70	Standard Test Method for Surface Moisture in Fine Aggregate
ASTM C78	Standard Test Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading)
ASTM C88	Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Standard Test Method for Materials Finer Than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing
ASTM C131	Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C138	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM C143	Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C172	Standard Practice for Sampling Freshly Mixed Concrete
ASTM C173	Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
ASTM C174	Standard Test Method for Measuring Thickness of Concrete Elements Using Drilled Concrete Cores
ASTM C227	Standard Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method)
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C289	Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)
ASTM C295	Standard Guide for Petrographic Examination of Aggregates for Concrete
ASTM C114	Standard Test Methods for Chemical Analysis of Hydraulic Cement
ASTM C311	Standard Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use in Portland Cement Concrete
ASTM C566	Standard Test Method for Total Evaporable Moisture Content of Aggregates by Drying
ASTM C642	Standard Test Method for Density, Absorption, and Voids in Hardened Concrete

ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1567	Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregate (Accelerated Mortar-Bar Method)
ASTM C1602	Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete
ASTM D3665	Standard Practice for Random Sampling of Construction Materials
ASTM D4791	Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate
ASTM E178	Standard Practice for Dealing With Outlying Observations
ASTM E1274	Standard Test Method for Measuring Pavement Roughness Using a Profilograph

U.S. Army Corps of Engineers (USACE) Concrete Research Division (CRD) C662
Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials, Lithium Nitrate Admixture and Aggregate (Accelerated Mortar-Bar Method)

MATERIAL REQUIREMENTS

ASTM A184	Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM A704	Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement
ASTM A706	Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement
ASTM A714	Standard Specification for High-Strength Low-Alloy Welded and Seamless Steel Pipe
ASTM A775	Standard Specification for Epoxy-Coated Steel Reinforcing Bars
ASTM A934	Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars
ASTM A996	Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement
ASTM A1064	Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

ASTM A1078	Standard Specification for Epoxy-Coated Steel Dowels for Concrete Pavement
ASTM C33	Standard Specification for Concrete Aggregates
ASTM C94	Standard Specification for Ready-Mixed Concrete
ASTM C150	Standard Specification for Portland Cement
ASTM C171	Standard Specification for Sheet Materials for Curing Concrete
ASTM C260	Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C595	Standard Specification for Blended Hydraulic Cements
ASTM C618	Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
ASTM C881	Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C989	Standard Specification for Slag Cement for Use in Concrete and Mortars
ASTM D1751	Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D1752	Standard Specification for Preformed Sponge Rubber and Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving And Structural Construction
ACI 211.1	Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
ACI 305R	Guide to Hot Weather Concreting
ACI 306R	Guide to Cold Weather Concreting
ACI 309R	Guide for Consolidation of Concrete
AC 150/5320-6	Airport Pavement Design and Evaluation
PCA	Design and Control of Concrete Mixtures

END ITEM P-501

Item P-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 these specifications and in reasonably close conformity to the lines shown on the plans.

MATERIALS

602-2.1 Bituminous material. The bituminous material shall be an emulsified asphalt indicated in ASTM D3628 as a bituminous application for prime coat appropriate to local conditions or as designated by the Engineer.

CONSTRUCTION METHODS

602-3.1 Weather limitations. The prime coat shall be applied only when the existing surface is dry; the atmospheric temperature is 50°F (10°C) or above, and the temperature has not been below 35°F (2°C) for the 12 hours prior to application; and when the weather is not foggy or rainy. The temperature requirements may be waived when directed by the Engineer.

602-3.2 Equipment. The equipment shall include a self-powered pressure bituminous material distributor and equipment for heating bituminous material.

Provide a distributor with pneumatic tires of such size and number that the load produced on the base surface does not exceed 65.0 psi (4.5 kg/sq cm) of tire width to prevent rutting, shoving or otherwise damaging the base, surface or other layers in the pavement structure. Design and equip the distributor to spray the bituminous material in a uniform coverage at the specified temperature, at readily determined and controlled rates from 0.05 to 2.0 gallons per square yard (0.23 to 9.05 L/square meter), with a pressure range of 25 to 75 psi (172.4 to 517.1 kPa) and with an allowable variation from the specified rate of not more than ±5%, and at variable widths. Include with the distributor equipment a separate power unit for the bitumen pump, full-circulation spray bars, tachometer, pressure gauges, volume-measuring devices, adequate heaters for heating of materials to the proper application temperature, a thermometer for reading the temperature of tank contents, and a hand hose attachment suitable for applying bituminous material manually to areas inaccessible to the distributor. Equip the distributor to circulate and agitate the bituminous material during the heating process. If the distributor is not equipped with an operable quick shutoff valve, the prime operations shall be started and stopped on building paper. The Contractor shall remove blotting sand prior to asphalt concrete lay down operations at no additional expense to the Owner.

A power broom and power blower suitable for cleaning the surfaces to which the bituminous coat is to be applied shall be provided.

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 bituminous material shall be uniformly applied with a bituminous distributor at the rate of 0.15 to 0.30 gallons per square yard (0.68 to 1.36 liters per square meter) depending on the base course surface texture. The type of bituminous material and application rate shall be approved by the Engineer prior to application.

Following application of the bituminous material and prior to application of the succeeding layer of pavement, allow the bituminous coat to cure and to obtain evaporation of any volatiles or moisture. Maintain the coated surface until the succeeding layer of pavement is placed, by protecting the surface against damage and by repairing and recoating deficient areas. Allow the prime coat to cure without being disturbed for a period of at least 48 hours or longer, as may be necessary to attain penetration into the treated course. Furnish and spread enough sand to effectively blot up and cure excess bituminous material. Keep traffic off surfaces freshly treated with bituminous material. Provide sufficient warning signs and barricades so that traffic will not travel over freshly treated surfaces.

602-3.4 Trial applications. Before providing the complete bituminous coat, the Contractor shall apply three lengths of at least 100 feet (30 m) for the full width of the distributor bar to evaluate the amount of bituminous material that can be satisfactorily applied with the equipment. Apply three different trial application rates of bituminous materials within the application range specified in paragraph 602-3.3. Other trial applications will be made using various amounts of material as deemed necessary by the Engineer.

602-3.5 Bituminous material Contractor's responsibility. The Contractor shall provide a statement of source and character of the proposed bituminous material which must be submitted to and approved by the Engineer before any shipment of bituminous materials to the project. The Contractor shall furnish vendor's certified test reports for each carload, or equivalent, of bituminous material shipped to the project. The test reports shall be provided to and approved by the Engineer before the bituminous material is applied. If the bituminous material does not meet the specifications, it shall be replaced at the Contractor's expense. Furnishing the vendor's certified test report for the bituminous material shall not be interpreted as basis for final acceptance.

602-3.6 Freight and weigh bills. The Contractor shall submit waybills and delivery tickets during the progress of the work. Before the final estimate is allowed, file with the Engineer certified waybills and certified delivery tickets for all bituminous materials used in the construction of the pavement covered by the contract. Do not remove bituminous material from storage until the initial outage and temperature measurements have been taken. The delivery or storage units will not be released until the final outage has been taken.

METHOD OF MEASUREMENT

602-4.1 The bituminous material for prime coat shall be measured by the gallon. Volume shall be corrected to the volume at 60°F (16°C) in accordance with ASTM D1250. The bituminous material paid for will be the measured quantities used in the accepted work, provided that the measured quantities are not 10% over the specified application rate. Any amount of bituminous material more than 10% over the specified application rate for each application will be deducted from the measured quantities, except for irregular areas where hand spraying of the bituminous material is necessary. Water added to emulsified asphalt will not be measured for payment.

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.

Payment will be made under:

Item P-602	Bituminous Prime Coat - per gallon

TESTING REQUIREMENTS

ASTM D1250	Standard Guide for Use of the Petroleum Measurement Tables

MATERIAL REQUIREMENTS

ASTM D977	Standard Specification for Emulsified Asphalt
ASTM D2028	Standard Specification for Cutback Asphalt (Rapid-Curing Type)
ASTM D2397	Standard Specification for Cationic Emulsified Asphalt
ASTM D3628	Standard Practice for Selection and Use of Emulsified Asphalts

END OF ITEM P-602

Item P-603 Bituminous Tack Coat

DESCRIPTION

603-1.1 This item shall consist of preparing and treating a bituminous or concrete surface with bituminous material in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

MATERIALS

603-2.1 Bituminous materials. The bituminous material shall be an emulsified asphalt indicated in ASTM D3628 as a bituminous application for tack coat appropriate to local conditions or as designated by the Engineer.

CONSTRUCTION METHODS

603-3.1 Weather limitations. The tack coat shall be applied only when the existing surface is dry and the atmospheric temperature is 50°F (10°C) or above; the temperature has not been below 35°F (2°C) for the 12 hours prior to application; and when the weather is not foggy or rainy. The temperature requirements may be waived when directed by the Engineer.

603-3.2 Equipment. The Contractor shall provide equipment for heating and applying the bituminous material.

Provide a distributor with pneumatic tires of such size and number that the load produced on the base surface does not exceed 65.0 psi (4.5 kg/sq cm) of tire width to prevent rutting, shoving or otherwise damaging the base, surface or other layers in the pavement structure. Design and equip the distributor to spray the bituminous material in a uniform coverage at the specified temperature, at readily determined and controlled rates from 0.05 to 2.0 gallons per square yard (0.23 to 9.05 L/square meter), with a pressure range of 25 to 75 psi (172.4 to 517.1 kPa) and with an allowable variation from the specified rate of not more than ±5%, and at variable widths. Include with the distributor equipment a separate power unit for the bitumen pump, full-circulation spray bars, tachometer, pressure gauges, volume-measuring devices, adequate heaters for heating of materials to the proper application temperature, a thermometer for reading the temperature of tank contents, and a hand hose attachment suitable for applying bituminous material manually to areas inaccessible to the distributor. Equip the distributor to circulate and agitate the bituminous material during the heating process. If the distributor is not equipped with an operable quick shutoff valve, the tack operations shall be started and stopped on building paper. The Contractor shall remove blotting sand prior to asphalt concrete lay down operations at no additional expense to the Owner.

A power broom and/or power blower suitable for cleaning the surfaces to which the bituminous tack coat is to be applied shall be provided.

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 and/or power blower to remove all loose dirt and other objectionable material.

Emulsified asphalt shall be diluted by the addition of water when directed by the Engineer and shall be applied a sufficient time in advance of the paver to ensure that all water has evaporated before the overlying mixture is placed on the tacked surface.

The bituminous material including vehicle shall be uniformly applied with a bituminous distributor at the rate of 0.05 to 0.10 gallons per square yard (0.20 to 0.50 liters per square meter) depending on the condition of the existing surface. The type of bituminous material and application rate shall be approved by the Engineer prior to application.

After application of the tack coat, the surface shall be allowed to cure without being disturbed for the period of time necessary to permit drying and setting of the tack coat. This period shall be determined by the Engineer. The Contractor shall protect the tack coat and maintain the surface until the next course has been placed.

603-3.4 Bituminous material Contractor's responsibility. The Contractor shall provide a statement of source and character of the proposed bituminous material which must be submitted and approved by the Engineer before any shipment of bituminous materials to the project.

The Contractor shall furnish the vendor's certified test reports for each carload, or equivalent, of bituminous material shipped to the project. The tests reports shall be provided to and approved by the Engineer before the bituminous material is applied. If the bituminous material does not meet the specifications, it shall be replaced at the Contractor's expense. Furnishing the vendor's certified test report for the bituminous material shall not be interpreted as a basis for final acceptance.

603-3.5 Freight and weigh bills The Contractor shall submit waybills and delivery tickets, during progress of the work. Before the final statement is allowed, file with the Engineer certified waybills and certified delivery tickets for all bituminous materials used in the construction of the pavement covered by the contract. Do not remove bituminous material from storage until the initial outage and temperature measurements have been taken. The delivery or storage units will not be released until the final outage has been taken.

METHOD OF MEASUREMENT

603-4.1 The bituminous material for tack coat shall be measured by the gallon. Volume shall be corrected to the volume at 60°F (16°C) in accordance with ASTM D1250. The bituminous material paid for will be the measured quantities used in the accepted work, provided that the measured quantities are not 10% over the specified application rate. Any amount of bituminous material more than 10% over the specified application rate for each application will be deducted from the measured quantities, except for irregular areas where hand spraying of the bituminous material is necessary. Water added to emulsified asphalt will not be measured for payment.

BASIS OF PAYMENT

603.5-1 Payment shall be made at the contract unit price per gallon of bituminous material. This price shall be full compensation for furnishing all materials, for all preparation, delivery, and application of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-603 Bituminous Tack Coat - per gallon

MATERIAL REQUIREMENTS

ASTM D633	Standard Volume Correction Table for Road Tar
ASTM D977	Standard Specification for Emulsified Asphalt
ASTM D1250	Standard Guide for Use of the Petroleum Measurement Tables
ASTM D2028	Standard Specification for Cutback Asphalt (Rapid-Curing Type)
ASTM D2397	Standard Specification for Cationic Emulsified Asphalt
ASTM D3628	Standard Practice for Selection and Use of Emulsified Asphalts

END ITEM P-603

Item P-605 Joint Sealants for Concrete Pavements

DESCRIPTION

605-1.1 This item shall consist of providing and installing a resilient and adhesive joint sealing material capable of effectively sealing joints and cracks in rigid pavements.

MATERIALS

605-2.1 Joint sealants. Joint sealant materials shall meet the requirements of:

ASTM D6690 Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

Each lot or batch of sealant shall be delivered to the jobsite in the manufacturer's original sealed container. Each container shall be marked with the manufacturer's name, batch or lot number, the safe heating temperature, and shall be accompanied by the manufacturer's certification stating that the sealant meets the requirements of this specification.

605-2.2 Backer rod. The material furnished shall be a compressible, non-shrinking, non-staining, non-absorbing material that is non-reactive with the joint sealant. The material shall have a water absorption of not more than 5% when tested in accordance with ASTM C509. The backer-rod material shall be 25% ± 5 % larger in diameter than the nominal width of the crack.

605-2.3 Backup materials. Provide backup material that is a compressible, nonshrinking, nonstaining, nonabsorbing material, nonreactive with the joint sealant. The material shall have a melting point at least 5°F (3°C) greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. The material shall have a water absorption of not more than 5% of the sample weight when tested in accordance with ASTM C509. The backup material shall be 25 ±5% larger in diameter than the nominal width of the crack.

605-2.4 Bond breaking tapes. Provide a bond breaking tape or separating material that is a flexible, nonshrinkable, nonabsorbing, nonstaining, and nonreacting adhesive-backed tape. The material shall have a melting point at least 5°F (3°C) greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. The bond breaker tape shall be approximately 1/8 inch (3 mm) wider than the nominal width of the joint and shall not bond to the joint sealant.

CONSTRUCTION METHODS

605-3.1 Time of application. Joints shall be sealed as soon after completion of the curing period as feasible and before the pavement is opened to traffic, including construction equipment. The pavement temperature shall be 50°F (10°C) and rising at the time of application of the poured joint sealing material. Do not apply sealant if moisture is observed in the joint.

605-3.2 Equipment. Machines, tools, and equipment used in the performance of the work required by this section shall be approved before the work is started and maintained in satisfactory

condition at all times. Submit a list of proposed equipment to be used in performance of construction work including descriptive data, **seven (7)** days prior to use on the project.

a. Concrete saw. Provide a self-propelled power saw, with water-cooled diamond or abrasive saw blades, for cutting joints to the depths and widths specified or for refacing joints or cleaning sawed joints where sandblasting does not provide a clean joint.

b. Hand tools. Hand tools may be used, when approved, for removing defective sealant from a crack and repairing or cleaning the crack faces.

c. Hot-poured sealing equipment. The unit applicators used for heating and installing ASTM D6690 joint sealant materials shall be mobile and shall be equipped with a double-boiler, agitator-type kettle with an oil medium in the outer space for heat transfer; a direct-connected pressure-type extruding device with a nozzle shaped for inserting in the joint to be filled; positive temperature devices for controlling the temperature of the transfer oil and sealant; and a recording type thermometer for indicating the temperature of the sealant. The applicator unit shall be designed so that the sealant will circulate through the delivery hose and return to the inner kettle when not in use.

605-3.3 Preparation of joints.

a. Sawing. All joints shall be sawed in accordance with specifications and plan details. Immediately after sawing the joint, the resulting slurry shall be completely removed from joint and adjacent area by flushing with a jet of water, and by use of other tools as necessary.

b. Sealing. Immediately before sealing, the joints shall be thoroughly cleaned of all remaining laitance, curing compound, filler, protrusions of hardened concrete, old sealant and other foreign material from the sides and upper edges of the joint space to be sealed. Cleaning shall be accomplished by concrete saw as specified in paragraph 605-3.2. The newly exposed concrete joint faces and the pavement surface extending a minimum of 1/2 inch (12 mm) from the joint edge shall be sandblasted clean. Sandblasting shall be accomplished in a minimum of two passes. One pass per joint face with the nozzle held at an angle directly toward the joint face and not more than 3 inches (75 mm) from it. After final cleaning and immediately prior to sealing, blow out the joints with compressed air and leave them completely free of debris and water. The joint faces shall be surface dry when the seal is applied.

c. Back-up material. When the joint opening is of a greater depth than indicated for the sealant depth, plug or seal off the lower portion of the joint opening using a back-up material to prevent the entrance of the sealant below the specified depth. Take care to ensure that the backup material is placed at the specified depth and is not stretched or twisted during installation.

d. Bond-breaking tape. Where inserts or filler materials contain bitumen, or the depth of the joint opening does not allow for the use of a backup material, insert a bond-breaker separating tape to prevent incompatibility with the filler materials and three-sided adhesion of the sealant. Securely bond the tape to the bottom of the joint opening so it will not float up into the new sealant.

605-3.4 Installation of sealants. Joints shall be inspected for proper width, depth, alignment, and preparation, and shall be approved by the Engineer before sealing is allowed. Sealants shall be installed in accordance with the following requirements:

Immediately preceding, but not more than 50 feet (15 m) ahead of the joint sealing operations, perform a final cleaning with compressed air. Fill the joints from the bottom up to 1/8 inch (3 mm) ±1/16 inch (2 mm) below the pavement surface. Remove and discard excess or spilled sealant from the pavement by approved methods. Install the sealant in such a manner as to prevent the formation of voids and entrapped air. In no case shall gravity methods or pouring pots be used to install the sealant material. Traffic shall not be permitted over newly sealed pavement until

authorized by the Contracting Officer. When a primer is recommended by the manufacturer, apply it evenly to the joint faces in accordance with the manufacturer's instructions. Check the joints frequently to ensure that the newly installed sealant is cured to a tack-free condition within the time specified.

605-3.5 Inspection. The Contractor shall inspect the joint sealant for proper rate of cure and set, bonding to the joint walls, cohesive separation within the sealant, reversion to liquid, entrapped air and voids. Sealants exhibiting any of these deficiencies at any time prior to the final acceptance of the project shall be removed from the joint, wasted, and replaced as specified at no additional cost to the airport.

605-3.6 Clean-up. Upon completion of the project, remove all unused materials from the site and leave the pavement in a clean condition.

METHOD OF MEASUREMENT

605-4.1 Joint sealing material shall be considered incidental to P-501 Portland Cement Concrete (PCC) Pavement for sealant in place, completed, and accepted.

BASIS OF PAYMENT

605-5.1 Payment for joint sealing material shall be made considered incidental to P-501 Portland Cement Concrete (PCC) Pavement. The price shall be full compensation for furnishing all materials, for all preparation, delivering, and placing of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

TESTING REQUIREMENTS

ASTM D412	Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers – Tension
ASTM C509	Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material
ASTM D1644	Standard Test Methods for Nonvolatile Content of Varnishes

MATERIAL REQUIREMENTS

AC 150/5340-30	Design and Installation Details for Airport Visual Aids
ASTM D789	Standard Test Method for Determination of Relative Viscosity of Polyamide (PA)
ASTM D5893	Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements
ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

END ITEM P-605

Item P-610 Structural Portland Cement Concrete

DESCRIPTION

610-1.1 This item shall consist of plain and/or reinforced structural portland cement concrete (PCC), prepared and constructed in accordance with these specifications, at the locations and of the form and dimensions shown on the plans. This specification shall be used for all structural and miscellaneous concrete including signage bases.

MATERIALS

610-2.1 General. Only approved materials, conforming to the requirements of these specifications, shall be used in the work. Materials may be subject to inspection and tests at any time during their preparation or use. The source of all materials shall be approved by the Engineer before delivery or use in the work. Representative preliminary samples of the materials shall be submitted by the Contractor, when required, for examination and test. Materials shall be stored and handled to ensure preservation of their quality and fitness for use and shall be located to facilitate prompt inspection. All equipment for handling and transporting materials and concrete must be clean before any material or concrete is placed in them.

The use of pit-run aggregates shall not be permitted unless the pit-run aggregate has been screened and washed, and all fine and coarse aggregates stored separately and kept clean. The mixing of different aggregates from different sources in one storage stockpile or alternating batches of different aggregates shall not be permitted.

a. Reactivity. Fine and Coarse aggregates to be used in all concrete shall be evaluated and tested by the Contractor for alkali-aggregate reactivity in accordance with both ASTM C1260 and C1567. Aggregate and mix proportion reactivity tests shall be performed for each project.

(1) Coarse and fine aggregate shall be tested separately in accordance with ASTM C1260. The aggregate shall be considered innocuous if the expansion of test specimens, tested in accordance with ASTM C1260, does not exceed 0.10% at 28 days (30 days from casting).

(2) Combined coarse and fine aggregate shall be tested in accordance with ASTM C1567, modified for combined aggregates, using the proposed mixture design proportions of aggregates, cementitious materials, and/or specific reactivity reducing chemicals. If lithium nitrate is proposed for use with or without supplementary cementitious materials, the aggregates shall be tested in accordance with Corps of Engineers (COE) CRD C662. If lithium nitrate admixture is used, it shall be nominal 30% ±0.5% weight lithium nitrate in water.

(3) If the expansion of the proposed combined materials test specimens, tested in accordance with ASTM C1567, modified for combined aggregates, or COE CRD C662, does not exceed 0.10% at 28 days, the proposed combined materials will be accepted. If the expansion of the proposed combined materials test specimens is greater than 0.10% at 28 days, the aggregates will not be accepted unless adjustments to the combined materials mixture can reduce the expansion to less than 0.10% at 28 days, or new aggregates shall be evaluated and tested.

610-2.2 Coarse aggregate. The coarse aggregate for concrete shall meet the requirements of ASTM C33. The Engineer may consider and reserve final approval of other State classification procedures addressing aggregate durability.

Coarse aggregate shall be well graded from coarse to fine and shall meet one of the following gradation shown in the table below when tested per ASTM C136.

Gradation For Coarse Aggregate

Sieve Designation (square openings)	Percentage by Weight Passing Sieves						
	2" (50 mm)	1-1/2" (38 mm)	1" (25 mm)	3/4" (19 mm)	1/2" (12 mm)	3/8" (9 mm)	No. 4
No. 4 to 3/4 in. (4.75-19 mm)			100	90-100		20-55	0-10
No. 4 to 1 in. (4.75-25 mm)		100	90-100		25-60		0-10
No. 4 to 1-1/2 in. (4.75-38 mm)	100	95-100		35-70		10-30	0-5

610-2.2.1 Aggregate susceptibility to durability (D) cracking.

Coarse aggregate may be accepted from sources that have a 20 year service history for the same gradation to be supplied with no durability issues.

a. Material currently being produced shall have a durability factor $\geq$ 95 using ASTM C666. Coarse aggregates that are crushed granite, calcite cemented sandstone, quartzite, basalt, diabase, rhyolite or trap rock are considered to meet the D-cracking test but must meet all other quality tests. Aggregates meeting State Highway Department material specifications may be acceptable with concurrence of the FAA.

b. The Contractor shall submit a current certification that the aggregate does not have a history of D-cracking and that the aggregate meets the state specifications for use in PCC pavement for use on interstate highways. Certifications, tests and any history reports must be for the same gradation as being proposed for use on the project. Certifications which are not dated or which are over one (1) year old or which are for different gradations will not be accepted. Test results will only be accepted when tests were performed by a State Department of Transportation (DOT) materials laboratory or an accredited laboratory.

610-2.3 Fine aggregate. The fine aggregate for concrete shall meet the requirements of ASTM C33.

The fine aggregate shall be well graded from fine to coarse and shall meet the requirements of the table below when tested in accordance with ASTM C136:

Gradation For Fine Aggregate

Sieve Designation (square openings)	Percentage by Weight Passing Sieves
3/8 inch (9 mm)	100
No. 4 (4.75 mm)	95-100
No. 16 (1.18 mm)	45-80
No. 30 (0.60 mm)	25-55
No. 50 (0.30 mm)	10-30
No. 100 (0.15 mm)	2-10

Blending will be permitted, if necessary, to meet the gradation requirements for fine aggregate. Fine aggregate deficient in the percentage of material passing the No. 50 mesh sieve may be

accepted, if the deficiency does not exceed 5% and is remedied by the addition of pozzolanic or cementitious materials other than Portland cement, as specified in paragraph 610-2.6, Admixtures, in sufficient quantity to produce the required workability as approved by the Engineer.

610-2.4 Cement. Cement shall conform to the requirements of **ASTM C150** Type **I or II**.

If aggregates are deemed innocuous when tested in accordance with paragraph 610-2.1.a.1 and accepted in accordance with paragraph 610-2.1.a.3, higher equivalent alkali content in the cement may be allowed if approved by the Engineer and FAA. If cement becomes partially set or contains lumps of caked cement, it shall be rejected. Cement salvaged from discarded or used bags shall not be used.

The Contractor shall furnish vendors' certified test reports for each carload, or equivalent, of cement shipped to the project. The report shall be delivered to the Engineer before use of the cement is granted. All test reports shall be subject to verification by testing sample materials received for use on the project.

610-2.5 Water. The water used in concrete shall be fresh, clean and potable; free from injurious amounts of oils, acids, alkalies, salts, organic materials or other substances deleterious to concrete.

610-2.6 Admixtures and supplementary cementitious material. The Contractor shall submit certificates indicating that the material to be furnished meets all of the requirements indicated below. In addition, the Engineer may require the Contractor to submit complete test data from an approved laboratory showing that the material to be furnished meets all of the requirements of the cited specifications. Subsequent tests may be made of samples taken by the Engineer from the supply of the material being furnished or proposed for use on the work to determine whether the admixture is uniform in quality with that approved.

a. Air-entraining admixtures. Air-entraining admixtures shall meet the requirements of ASTM C260 and shall consistently entrain the air content in the specified ranges under field conditions. The air-entrainment agent and any water reducer admixture shall be compatible.

b. Water-reducing admixtures. Water-reducing admixture shall meet the requirements of ASTM C494, Type A, B, or D. ASTM C494, Type F and G high range water reducing admixtures and ASTM C1017 flowable admixtures shall not be used.

c. Other chemical admixtures. The use of set retarding, and set-accelerating admixtures shall be approved by the Engineer. Retarding shall meet the requirements of ASTM C494, Type A, B, or D and set-accelerating shall meet the requirements of ASTM C494, Type C. Calcium chloride and admixtures containing calcium chloride shall not be used.

d. Lithium nitrate. The lithium admixture shall be a nominal 30% aqueous solution of Lithium Nitrate, with a density of 10 pounds/gallon (1.2 kg/L), and shall have the approximate chemical form as shown below:

Constituent	**Limit (Percent by Mass)**
LiNO3 (Lithium Nitrate)	30 ±0.5
SO4 (Sulfate Ion)	0.1 (max)
Cl (Chloride Ion)	0.2 (max)
Na (Sodium Ion)	0.1 (max)
K (Potassium Ion)	0.1 (max)

Provide a trained representative to supervise the lithium nitrate admixture dispensing and mixing operations.

610-2.7 Premolded joint material. Premolded joint material for expansion joints shall meet the requirements of ASTM D1751.

610-2.8 Joint filler. The filler for joints shall meet the requirements of Item P-605, unless otherwise specified.

610-2.9 Steel reinforcement. Reinforcing materials shall conform to one of the following specifications:

Reinforcing Steel	ASTM A615, ASTM A706, ASTM A775, ASTM A934
Welded Steel Wire Fabric	ASTM A1064
Welded Deformed Steel Fabric	ASTM A1064
Bar Mars	ASTM A184 or ASTM A704

610-2.10 Materials for curing concrete. Curing materials shall conform to one of the following specifications:

Waterproof paper	ASTM C171
Clear or white Polyethylene Sheeting	ASTM C171
White-pigmented Liquid Membrane-Forming Compound, Type 2, Class B	ASTM C309

CONSTRUCTION METHODS

610-3.1 General. The Contractor shall furnish all labor, materials, and services necessary for, and incidental to, the completion of all work as shown on the drawings and specified here. All machinery and equipment used by the Contractor on the work, shall be of sufficient size to meet the requirements of the work. All work shall be subject to the inspection and approval of the Engineer.

610-3.2 Concrete composition. The concrete shall develop a compressive strength of **3,500** psi in 28 days as determined by test cylinders made in accordance with ASTM C31 and tested in accordance with ASTM C39. The concrete shall contain not less than 470 pounds of cement per cubic yard (280 kg per cubic meter). The concrete shall contain 5% of entrained air, ±1%, as determined by ASTM C231 and shall have a slump of not more than 4 inches (100 mm) as determined by ASTM C143.

610-3.3 Acceptance sampling and testing. Concrete for each structure will be accepted on the basis of the compressive strength specified in paragraph 610-3.2. The concrete shall be sampled in accordance with ASTM C172. Concrete cylindrical compressive strength specimens shall be made in accordance with ASTM C31 and tested in accordance with ASTM C39. The Contractor shall cure and store the test specimens under such conditions as directed by the Engineer. The Engineer will make the actual tests on the specimens at no expense to the Contractor.

610-3.4 Qualifications for concrete testing service. Perform concrete testing by an approved laboratory and inspection service experienced in sampling and testing concrete. Testing agency must meet the requirements of ASTM C1077 or ASTM E329.

610-3.5 Proportioning and measuring devices. When package cement is used, the quantity for each batch shall be equal to one or more whole sacks of cement. The aggregates shall be measured separately by weight. If aggregates are delivered to the mixer in batch trucks, the exact

amount for each mixer charge shall be contained in each batch compartment. Weighing boxes or hoppers shall be approved by the Engineer and shall provide means of regulating the flow of aggregates into the batch box so the required, exact weight of aggregates is obtained.

610-3.6 Consistency. The consistency of the concrete shall be determined by the slump test specified in ASTM C143.

610-3.7 Mixing. Concrete may be mixed at the construction site, at a central point, or wholly or in part in truck mixers. The concrete shall be mixed and delivered in accordance with the requirements of ASTM C94.

610-3.8 Mixing conditions. The concrete shall be mixed only in quantities required for immediate use. Concrete shall not be mixed while the air temperature is below 40°F (4°C) without permission of the Engineer. If permission is granted for mixing under such conditions, aggregates or water, or both, shall be heated and the concrete shall be placed at a temperature not less than 50°F (10°C) nor more than 100°F (38°C). The Contractor shall be held responsible for any defective work, resulting from freezing or injury in any manner during placing and curing, and shall replace such work at his expense.

Retempering of concrete by adding water or any other material shall not be permitted.

The rate of delivery of concrete to the job shall be sufficient to allow uninterrupted placement of the concrete.

610-3.9 Forms. Concrete shall not be placed until all the forms and reinforcements have been inspected and approved by the Engineer. Forms shall be of suitable material and shall be of the type, size, shape, quality, and strength to build the structure as shown on the plans. The forms shall be true to line and grade and shall be mortar-tight and sufficiently rigid to prevent displacement and sagging between supports. The surfaces of forms shall be smooth and free from irregularities, dents, sags, and holes. The Contractor shall be responsible for their adequacy.

The internal form ties shall be arranged so no metal will show in the concrete surface or discolor the surface when exposed to weathering when the forms are removed. All forms shall be wetted with water or with a non-staining mineral oil, which shall be applied immediately before the concrete is placed. Forms shall be constructed so they can be removed without injuring the concrete or concrete surface. The forms shall not be removed until at least 30 hours after concrete placement for vertical faces, walls, slender columns, and similar structures. Forms supported by falsework under slabs, beams, girders, arches, and similar construction shall not be removed until tests indicate the concrete has developed at least 60% of the design strength.

610-3.10 Placing reinforcement. All reinforcement shall be accurately placed, as shown on the plans, and shall be firmly held in position during concrete placement. Bars shall be fastened together at intersections. The reinforcement shall be supported by approved metal chairs. Shop drawings, lists, and bending details shall be supplied by the Contractor when required.

610-3.11 Embedded items. Before placing concrete, all embedded items shall be firmly and securely fastened in place as indicated. All embedded items shall be clean and free from coating, rust, scale, oil, or any foreign matter. The concrete shall be spaded and consolidated around and against embedded items. The embedding of wood shall not be allowed.

610-3.12 Placing concrete. All concrete shall be placed during daylight hours, unless otherwise approved. The concrete shall not be placed until the depth and condition of foundations, the adequacy of forms and falsework, and the placing of the steel reinforcing have been approved by the Engineer. Concrete shall be placed as soon as practical after mixing, but in no case later than one (1) hour after water has been added to the mix. The method and manner of placing shall avoid segregation and displacement of the reinforcement. Troughs, pipes, and chutes shall be

used as an aid in placing concrete when necessary. The concrete shall not be dropped from a height of more than 5 feet (1.5 m). Concrete shall be deposited as nearly as practical in its final position to avoid segregation due to rehandling or flowing. Do not subject concrete to procedures which cause segregation. Concrete shall be placed on clean, damp surfaces, free from running water, or on a properly consolidated soil foundation.

610-3.13 Vibration. Vibration shall follow the guidelines in American Concrete Institute (ACI) Committee 309, Guide for Consolidation of Concrete. Where bars meeting ASTM A775 or A934 are used, the vibrators shall be equipped with rubber or non-metallic vibrator heads. Furnish a spare, working, vibrator on the job site whenever concrete is placed. Consolidate concrete slabs greater than 4 inches (100 mm) in depth with high frequency mechanical vibrating equipment supplemented by hand spading and tamping. Consolidate concrete slabs 4 inches (100 mm) or less in depth by wood tampers, spading, and settling with a heavy leveling straightedge. Operate internal vibrators with vibratory element submerged in the concrete, with a minimum frequency of not less than 6000 cycles per minute when submerged. Do not use vibrators to transport the concrete in the forms. Penetrate the previously placed lift with the vibrator when more than one lift is required. Use external vibrators on the exterior surface of the forms when internal vibrators do not provide adequate consolidation of the concrete. Vibrators shall be manipulated to work the concrete thoroughly around the reinforcement and embedded fixtures and into corners and angles of the forms. The vibration at any point shall be of sufficient duration to accomplish compaction but shall not be prolonged to where segregation occurs. Concrete deposited under water shall be carefully placed in a compact mass in its final position by means of a tremie or other approved method and shall not be disturbed after placement.

610-3.14 Construction joints. If the placement of concrete is suspended, necessary provisions shall be made for joining future work before the placed concrete takes its initial set. For the proper bonding of old and new concrete, provisions shall be made for grooves, steps, reinforcing bars or other devices as specified. The work shall be arranged so that a section begun on any day shall be finished during daylight of the same day. Before depositing new concrete on or against concrete that has hardened, the surface of the hardened concrete shall be cleaned by a heavy steel broom, roughened slightly, wetted, and covered with a neat coating of cement paste or grout.

610-3.15 Expansion joints. Expansion joints shall be constructed at such points and dimensions as indicated on the drawings. The premolded filler shall be cut to the same shape as the surfaces being joined. The filler shall be fixed firmly against the surface of the concrete already in place so that it will not be displaced when concrete is deposited against it.

610-3.16 Defective work. Any defective work discovered after the forms have been removed, which in the opinion of the Engineer cannot be repaired satisfactorily, shall be immediately removed and replaced at the expense of the Contractor. Defective work shall include deficient dimensions, or bulged, uneven, or honeycomb on the surface of the concrete.

610-3.17 Surface finish. All exposed concrete surfaces shall be true, smooth, and free from open or rough areas, depressions, or projections. All concrete horizontal plane surfaces shall be brought flush to the proper elevation with the finished top surface struck-off with a straightedge and floated. Mortar finishing shall not be permitted, nor shall dry cement or sand-cement mortar be spread over the concrete during the finishing of horizontal plane surfaces.

The surface finish of exposed concrete shall be a rubbed finish. If forms can be removed while the concrete is still green, the surface shall be wetted and then rubbed with a wooden float until all irregularities are removed. If the concrete has hardened before being rubbed, a carborundum stone shall be used to finish the surface. When approved, the finishing can be done with a finishing machine.

610-3.18 Curing and protection. All concrete shall be properly cured and protected by the Contractor. The concrete shall be protected from the weather, flowing water, and from defacement of any nature during the project. The concrete shall be cured by covering with an approved material as soon as it has sufficiently hardened. Water-absorptive coverings shall be thoroughly saturated when placed and kept saturated for at least three (3) days following concrete placement. All curing mats or blankets shall be sufficiently weighted or tied down to keep the concrete surface covered and to prevent the surface from being exposed to air currents. Wooden forms shall be kept wet at all times until removed to prevent opening of joints and drying out of the concrete. Traffic shall not be allowed on concrete surfaces for seven (7) days after the concrete has been placed.

610-3.19 Drains or ducts. Drainage pipes, conduits, and ducts that are to be encased in concrete shall be installed by the Contractor before the concrete is placed. The pipe shall be held rigidly so that it will not be displaced or moved during the placing of the concrete.

610-3.20 Cold weather placing. When concrete is placed at temperatures below 40°F (4°C), the Contractor shall provide satisfactory methods and means to protect the mix from injury by freezing. The aggregates, or water, or both, shall be heated to place the concrete at temperatures between 50°F and 100°F (10°C and 38°C).

Calcium chloride may be incorporated in the mixing water when directed by the Engineer. Not more than pounds (908 grams) of Type 1 nor more than 1.6 pounds (726 grams) of Type 2 shall be added per bag of cement. After the concrete has been placed, the Contractor shall provide sufficient protection such as cover, canvas, framework, heating apparatus, etc., to enclose and protect the structure and maintain the temperature of the mix at not less than 50°F (10°C) until at least 60% of the designed strength has been attained.

610-3.21 Hot weather placing. Concrete shall be properly placed and finished with procedures previously submitted. The concrete-placing temperature shall not exceed 95°F when measured in accordance with ASTM C1064. Cooling of the mixing water and aggregates, or both, may be required to obtain an adequate placing temperature. A retarder meeting the requirements of paragraph 610-2.6 may be used to facilitate placing and finishing. Steel forms and reinforcement shall be cooled prior to concrete placement when steel temperatures are greater than 120°F (50°C). Conveying and placing equipment shall be cooled if necessary to maintain proper concrete-placing temperature. Submit the proposed materials and methods for review and approval by the Engineer, if concrete is to be placed under hot weather conditions.

Information regarding hot weather concreting practices may be found in ACI 305R, Hot Weather Concreting.

610-3.22 Filling joints. All joints that require filling shall be thoroughly cleaned, and any excess mortar or concrete shall be cut out with proper tools. Joint filling shall not start until after final curing and shall be done only when the concrete is completely dry. The cleaning and filling shall be done with proper equipment to obtain a neat looking joint free from excess filler.

METHOD OF MEASUREMENT

610-4.1 Portland cement concrete shall be considered incidental to the project for concrete complete in place and accepted. ~~In computing the yardage of concrete for payment, the dimensions used shall be those shown on the plans or ordered by the Engineer~~. No measurements or other allowances shall be made for forms, falsework, cofferdams, pumping, bracing, expansion joints, or finishing of the concrete. ~~No deductions in yardage shall be made for the volumes of reinforcing steel or embedded items.~~

610-4.2 Reinforcing steel shall be considered incidental to the project when placed, as shown on the plans, complete in place and accepted. ~~The unit weight used for deformed bars shall be the weight of plain square or round bars of equal nominal size. If so indicated on the plans, the poundage to be paid for shall include the weight of metal pipes and drains, metal conduits and ducts, or similar materials indicated and included~~.

BASIS OF PAYMENT

610-5.1 Payment shall be considered incidental to the project for structural Portland cement concrete and for reinforcing steel. These prices shall be full compensation for furnishing all materials and for all preparation, delivery and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

TESTING REQUIREMENTS

ASTM C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C39	Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C138	Standard Test Method for Density (Unit Weight), Yield, and Air Content (Gravimetric) of Concrete
ASTM C143	Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C666	Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing
ASTM C1017	Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C1064	Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete
ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
ASTM C1260	Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1567	Standard Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregates (Accelerated Mortar-Bar Method)
ASTM E329	Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection

U.S. Army Corps of Engineers (USACE) Concrete Research Division (CRD) C662 Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials, Lithium Nitrate Admixture and Aggregate (Accelerated Mortar-Bar Method)

MATERIAL REQUIREMENTS

ASTM A184 Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement

ASTM A185 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete

ASTM A615 Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

ASTM A704 Standard Specification for Welded Steel Plain Bar or Rod Mats for Concrete Reinforcement

ASTM A706 Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement

ASTM A775 Standard Specification for Epoxy-Coated Steel Reinforcing Bars

ASTM A934 Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars

ASTM A1064 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

ASTM C33 Standard Specification for Concrete Aggregates

ASTM C94 Standard Specification for Ready-Mixed Concrete

ASTM C150 Standard Specification for Portland Cement

ASTM C171 Standard Specification for Sheet Materials for Curing Concrete

ASTM C172 Standard Practice for Sampling Freshly Mixed Concrete

ASTM C260 Standard Specification for Air-Entraining Admixtures for Concrete

ASTM C309 Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete

ASTM C494 Standard Specification for Chemical Admixtures for Concrete

ASTM C595 Standard Specification for Blended Hydraulic Cements

ASTM C618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

ASTM D1751 Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Asphalt Types)

ASTM D1752 Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

ACI 305R	Hot Weather Concreting
ACI 306R	Cold Weather Concreting
ACI 309R	Guide for Consolidation of Concrete

END OF ITEM P-610

Item P-620 Runway and Taxiway Marking

DESCRIPTION

620-1.1 This item shall consist of the preparation and painting of numbers, markings, and stripes on the surface of runways, taxiways, and aprons, in accordance with these specifications and at the locations shown on the plans, or as directed by the Engineer. The terms "paint" and "marking material" as well as "painting" and "application of markings" are interchangeable throughout this specification.

MATERIALS

620-2.1 Materials acceptance. The Contractor shall furnish manufacturer's certified test reports for materials shipped to the project. The certified test reports shall include a statement that the materials meet the specification requirements. The reports can be used for material acceptance or the Engineer may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the Engineer upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers 55 gallons or smaller for inspection by the Engineer. Material shall not be loaded into the equipment until inspected by the Engineer.

620-2.2 Marking materials. Paint shall be waterborne in accordance with the requirements of paragraph 620-2.2a. Paint shall be furnished in White (37925), Yellow (33538 or 33655), and Black (37038) in accordance with Federal Standard No. 595.

a. Waterborne. Paint shall meet the requirements of Federal Specification TT-P-1952E, Type II. The non-volatile portion of the vehicle for all paint types shall be composed of a 100% acrylic polymer as determined by infrared spectral analysis.

620-2.3 Reflective media. Glass beads shall meet the requirements for Glass Beads, Type III. Glass beads shall be treated with all compatible coupling agents recommended by the manufacturers of the paint and reflective media to ensure adhesion and embedment.

Paint Color	**Glass Beads, Type I, Gradation A**	**Glass Beads, Type III**	**Glass Beads, Type IV**
White	~~See Table 1~~	See Table 1	~~See Table 1~~
Yellow	~~See Table 1~~	See Table 1	~~See Table 1~~
Black	~~Not used~~	Not used	~~Not used~~

CONSTRUCTION METHODS

620-3.1 Weather limitations. The painting shall be performed only when the surface is dry and when the surface temperature is at least 45°F (7°C) and rising and the pavement surface temperature is at least 5°F (2.7°C) above the dew point or meets the manufacturer's recommendations. Markings shall not be applied when the pavement temperature is greater than

130°F (55°C). Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns.

620-3.2 Equipment. Equipment shall include the apparatus necessary to properly clean the existing surface, a mechanical marking machine, a bead dispensing 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 or airless-type marking machine suitable for application of traffic paint. It shall produce an even and uniform film thickness at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray.

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 that would reduce the bond between the paint and the pavement. The area to be painted shall be cleaned by waterblasting or by other methods as required to remove all contaminants minimizing damage to the pavement surface. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the Engineer. After the cleaning operations, sweeping, blowing, or rinsing with pressurized water shall be performed to ensure the surface is clean and free of grit or other debris left from the cleaning process.

Paint shall not be applied to Portland cement concrete pavement until the areas to be painted are clean of curing material. Sandblasting or high-pressure water shall be used to remove curing materials.

At least 24 hours prior to remarking existing markings, loose existing markings must be removed such that 70% or 100% of the loose and existing markings are removed. After removal, the surface shall be cleaned of all residue or debris either with sweeping or blowing with compressed air or both.

Paint shall not be applied to Portland cement concrete pavement until the areas to be painted are clean of curing material. High-pressure water shall be used to remove curing materials.

Prior to the application of any markings, the Contractor shall certify in writing that the surface has been prepared in accordance with the paint manufacturer's requirements, that the application equipment is appropriate for the type of marking paint and that environmental conditions are appropriate for the material being applied. This certification along with a copy of the paint manufacturer's surface preparation and application requirements must be submitted and approved by the Engineer prior to the initial application of markings.

620-3.4 Layout of markings. The proposed markings shall be laid out in advance of the paint application. All markings except black paint shall receive glass beads.

620-3.5 Application. Paint 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 has been approved by the Engineer. The edges of the markings shall not vary from a straight line more than 1/2 inch (12 mm) in 50 feet (15 m), and marking dimensions and spacings shall be within the following tolerances:

Dimension and Spacing	**Tolerance**
36 inch (910 mm) or less	±1/2 inch (12 mm)
greater than 36 inch to 6 feet (910 mm to 1.85 m)	±1 inch (25 mm)

Dimension and Spacing	Tolerance
greater than 6 feet to 60 feet (1.85 m to 18.3 m)	±2 inch (50 mm)
greater than 60 feet (18.3 m)	±3 inch (76 mm)

The paint shall be mixed in accordance with the manufacturer's instructions and applied to the pavement with a marking machine at the rate shown in Table 1. The addition of thinner will not be permitted. A 50% application rate for temporary markings will be required after placement of the final surface course. 50% marking will not be required for the black pavement markings. Glass beads are not required for temporary markings. A period of 30 days shall elapse between placement of a bituminous surface course or seal coat and application of the paint. New concrete pavements should be allowed to cure for eight to twelve weeks before removing the curing compound and installing permanent markings.

Prior to the initial application of markings, the Contractor shall certify in writing that the surface has been prepared in accordance with the paint manufacturer's requirements, that the application equipment is appropriate for the marking paint and that environmental conditions are appropriate for the material being applied. This certification along with a copy of the paint manufactures application and surface preparation requirements must be submitted to the Engineer prior to the initial application of markings.

620-3.6 Test strip. Prior to the full application of airfield markings, the Contractor shall produce a test strip in the presence of the Engineer. The test strip shall include the application of a minimum of 5 gallons (4 liters) of paint and application of 35 lbs (15.9 kg) of Type I/50 lbs (22.7 kg) of Type III glass beads. The test strip shall be used to establish thickness/darkness standard for all markings. The test strip shall cover no more than the maximum area prescribed in Table 1 (e.g., for 5 gallons (19 liters) of waterborne paint shall cover no more than 575 square feet (53.4 m^2).

Table 1. Application Rates for Paint and Glass Beads
(See Note regarding Red and Pink Paint)

Paint Type	Paint Square feet per gallon, ft^2/gal (Sq m per liter, m^2/l)	Glass Beads, Type I, Gradation A Pounds per gallon of paint-lb/gal (Km per liter of paint-kg/l)	Glass Beads, Type III Pounds per gallon of paint-lb/gal (Km per liter of paint-kg/l)	Glass Beads, Type IV Pounds per gallon of paint-lb/gal (Km per liter of paint-kg/l)
Waterborne Type I or II	115 ft^2/gal max (2.8 m^2/l)	~~7 lb/gal min (0.85 kg/l)~~	10 lb/gal min (1.2 kg/l)	*

New concrete pavements should be allowed to cure for eight to twelve weeks before removing the curing compound and installing permanent markings.

Glass beads shall be distributed upon the marked areas at the locations shown on the plans to receive glass beads immediately after application of the paint. A dispenser shall be furnished that is properly designed for attachment to the marking machine and suitable for dispensing glass beads. Glass beads shall be applied at the rate shown in Table 1. Glass beads shall not be applied

to black paint or green paint. Glass beads shall adhere to the cured paint or all marking operations shall cease until corrections are made. Different bead types shall not be mixed. Regular monitoring of glass bead embedment should be performed.

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.

620-3.7 Application--preformed thermoplastic airport pavement markings.

a. Asphalt and Portland cement. To ensure minimum single-pass application time and optimum bond in the marking/substrate interface, the materials must be applied using a variable speed self-propelled mobile heater with an effective heating width of no less than 16 feet (5 m) and a free span between supporting wheels of no less than 18 feet (5.5 m). The heater must emit thermal radiation to the marking material in such a manner that the difference in temperature of 2 inches (50 mm) wide linear segments in the direction of heater travel must be within 5% of the overall average temperature of the heated thermoplastic material as it exits the heater. The material must be able to be applied at ambient and pavement temperatures down to 35°F (2°C) without any preheating of the pavement to a specific temperature. The material must be able to be applied without the use of a thermometer. The pavement shall be clean, dry, and free of debris. A non-volatile organic content (non-VOC) sealer with a maximum applied viscosity of 250 centiPoise must be applied to the pavement shortly before the markings are applied. The supplier must enclose application instructions with each box/package.

620-3.8 Protection and cleanup. After application of the markings, all markings shall be protected from damage until dry. All surfaces shall be protected from excess moisture and/or rain and from disfiguration by spatter, splashes, spillage, or drippings. The Contractor shall remove from the work area all debris, waste, loose or unadhered reflective media, and by-products generated by the surface preparation and application operations to the satisfaction of the Engineer. The Contractor shall dispose of these wastes in strict compliance with all applicable state, local, and Federal environmental statutes and regulations.

METHOD OF MEASUREMENT

620-4.1 The quantity of runway and taxiway markings to be paid for shall be the number of square feet (square meters) of markings performed or removal in accordance with the specifications and accepted by the Engineer. Reflective media shall be considered incidental to all final pavement markings.

BASIS OF PAYMENT

620-5.1 Payment shall be made at the respective contract price per square foot (square meter) for runway and taxiway painting. This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item. Reflective media shall be considered incidental to all final pavement markings.

Payment will be made under:

Item P-620.1	Pavement Marking Removal (100%) - per square foot
Item P-620.2	Temporary Runway Marking – White - per square foot
Item P-620.3	Final Runway Marking - White - per square foot

Item P-620.4 Final Outline Marking - Black - per square foot

Item P-620.5 Temporary Taxiway Marking - Yellow - per square foot

Item P-620.6 Final Taxiway Marking - Yellow - per square foot

Item P-620.7 Pavement Marking Removal (70%) - per square foot

TESTING REQUIREMENTS

ASTM C371 Standard Test Method for Wire-Cloth Sieve Analysis of Nonplastic Ceramic Powders

ASTM D92 Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester

ASTM D711 Standard Test Method for No-Pick-Up Time of Traffic Paint

ASTM D968 Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive

ASTM D1652 Standard Test Method for Epoxy Content of Epoxy Resins

ASTM D2074 Standard Test Method for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method

ASTM D2240 Standard Test Method for Rubber Property - Durometer Hardness

ASTM D7585 Standard Practice for Evaluating Retroreflective Pavement Markings Using Portable Hand-Operated Instruments

ASTM E1710 Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer

ASTM E2302 Standard Test Method for Measurement of the Luminance Coefficient Under Diffuse Illumination of Pavement Marking Materials Using a Portable Reflectometer

ASTM G154 Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials

MATERIAL REQUIREMENTS

ASTM D476 Standard Classification for Dry Pigmentary Titanium Dioxide Products

40 CFR Part 60, Appendix A-7, Method 24
Determination of volatile matter content, water content, density, volume solids, and weight solids of surface coatings

29 CFR Part 1910.1200 Hazard Communication

FED SPEC TT-B-1325D
Beads (Glass Spheres) Retro-Reflective

American Association of State Highway and Transportation Officials (AASHTO) M247
Standard Specification for Glass Beads Used in Pavement Markings

FED SPEC TT-P-1952E
Paint, Traffic and Airfield Marking, Waterborne

Commercial Item Description A-A-2886B
Paint, Traffic, Solvent Based

FED STD 595 Colors used in Government Procurement

AC 150/5340-1 Standards for Airport Markings

END OF ITEM P-620

Item D-705 Pipe Underdrains for Airports

DESCRIPTION

705-1.1 This item shall consist of the construction of pipe drains in accordance with these specifications and in reasonably close conformity with the lines and grades shown on the plans.

MATERIALS

705-2.1 General. Materials shall meet the requirements shown on the plans and specified below.

705-2.2 Pipe. The pipe shall be of the type called for on the plans or in the proposal and shall be in accordance with the following appropriate requirements.

AASHTO M252 Standard Specification for Corrugated Polyethylene Drainage Pipe

705-2.3 Joint mortar. Pipe joint mortar shall consist of one part by volume of Portland cement and two parts sand. The Portland cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

705-2.4 Elastomeric seals. Elastomeric seals shall conform to the requirements of ASTM F477.

705-2.5 Porous backfill. Porous backfill shall be free of clay, humus, or other objectionable matter, and shall conform to the gradation in Table 1 when tested in accordance with ASTM C136.

Table 1. Gradation of Porous Backfill

Sieve Designation (square openings)	**Percentage by Weight Passing Sieves**
	Porous Material No. 2
1-1/2 inch (38 mm)	100
1 inch (25 mm)	90 - 100
3/8 inch (9 mm)	25 - 60
No. 4 (4.75 mm)	5 - 40
No. 8 (2.36 mm)	0 - 20
No. 16 (1.18 mm)	
No. 50 (0.30 mm)	
No. 100 (0.15 mm)	

When two courses of porous backfill are specified in the plans, the finer of the materials shall conform to particle size tabulated herein for porous material No. 1. The coarser granular material shall meet the gradation given in the tabulation for porous material No. 2.

705-2.6. Granular material. Granular material used for backfilling shall conform to the requirements of ASTM D2321 for Class IA, IB, or II materials, or shall meet the requirements of AASHTO Standard Specification for Highway Bridges Section 30.

705-2.7. Filter fabric. The filter fabric shall conform to the requirements of AASHTO M288 Class 2.

Table 2

Fabric Property	Test Method	Test Requirement
Grab Tensile Strength, lbs	ASTM D4632	125 min
Grab Tensile Elongation %	ASTM D4632	50 min
Burst Strength, psi	ASTM D3785	125 min
Trapezoid Tear Strength, lbs	ASTM D4533	55 min
Puncture Strength, lbs	ASTM D4833	40 min
Abrasion, lbs	ASTM D4886	15 max loss
Equivalent Opening Size	ASTM D4751	70-100
Permittivity sec^{-1}	ASTM D4491	0.80
Accelerated Weathering (UV Stability) (Strength Retained - %)	ASTM D4355 *(500 hrs exposure)	70

705-2.8. Controlled low-strength material (CLSM). CLSM is not allowed.

CONSTRUCTION METHODS

705-3.1 Equipment. All equipment required for the construction of pipe underdrains shall be on the project, in good working condition, and approved by the Engineer before construction is permitted to start.

705-3.2 Excavation. The width of the pipe trench shall be sufficient to permit satisfactory jointing of the pipe and thorough tamping of the bedding material under and around the pipe, but shall not be less than the external diameter of the pipe plus 6 inches (150 mm) on each side of the pipe. The trench walls shall be approximately vertical.

Where rock, hardpan, or other unyielding material is encountered, it shall be removed below the foundation grade for a depth of at least 4 inches (100 mm). The excavation below grade shall be backfilled with selected fine compressible material, such as silty clay or loam, and lightly compacted in layers not over 6 inches (150 mm) in uncompacted depth to form a uniform but yielding foundation.

Where a firm foundation is not encountered at the grade established, due to soft, spongy, or other unstable soil, the unstable soil shall be removed and replaced with approved granular material for the full trench width. The Engineer shall determine the depth of removal necessary. The granular material shall be compacted to provide adequate support for the pipe.

Excavated material not required or acceptable for backfill shall be disposed of by the Contractor as directed by the Engineer. The excavation shall not be carried below the required depth; if this occurs, the trench shall be backfilled at the Contractor's expense with material approved by the Engineer and compacted to the density of the surrounding material.

The pipe bed shall be shaped so at least the lower quarter of the pipe shall be in continuous contact with the bottom of the trench. Spaces for the pipe bell shall be excavated to allow the pipe barrel to support the entire weight of the pipe.

The Contractor shall do trench bracing, sheathing, or shoring necessary to perform and protect the excavation as required for safety and conformance to Federal, state and local laws. Unless otherwise provided, the bracing, sheathing, or shoring shall be removed by the Contractor after the backfill has reached at least 12 inches (300 mm) over the top of the pipe. The sheathing or shoring shall be pulled as the granular backfill is placed and compacted to avoid any unfilled spaces between the trench wall and the backfill material. The cost of bracing, sheathing, or shoring, and the removal of same, shall be included in the unit price bid per foot (meter) for the pipe.

705-3.3 Laying and installing pipe.

a. Concrete pipe. The laying of the pipe in the finished trench shall be started at the lowest point and proceed upgrade. When bell and spigot pipe is used, the bells shall be laid upgrade. If tongue and groove pipe is used, the groove end shall be laid upgrade. Holes in perforated pipe shall be placed down, unless otherwise shown on the plans. The pipe shall be firmly and accurately set to line and grade so that the invert will be smooth and uniform. Pipe shall not be laid on frozen ground.

Pipe which is not true in alignment, or which shows any settlement after laying, shall be taken up and relaid by the Contractor at no additional expense.

b. Metal pipe. The metal pipe shall be laid with the separate sections joined firmly together with bands, with outside laps of circumferential joints pointing upgrade, and with longitudinal laps on the sides. Any metal in the pipe or bands that is not protected thoroughly by galvanizing shall be coated with a suitable asphaltum paint.

During installation, the asphalt-protected pipe shall be handled without damaging the asphalt coating. Any breaks in the bitumen or treatment of the pipe shall be refilled with the type and kind of bitumen used in coating the pipe originally.

c. PVC or polyethylene pipe. PVC or polyethylene pipe shall be installed in accordance with the requirements of ASTM D2321 or AASHTO Standard Specification for Highway Bridges Section 30. Perforations shall meet the requirements of AASHTO M252 or AASHTO M294 Class 2, unless otherwise indicated on the plans. The pipe shall be laid accurately to line and grade.

d. All types of pipe. The upgrade end of pipelines, not terminating in a structure, shall be plugged or capped as approved by the Engineer.

Unless otherwise shown on the plans, a 4 inch (100 mm) bed of granular backfill material shall be spread in the bottom of the trench throughout the entire length under all perforated pipe underdrains.

Pipe outlets for the underdrains shall be constructed when required or shown on the plans. The pipe shall be laid with tight-fitting joints. Porous backfill is not required around or over pipe outlets for underdrains. All connections to other drainage pipes or structures shall be made as required and in a satisfactory manner. If connections are not made to other pipes or structures, the outlets shall be protected and constructed as shown on the plans.

e. Filter fabric. The filter fabric shall be installed in accordance with the manufacturer's recommendations, or in accordance with AASHTO M288 Appendix, unless otherwise shown on the plans.

705-3.4 Mortar. The mortar shall be of the desired consistency for caulking and filling the joints of the pipe and for making connections to other pipes or to structures. Mortar that is not used within 45 minutes after water has been added shall be discarded. Retempering of mortar shall not be permitted.

705-3.5 Joints in concrete pipe. When open or partly open joints are required or specified, they shall be constructed as indicated on the plans. The pipe shall be laid with the ends fitted together as designed. If bell and spigot pipe is used, mortar shall be placed along the inside bottom quarter of the bell to center the following section of pipe.

The open or partly open joints shall be surrounded with granular material meeting requirements of porous backfill No. 2 in Table 1 or as indicated on the plans. This backfill shall be placed so its thickness will be not less than 3 inches (75 mm) nor more than 6 inches (150 mm), unless otherwise shown on the plans.

When the original material excavated from the trench is impervious, commercial concrete sand or granular material meeting requirements of porous backfill No. 1 shall surround porous backfill No. 2 (Table 1), as shown on the plans or as directed by the Engineer.

When the original material excavated from the trench is pervious and suitable, it may be used as backfill in lieu of porous backfill No. 1, when indicated on the plans or as directed by the Engineer.

705-3.6 Backfilling.

a. Earth. All trenches and excavations shall be backfilled soon after the pipes are installed, unless additional protection of the pipe is directed. The backfill material shall be select material from excavation or borrow and shall be approved by the Engineer. The select material shall be placed on each side of the pipe out to a distance of the nominal pipe diameter and one foot (30 cm) over the top of the pipe and shall be readily compacted. It shall not contain stones 3 inches (75 mm) or larger in size, frozen lumps, chunks of highly plastic clay, or any other material that is objectionable to the Engineer. The material shall be moistened or dried, as required to aid compaction. Placement of the backfill shall not cause displacement of the pipe. Thorough compaction under the haunches and along the sides to the top of the pipe shall be obtained.

The backfill shall be placed in loose layers not exceeding 6 inches (150 mm) in depth under and around the pipe, and not exceeding 8 inches (200 mm) over the pipe. Successive layers shall be added and thoroughly compacted by hand and pneumatic tampers, approved by the Engineer, until the trench is completely filled and brought to the planned elevation. Backfilling shall be done to avoid damaging top or side pressures on the pipe.

In embankments and other unpaved areas, the backfill shall be compacted per Item P-152 to the density required for embankments in unpaved areas. Under paved areas, the subgrade and any backfill shall be compacted per Item P-152 to the density required for embankments for paved areas.

b. Granular backfill. When granular backfill is required, placement in the trench and about the pipe shall be as shown on the plans. The granular backfill shall not contain an excessive amount of foreign matter, nor shall soil from the sides of the trench or from the soil excavated from the trench be allowed to filter into the granular backfill. When required by the Engineer, a template shall be used to properly place and separate the two sizes of backfill. The backfill shall be placed in loose layers not exceeding 6 inches (150 mm) in depth. The granular backfill shall be compacted by hand and pneumatic tampers to the requirements as given for embankment. Backfilling shall be done to avoid damaging top or side pressure on the pipe. The granular backfill shall extend to the elevation of the trench or as shown on the plans.

When perforated pipe is specified, granular backfill material shall be placed along the full length of the pipe. The position of the granular material shall be as shown on the plans. If the original material excavated from the trench is pervious and suitable, it shall be used in lieu of porous backfill No. 1.

If porous backfill is placed in paved or adjacent to paved areas before grading or subgrade operations is completed, the backfill material shall be placed immediately after laying the pipe. The depth of the granular backfill shall be not less than 12 inches (300 mm), measured from the top of the underdrain. During subsequent construction operations, a minimum depth of 12 inches (300 mm) of backfill shall be maintained over the underdrains. When the underdrains are to be completed, any unsuitable material shall be removed exposing the porous backfill. Porous backfill containing objectionable material shall be removed and replaced with suitable material. The cost of removing and replacing any unsuitable material shall be at the Contractor's expense.

If a granular subbase blanket course is used which extends several feet beyond the edge of paving to the outside edge of the underdrain trench, the granular backfill material over the underdrains shall be placed in the trench up to an elevation of 2 inches (50 mm) above the bottom surface of the granular subbase blanket course. Immediately prior to the placing of the granular subbase blanket course, the Contractor shall blade this excess trench backfill from the top of the trench onto the adjacent subgrade where it can be incorporated into the granular subbase blanket course. Any unsuitable material that remains over the underdrain trench shall be removed and replaced. The subbase material shall be placed to provide clean contact between the subbase material and the underdrain granular backfill material for the full width of the underdrain trench.

c. Controlled low-strength material (CLSM). CLSM is not allowed.

d. Deflection testing. The Engineer may at any time, notwithstanding previous material acceptance, reject or require re-installation of pipe that exceeds 5% deflection when measured in accordance with ASTM D2321, including Appendices.

705-3.7 Connections. When the plans call for connections to existing or proposed pipe or structures, these connections shall be watertight and made to obtain a smooth uniform flow line throughout the drainage system.

705-3.8 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, soil, and rubbish from the site. Surplus soil may be deposited in embankments, shoulders, or as directed by the Engineer. Except for paved areas of the airport, the Contractor shall restore all disturbed areas to their original condition.

METHOD OF MEASUREMENT

705-4.1 The length of pipe shall be the number of linear feet (meters) of pipe underdrains in place, completed, and approved; measured along the centerline of the pipe from end or inside face of structure to the end or inside face of structure, whichever is applicable. The several classes, types, and sizes shall be measured separately. All fittings shall be included in the footage as typical pipe sections in the pipeline being measured.

BASIS OF PAYMENT

705-5.1 Payment will be made at the contract unit price per linear foot (meter) for pipe underdrains of the type, class, and size designated.

705-5.2 Pipe underdrains, Complete. Pipe underdrains, complete (including porous backfill and filter fabric) shall be made at the contract unit price per linear foot (meter) COMPLETE (including porous backfill and filter fabric.

These prices shall be full compensation for furnishing all materials and for all preparation, excavation, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item D-705.1	Corrugated Polyethylene Underdrain, 6-Inch Perforated (COMPLETE, Including Porous backfill and Filter Fabric) - per linear foot
Item D-705.2	Corrugated Polyethylene Underdrain, 6-Inch Non-Perforated - per linear foot

MATERIAL REQUIREMENTS

ASTM A760	Standard Specification for Corrugated Steel Pipe, Metallic Coated for Sewers and Drains
ASTM A762	Standard Specification for Corrugated Steel Pipe, Polymer Precoated for Sewers and Drains
ASTM C136	Standard Test Method for Sieve or Screen Analysis of Fine and Coarse Aggregates
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C444	Standard Specification for Perforated Concrete Pipe
ASTM C654	Standard Specification for Porous Concrete Pipe
ASTM D2321	Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications
ASTM D3034	Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings
ASTM F477	Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe
ASTM F758	Standard Specification for Smooth Wall Poly (Vinyl Chloride) (PVC) Plastic Underdrain Systems for Highway, Airport, and Similar Drainage
ASTM F794	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Gravity Sewer Pipe & Fittings Based on Controlled Inside Diameter
ASTM F949	Standard Specification for Poly (Vinyl Chloride) (PVC) Corrugated Sewer Pipe with a Smooth Interior and Fittings
ASTM F2562	Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage
AASHTO M190	Standard Specification for Bituminous - Coated Corrugated Metal Culvert Pipe and Pipe Arches

AASHTO M196	Standard Specification for Corrugated Aluminum Pipe for Sewers and Drains
AASHTO M252	Standard Specification for Corrugated Polyethylene Drainage Pipe
AASHTO M288	Standard Specification for Geotextile Specification for Highway Applications
AASHTO M294	Standard Specification for Corrugated Polyethylene Pipe, 300- to 1500-mm (12- to 60-in.) Diameter
AASHTO M304	Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Wall Drain Pipe and Fittings Based on Controlled Inside Diameter
AASHTO MP20	Standard Specification for Steel-Reinforced Polyethylene (PE) Ribbed Pipe, 300- to 900-mm (12- to 36-in.) diameter
AASHTO	Standard Specifications for Highway Bridges

END OF ITEM D-705

Item D-751 Manholes, Catch Basins, Inlets and Inspection Holes

DESCRIPTION

751-1.1 This item shall consist of construction of manholes, catch basins, inlets, and inspection holes, in accordance with these specifications, at the specified locations and conforming to the lines, grades, and dimensions shown on the plans or required by the Engineer.

MATERIALS

751-2.1 Brick. The brick shall conform to the requirements of ASTM C32, Grade MS.

751-2.2 Mortar. Mortar shall consist of one part Portland cement and two parts sand. The Portland cement shall conform to the requirements of ASTM C150, Type I. The sand shall conform to the requirements of ASTM C144.

751-2.3 Concrete. Plain and reinforced concrete used in structures, connections of pipes with structures, and the support of structures or frames shall conform to the requirements of Item P-610.

751-2.4 Precast concrete pipe manhole rings. Precast concrete pipe manhole rings shall conform to the requirements of ASTM C478. Unless otherwise specified, the risers and offset cone sections shall have an inside diameter of not less than 36 inches (90 cm) nor more than 48 inches (120 cm). There shall be a gasket between individual sections and sections cemented together with mortar on the inside of the manhole.

751-2.5 Corrugated metal. Corrugated metal shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M36.

751-2.6 Frames, covers, and grates. The castings shall conform to one of the following requirements:

a. ASTM A48, Class 35B: Gray iron castings

b. ASTM A47: Malleable iron castings

c. ASTM A27: Steel castings

d. ASTM A283, Grade D: Structural steel for grates and frames

e. ASTM A536, Grade 65-45-12: Ductile iron castings

f. ASTM A897:Austempered ductile iron castings

All castings or structural steel units shall conform to the dimensions shown on the plans and shall be designed to support the loadings, aircraft gear configuration and/or direct loading, specified.

Each frame and cover or grate unit shall be provided with fastening members to prevent it from being dislodged by traffic but which will allow easy removal for access to the structure.

All castings shall be thoroughly cleaned. After fabrication, structural steel units shall be galvanized to meet the requirements of ASTM A123.

751-2.7 Steps. The steps or ladder bars shall be gray or malleable cast iron or galvanized steel. The steps shall be the size, length, and shape shown on the plans and those steps that are not galvanized shall be given a coat of bituminous paint, when directed.

751-2.8 Precast inlet structures. Manufactured in accordance with and conforming to ASTM C1433.

CONSTRUCTION METHODS

751-3.1 Unclassified excavation.

a. The Contractor shall excavate for structures and footings to the lines and grades or elevations, shown on the plans, or as staked by the Engineer. The excavation shall be of sufficient size to permit the placing of the full width and length of the structure or structure footings shown. The elevations of the bottoms of footings, as shown on the plans, shall be considered as approximately only; and the Engineer may direct, in writing, changes in dimensions or elevations of footings necessary for a satisfactory foundation.

b. Boulders, logs, or any other objectionable material encountered in excavation shall be removed. All rock or other hard foundation material shall be cleaned of all loose material and cut to a firm surface either level, stepped, or serrated, as directed by the Engineer. All seams or crevices shall be cleaned out and grouted. All loose and disintegrated rock and thin strata shall be removed. Where concrete will rest on a surface other than rock, the bottom of the excavation shall not be disturb and excavation to final grade shall not be made until immediately before the concrete or reinforcing is placed.

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

d. All bracing, sheathing, or shoring involved in the construction of this item shall be removed by the Contractor after the completion of the structure. Removal shall not disturb or damage finished masonry. The cost of removal shall be included in the unit price bid for the structure.

e. After excavation is completed for each structure, the Contractor shall notify the Engineer. No concrete or reinforcing steel shall be placed until the Engineer has approved the depth of the excavation and the character of the foundation material.

751-3.2 Brick structures.

a. Foundations. A prepared foundation shall be placed for all brick structures after the foundation excavation is completed and accepted. Unless otherwise specified, the base shall consist of reinforced concrete mixed, prepared, and placed in accordance with the requirements of Item P-610.

b. Laying brick. All brick shall be clean and thoroughly wet before laying so that they will not absorb any appreciable amount of additional water at the time they are laid. All brick shall be laid in freshly made mortar. Mortar not used within 45 minutes after water has been added shall be discarded. Retempering of mortar shall not be permitted. An ample layer of mortar shall be spread on the beds and a shallow furrow shall be made in it that can be readily closed by the laying of the brick. All bed and head joints shall be filled solid with mortar. End joints of stretchers and side or cross joints of headers shall be fully buttered with mortar and a shoved joint made to squeeze out mortar at the top of the joint. Any bricks that may be loosened after the mortar has taken its set, shall be removed, cleaned, and relaid with fresh mortar. No broken or chipped brick shall be used in the face, and no spalls or bats shall be used except where necessary to shape around

irregular openings or edges; in which case, full bricks shall be placed at ends or corners where possible, and the bats shall be used in the interior of the course. In making closures, no piece of brick shorter than the width of a whole brick shall be used; and wherever practicable, whole brick shall be used and laid as headers.

c. Joints. All joints shall be filled with mortar at every course Exterior faces shall be laid up in advance of backing. Exterior faces shall be plastered or parged with a coat of mortar not less than 3/8 inch (9 mm) thick before the backing is laid up. Prior to parging, all joints on the back of face courses shall be cut flush. Unless otherwise noted, joints shall be not less than 1/4 inch (6 mm) nor more than 1/2 inch (12 mm) wide and the selected joint width shall be maintained uniform throughout the work.

d. Pointing. Face joints shall be neatly struck, using the weather-struck joint. All joints shall be finished properly as the laying of the brick progresses. When nails or line pins are used the holes shall be immediately plugged with mortar and pointed when the nail or pin is removed.

e. Cleaning. Upon completion of the work all exterior surfaces shall be thoroughly cleaned by scrubbing and washing with water. If necessary to produce satisfactory results, cleaning shall be done with a 5% solution of muriatic acid which shall then be rinsed off with liberal quantities of water.

f. Curing and cold weather protection. The brick masonry shall be protected and kept moist for at least 48 hours after laying the brick. Brick masonry work or pointing shall not be done when there is frost on the brick or when the air temperature is below 50°F (10°C) unless the Contractor has, on the project ready to use, suitable covering and artificial heating devices necessary to keep the atmosphere surrounding the masonry at a temperature of not less than 60°F (16°C) for the duration of the curing period.

751-3.3 Concrete structures. Concrete structures shall be built on prepared foundations, conforming to the dimensions and shape indicated on the plans. The construction shall conform to the requirements specified in Item P-610. Any reinforcement required shall be placed as indicated on the plans and shall be approved by the Engineer before the concrete is placed.

All invert channels shall be constructed and shaped accurately to be smooth, uniform, and cause minimum resistance to flowing water. The interior bottom shall be sloped to the outlet.

751-3.4 Precast concrete structures. Precast concrete structures shall conform to ASTM C478. Precast concrete structures shall be constructed on prepared or previously placed slab foundations conforming to the dimensions and locations shown on the plans. All precast concrete sections necessary to build a completed structure shall be furnished. The different sections shall fit together readily. Joints between precast concrete risers and tops shall be full-bedded in cement mortar and shall be smoothed to a uniform surface on both interior and exterior of the structure. The top of the upper precast concrete section shall be suitably formed and dimensioned to receive the metal frame and cover or grate, or other cap, as required. Provision shall be made for any connections for lateral pipe, including drops and leads that may be installed in the structure. The flow lines shall be smooth, uniform, and cause minimum resistance to flow. The metal steps that are embedded or built into the side walls shall be aligned and placed at vertical intervals of 12 inches (300 mm). When a metal ladder replaces the steps, it shall be securely fastened into position.

751-3.5 Corrugated metal structures. Corrugated metal structures shall be prefabricated. All standard or special fittings shall be furnished to provide pipe connections or branches with the correct dimensions and of sufficient length to accommodate connecting bands. The fittings shall be welded in place to the metal structures. The top of the metal structure shall be designed so that either a concrete slab or metal collar may be attached to allow the fastening of a standard

metal frame and grate or cover. Steps or ladders shall be furnished as shown on the plans. Corrugated metal structures shall be constructed on prepared foundations, conforming to the dimensions and locations as shown on the plans. When indicated, the structures shall be placed on a reinforced concrete base.

751-3.6 Inlet and outlet pipes. Inlet and outlet pipes shall extend through the walls of the structures a sufficient distance beyond the outside surface to allow for connections. They shall be cut off flush with the wall on the inside surface of the structure, unless otherwise directed. For concrete or brick structures, mortar shall be placed around these pipes to form a tight, neat connection.

751-3.7 Placement and treatment of castings, frames, and fittings. All castings, frames, and fittings shall be placed in the positions indicated on the plans or as directed by the Engineer, and shall be set true to line and elevation. If frames or fittings are to be set in concrete or cement mortar, all anchors or bolts shall be in place before the concrete or mortar is placed. The unit shall not be disturbed until the mortar or concrete has set.

When frames or fittings are placed on previously constructed masonry, the bearing surface of the masonry shall be brought true to line and grade and shall present an even bearing surface so the entire face or back of the unit will come in contact with the masonry. The unit shall be set in mortar beds and anchored to the masonry as indicated on the plans or as directed by the Engineer. All units shall set firm and secure.

After the frames or fittings have been set in final position, the concrete or mortar shall be allowed to harden for seven (7) days before the grates or covers are placed and fastened down.

751-3.8 Installation of steps. The steps shall be installed as indicated on the plans or as directed by the Engineer. When the steps are to be set in concrete, they shall be placed and secured in position before the concrete is placed. When the steps are installed in brick masonry, they shall be placed as the masonry is being built. The steps shall not be disturbed or used until the concrete or mortar has hardened for at least seven (7) days. After seven (7) days, the steps shall be cleaned and painted, unless they have been galvanized.

When steps are required with precast concrete structures, they shall be cast into the side of the sections at the time the sections are manufactured or set in place after the structure is erected by drilling holes in the concrete and cementing the steps in place.

When steps are required with corrugated metal structures, they shall be welded into aligned position at a vertical spacing of 12 inches (300 mm).

Instead of steps, prefabricated ladders may be installed. For brick or concrete structures, the ladder shall be held in place by grouting the supports in drilled holes. For metal structures, the ladder shall be secured by welding the top support to the structure and grouting the bottom support into drilled holes in the foundation or as directed by the Engineer.

751-3.9 Backfilling.

a. After a structure has been completed, the area around it shall be backfilled with approved material, in horizontal layers not to exceed 8 inches (200 mm) in loose depth, and compacted to the density required in Item P-152. Each layer shall be deposited evenly around the structure to approximately the same elevation. The top of the fill shall meet the elevation shown on the plans or as directed by the Engineer.

b. Backfill shall not be placed against any structure until approved by the Engineer. For concrete structures, approval shall not be given until the concrete has been in place seven (7)

days, or until tests establish that the concrete has attained sufficient strength to withstand any pressure created by the backfill and placing methods.

c. Backfill shall not be measured for direct payment. Performance of this work shall be considered an obligation of the Contractor covered under the contract unit price for the structure involved.

751-3.10 Cleaning and restoration of site. After the backfill is completed, the Contractor shall dispose of all surplus material, dirt, and rubbish from the site. Surplus dirt may be deposited in embankments, shoulders, or as approved by the Engineer. The Contractor shall restore all disturbed areas to their original condition. The Contractor shall remove all tools and equipment, leaving the entire site free, clear, and in good condition.

METHOD OF MEASUREMENT

751-4.1 Manholes, catch basins, inlets, and inspection holes shall be measured by the unit.

BASIS OF PAYMENT

751-5.1 The accepted quantities of manholes, catch basins, inlets, and inspection holes will be paid for at the contract unit price per each in place when completed. This price shall be full compensation for furnishing all materials and for all preparation, excavation, backfilling and placing of the materials; furnishing and installation of such specials and connections to pipes and other structures as may be required to complete the item as shown on the plans; and for all labor equipment, tools and incidentals necessary to complete the structure.

Payment will be made under:

Item D-751	Underdrain Cleanout - per each

MATERIAL REQUIREMENT

ASTM A27	Standard Specification for Steel Castings, Carbon, for General Application
ASTM A47	Standard Specification for Ferritic Malleable Iron Castings
ASTM A48	Standard Specification for Gray Iron Castings
ASTM A123	Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
ASTM A283	Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
ASTM A536	Standard Specification for Ductile Iron Castings
ASTM A897	Standard Specification for Austempered Ductile Iron Castings
ASTM C32	Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale)
ASTM C144	Standard Specification for Aggregate for Masonry Mortar
ASTM C150	Standard Specification for Portland Cement
ASTM C478	Standard Specification for Precast Reinforced Concrete Manhole Sections

ASTM C1433	Standard Specification for Precast Reinforced Concrete Monolithic Box Sections for Culverts, Storm Drains, and Sewers
AASHTO M36	Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains

END OF ITEM D-751

Item L-108 Underground Power Cable for Airports

DESCRIPTION

108-1.1 This item shall consist of furnishing and installing power cables that are direct buried and furnishing and/or installing power cables within conduit or duct banks per these specifications at the locations shown on the plans. It includes excavation and backfill of trench for direct-buried cables only. Also included are the installation of counterpoise wires, ground wires, ground rods and connections, cable splicing, cable marking, cable testing, and all incidentals necessary to place the cable in operating condition as a completed unit to the satisfaction of the Engineer. This item shall not include the installation of duct banks or conduit, trenching and backfilling for duct banks or conduit, or furnishing or installation of cable for FAA owned/operated facilities. Requirements and payment for trenching and backfilling for the installation of underground conduit and duct banks is in Item L-110, Airport Underground Electrical Duct Banks and Conduits.

EQUIPMENT AND MATERIALS

108-2.1 General.

a. Airport lighting equipment and materials covered by advisory circulars (AC) shall be approved under the Airport Lighting Equipment Certification Program per AC 150/5345-53, current version.

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

c. Manufacturer's certifications shall not relieve the Contractor of the responsibility to provide materials per these specifications. Materials supplied and/or installed that do not comply with these specifications shall be removed (when directed by the Engineer) and replaced with materials that comply with these specifications at the Contractor's cost.

d. All materials and equipment used to construct this item shall be submitted to the Engineer for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete any non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment to which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor may elect to submit color PDF submittals electronically.

The Contractor is solely responsible for delays in the project that may accrue directly or indirectly from late submissions or resubmissions of submittals.

e. The data submitted shall be sufficient, in the opinion of the Engineer, to determine compliance with the plans and specifications. The Contractor's submittals shall be neatly bound in a properly sized 3-ring binder, tabbed by specification section.The Engineer reserves the right

to reject any and all equipment, materials, or procedures that do not meet the system design and the standards and codes, specified in this document.

f. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for at least twelve (12) months from the date of final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner. The Contractor shall be responsible to maintain a minimum insulation resistance per AC 150/5340-26B, Maintenance Airport Visual aid Facilities, Table 5-1 and paragraph 5.1.3.1, with isolation transformers connected in new circuits and new segments of existing circuits through the end of the contract warranty period.

108-2.2 Cable. Underground cable for airfield lighting facilities (runway and taxiway lights and signs) shall conform to the requirements of AC 150/5345-7, Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits latest edition. Conductors for use on 6.6 ampere primary airfield lighting series circuits shall be single conductor, seven strand, #8 American wire gauge AWG), L-824 **Type C,** 5,000 volts, nonshielded, with **ethylene propylene insulation, cross-linked polyethylene insulation.** Conductors for use on 20 ampere primary airfield lighting series circuits shall be single conductor, seven strand, #6 AWG, L-824 Type **C** , 5,000 volts, nonshielded, with ethylene propylene insulation, cross-linked polyethylene insulation. L-824 conductors for use on the L-830 secondary of airfield lighting series circuits shall be sized in accordance with the manufacturer's recommendations. All other conductors shall comply with FAA and National Electric Code (NEC) requirements. Conductor sizes noted above shall not apply to leads furnished by manufacturers on airfield lighting transformers and fixtures.

Wire for electrical circuits up to 600 volts shall comply with Specification L-824 and/or Federal Specification J-C-30 and shall be type THWN-2, 75°C. Conductors for parallel (voltage) circuits shall be sized and installed in accordance with NFPA-70, National Electrical Code.

Unless noted otherwise, all 600-volt and less non-airfield lighting conductor sizes are based on a 75°C, THWN-2, 600 volt insulation, copper conductors, not more than three single insulated conductors, in raceway, in free air. The conduit/duct sizes are based on the use of THWN-2, 600 volt insulated conductors. The Contractor shall make the necessary increase in conduit/duct sizes for other types of wire insulation. In no case shall the conduit/duct size be reduced. The minimum power circuit wire size shall be #12 AWG.

Conductor sizes may have been adjusted due to voltage drop or other engineering considerations. Equipment provided by the Contractor shall be capable of accepting the quantity and sizes of conductors shown in the Contract Documents. All conductors, pigtails, cable step-down adapters, cable step-up adapters, terminal blocks and splicing materials necessary to complete the cable termination/splice shall be considered incidental to the respective pay items provided.

Cable type, size, number of conductors, strand and service voltage shall be as specified in the Contract Document.

108-2.3 Bare copper wire (counterpoise, bare copper wire ground and ground rods). Wire for counterpoise or ground installations for airfield lighting systems shall be No. 6 AWG bare solid copper wire for counterpoise and/or No. 6 AWG insulated stranded for ground wire per ASTM B3 and ASTM B8, and shall be **bare copper** wire per ASTM B33. See AC 150/5340-30 for additional details about counterpoise and ground wire types and installation. For voltage powered circuits, the equipment ground conductor shall be minimum No. 6 AWG, 600V rated, Type XHHW insulated, green color, stranded copper equipment ground conductor.

Ground rods shall be **copper-clad steel**. The ground rods shall be of the length and diameter specified on the plans, but in no case be less than **10 feet (2.54 m)** long and **3/4 inch (19 mm)** in diameter.

108-2.4 Cable connections. In-line connections or splices of underground primary cables shall be of the type called for on the plans, and shall be one of the types listed below. No separate payment will be made for cable connections.

a. The cast splice. A cast splice, employing a plastic mold and using epoxy resin equivalent to that manufactured by 3M™ Company, "Scotchcast" Kit No. 82-B, or as manufactured by Hysol® Corporation, "Hyseal Epoxy Splice" Kit No. E1135, or an approved equivalent, used for potting the splice is acceptable.

~~**b. The field-attached plug-in splice.** Figure 3 of AC 150/5345-26, Specification for L-823 Plug and Receptacle, Cable Connectors, employing connector kits, is acceptable for field attachment to single conductor cable. It shall be the Contractor's responsibility to determine the outside diameter of the cable to be spliced and to furnish appropriately sized connector kits and/or adapters and heat shrink tubing with integral sealant.~~

b. The field-attached plug-in splice. "Figure 3 of AC 150/5345-26, Specification for L-823 Plug and Receptacle, Cable Connectors, employing connector kits, is acceptable-for field attachment to single conductor cable. It shall be the Contractor's responsibility to determine the outside diameter of the cable to be spliced and to furnish the appropriately sized connector kits and/or adapters. Contractor must use AMERACE, a division of Thomas & Betts, part number 54 SUPER D4-D4 (C, E, F & Z) Series Primary Kit for all Field-attached Plug-in Splice applications with L-824C - 5KV rated cables or equal of Integro. All L-823 applications with L-830 Isolation transformers primary leads and the AMERACE L-823 connector must be compatible to ensure a long term water-tight seal.

c. The factory-molded plug-in splice. Specification for L-823 Connectors, Factory-Molded to Individual Conductors, is acceptable.

~~**d. The taped or heat-shrink splice.** Taped splices employing field-applied rubber, or synthetic rubber tape covered with plastic tape is acceptable. The rubber tape should meet the requirements of ASTM D4388 and the plastic tape should comply with Military Specification MIL-I-24391 or Commercial Item Description A-A-55809. Heat shrinkable tubing shall be heavy-wall, self-sealing tubing rated for the voltage of the wire being spliced and suitable for direct-buried installations. The tubing shall be factory coated with a thermoplastic adhesive-sealant that will adhere to the insulation of the wire being spliced forming a moisture- and dirt-proof seal. Additionally, heat shrinkable tubing for multi-conductor cables, shielded cables, and armored cables shall be factory kits that are designed for the application. Heat shrinkable tubing and tubing kits shall be manufactured by Tyco Electronics/ Raychem Corporation, Energy Division, or approved equivalent.~~

~~In all the above cases, connections of cable conductors shall be made using crimp connectors using a crimping tool designed to make a complete crimp before the tool can be removed. All L-823/L-824 splices and terminations shall be made per the manufacturer's recommendations and listings.~~

~~All connections of counterpoise, grounding conductors and ground rods shall be made by the exothermic process or approved equivalent, except that a light base ground clamp connector shall be used for attachment to the light base. See AC 150/5340-30 for additional information about methods of attaching a ground to a galvanized light base. All exothermic connections shall be made per the manufacturer's recommendations and listings.~~

108-2.5 Splicer qualifications. Every airfield lighting cable splicer shall be qualified in making airport cable splices and terminations on cables rated at or above 5,000 volts AC. The Contractor shall submit to the Engineer proof of the qualifications of each proposed cable splicer for the airport cable type and voltage level to be worked on. Cable splicing/terminating personnel shall have a minimum of three (3) years continuous experience in terminating/splicing medium voltage cable.

108-2.6 Concrete. Concrete for cable markers shall be per Specification Item P-610, Structural Portland Cement Concrete.

108-2.7 Flowable backfill. Flowable material used to backfill trenches for power cable trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material.

108-2.8 Cable identification tags. Cable identification tags shall be made from a non-corrosive material with the circuit identification stamped or etched onto the tag. The tags shall be of the type as detailed on the plans.

108-2.9 Tape. Electrical tapes shall be Scotch™ Electrical Tapes –Scotch™ 88 (1-1/2 inch (38 mm) wide) and Scotch™ 130C® linerless rubber splicing tape (2-inch (50 mm) wide), as manufactured by the Minnesota Mining and Manufacturing Company (3M™), or an approved equivalent.

108-2.10 Electrical coating. Electrical coating shall be Scotchkote™ as manufactured by 3M™, or an approved equivalent.

108-2.11 Existing circuits. Whenever the scope of work requires connection to an existing circuit, the circuit's insulation resistance shall be tested, in the presence of the Engineer. The test shall be performed per this item and prior to any activity that will affect the respective circuit. The Contractor shall record the results on forms acceptable to the Engineer. When the work affecting the circuit is complete, the circuit's insulation resistance shall be checked again, in the presence of the Engineer. The Contractor shall record the results on forms acceptable to the Engineer. The second reading shall be equal to or greater than the first reading or the Contractor shall make the necessary repairs to the circuit to bring the second reading above the first reading. All repair costs including a complete replacement of the L-823 connectors, L-830 transformers and L-824 cable, if necessary, shall be borne by the Contractor. All test results shall be submitted in the Operation and Maintenance (O&M) Manual.

108-2.12 Detectable warning tape. Plastic, detectable, American Wood Preservers Association (AWPA) Red (electrical power lines, cables, conduit and lighting cable) with continuous legend magnetic tape shall be polyethylene film with a metalized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item.

CONSTRUCTION METHODS

108-3.1 General. The Contractor shall install the specified cable at the approximate locations indicated on the plans. Unless otherwise shown on the plans, all cable required to cross under pavements expected to carry aircraft loads shall be installed in concrete encased duct banks. Wherever possible, cable shall be run without splices, from connection to connection.

Cable connections between lights will be permitted only at the light locations for connecting the underground cable to the primary leads of the individual isolation transformers. The Contractor shall be responsible for providing cable in continuous lengths for home runs or other long cable runs without connections unless otherwise authorized in writing by the Engineer or shown on the plans.

In addition to connectors being installed at individual isolation transformers, L-823 cable connectors for maintenance and test points shall be installed at locations shown on the plans. Cable circuit identification markers shall be installed on both sides of the L-823 connectors installed or at least once in each access point where L-823 connectors are not installed.

~~Provide not less than 3 feet (1 m) of cable slack on each side of all connections, isolation transformers, light units, and at points where cable is connected to field equipment. Where provisions must be made for testing or for future above grade connections, provide enough slack to allow the cable to be extended at least one foot (30 cm) vertically above the top of the access structure. This requirement also applies where primary cable passes through empty light bases, junction boxes, and access structures to allow for future connections, or as designated by the Engineer.~~

Provide a minimum of three (3) feet of cable slack above each fixture can rim or access structure (for new cables), after all connections have been made for a total of ten (10) feet of make-up cable. If no connections are to be made, but a cable passes through a base can or access structure, a coil of ten (10) feet of cable shall be provided within each can or structure to allow for future connections or testing.

Primary airfield lighting cables installed shall have cable circuit identification markers attached on both sides of each L-823 connector and on each airport lighting cable entering or leaving cable access points, such as manholes, hand holes, pull boxes, junction boxes, etc. Markers shall be of sufficient length for imprinting the cable circuit identification legend on one line, using letters not less than 1/4 inch (6 mm) in size. The cable circuit identification shall match the circuits noted on the construction plans.

108-3.2 Installation in duct banks or conduits. This item includes the installation of the cable in duct banks or conduit per the following paragraphs. The maximum number and voltage ratings of cables installed in each single duct or conduit, and the current-carrying capacity of each cable shall be per the latest version of the National Electric Code, or the code of the local agency or authority having jurisdiction.

The Contractor shall make no connections or splices of any kind in cables installed in conduits or duct banks.

Unless otherwise designated in the plans, where ducts are in tiers, use the lowest ducts to receive the cable first, with spare ducts left in the upper levels. Check duct routes prior to construction to obtain assurance that the shortest routes are selected and that any potential interference is avoided.

Duct banks or conduits shall be installed as a separate item per Item L-110, Airport Underground Electrical Duct Banks and Conduit. The Contractor shall run a mandrel through duct banks or conduit prior to installation of cable to ensure that the duct bank or conduit is open, continuous and clear of debris. The mandrel size shall be compatible with the conduit size. The Contractor shall swab out all conduits/ducts and clean light bases, manholes, etc., interiors immediately prior to pulling cable. Once cleaned and swabbed, the light bases and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, light bases, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be re-cleaned at the Contractor's expense. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the Engineer of any blockage in the existing ducts.

The cable shall be installed in a manner that prevents harmful stretching of the conductor, damage to the insulation, or damage to the outer protective covering. The ends of all cables shall be sealed with moisture-seal tape providing moisture-tight mechanical protection with minimum bulk, or

alternately, heat shrinkable tubing before pulling into the conduit and it shall be left sealed until connections are made. Where more than one cable is to be installed in a conduit, all cable shall be pulled in the conduit at the same time. The pulling of a cable through duct banks or conduits may be accomplished by hand winch or power winch with the use of cable grips or pulling eyes. Maximum pulling tensions shall not exceed the cable manufacturer's recommendations. A non-hardening cable-pulling lubricant recommended for the type of cable being installed shall be used where required.

The Contractor shall submit the recommended pulling tension values to the Engineer prior to any cable installation. If required by the Engineer, pulling tension values for cable pulls shall be monitored by a dynamometer in the presence of the Engineer. Cable pull tensions shall be recorded by the Contractor and reviewed by the Engineer. Cables exceeding the maximum allowable pulling tension values shall be removed and replaced by the Contractor at the Contractor's expense.

The manufacturer's minimum bend radius or NEC requirements (whichever is more restrictive) shall apply. Cable installation, handling and storage shall be per manufacturer's recommendations. During cold weather, particular attention shall be paid to the manufacturer's minimum installation temperature. Cable shall not be installed when the temperature is at or below the manufacturer's minimum installation temperature. At the Contractor's option, the Contractor may submit a plan, for review by the Engineer, for heated storage of the cable and maintenance of an acceptable cable temperature during installation when temperatures are below the manufacturer's minimum cable installation temperature.

Cable shall not be dragged across base can or manhole edges, pavement or earth. When cable must be coiled, lay cable out on a canvas tarp or use other appropriate means to prevent abrasion to the cable jacket.

108-3.3 Installation of direct-buried cable in trenches. Unless otherwise specified, the Contractor shall not use a cable plow for installing the cable. Cable shall be unreeled uniformly in place alongside or in the trench and shall be carefully placed along the bottom of the trench. The cable shall not be unreeled and pulled into the trench from one end. Slack cable sufficient to provide strain relief shall be placed in the trench in a series of S curves. Sharp bends or kinks in the cable shall not be permitted.

Where cables must cross over each other, a minimum of 3 inches (75 mm) vertical displacement shall be provided with the topmost cable depth at or below the minimum required depth below finished grade.

a. Trenching. Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored. Trenches for cables may be excavated manually or with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of surface is disturbed. Graders shall not be used to excavate the trench with their blades. The bottom surface of trenches shall be essentially smooth and free from coarse aggregate. Unless otherwise specified, cable trenches shall be excavated to a minimum depth of 18 inches (0.5 m) below finished grade per NEC Table 300.5, except as follows:

(1) When off the airport or crossing under a roadway or driveway, the minimum depth shall be 36 inches (91 cm) unless otherwise specified.

(2) Minimum cable depth when crossing under a railroad track, shall be 42 inches (1 m) unless otherwise specified.

Dewatering necessary for cable installation, erosion and turbidity control, per Federal, state, and local requirements is incidental to its respective pay items as part of Item L-108. The cost of all

excavation regardless of type of material encountered, shall be included in the unit price bid for the L-108 Item.

The Contractor shall excavate all cable trenches to a width not less than 6 inches (150 mm). Unless otherwise specified on the plans, all cables in the same location and running in the same general direction shall be installed in the same trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches (75 mm) below the required cable depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4 inch (6 mm) sieve. Flowable backfill material may alternatively be used. The Contractor shall ascertain the type of soil or rock to be excavated before bidding. All such rock removal shall be performed and paid for under Item P-152.

Duct bank or conduit markers temporarily removed for trench excavations shall be replaced as required.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

(1) Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred.

(2) Trenching, etc., in cable areas shall then proceed, with approval of the Engineer, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair or replacement.

b. Backfilling. After the cable has been installed, the trench shall be backfilled. The first layer of backfill in the trench shall be 3 inches (75 mm) deep, loose measurement, and shall be either earth or sand containing no mineral aggregate particles that would be retained on a 1/4 inch (6 mm) sieve. This layer shall not be compacted. The second layer shall be 5 inches (125 mm) deep, loose measurement, and shall contain no particles that would be retained on a one inch (25 mm) sieve. The remaining third and subsequent layers of backfill shall not exceed 8 inches (20 cm) of loose measurement and be excavated or imported material and shall not contain stone or aggregate larger than 4 inches (100 mm) maximum diameter.

The second and subsequent layers shall be thoroughly tamped and compacted to at least the density of the adjacent undisturbed soil, and to the satisfaction of the Engineer. If necessary to obtain the desired compaction, the backfill material shall be moistened or aerated as required.

If the cable is to be installed in locations or areas where other compaction requirements are specified (under pavements, embankments, etc.) the compaction requirements per Item P-152 for that area shall be followed.

Trenches shall not contain pools of water during backfilling operations. The trench shall be completely backfilled and tamped level with the adjacent surface, except that when turf is to be established over the trench, the backfilling shall be stopped at an appropriate depth consistent with the type of turfing operation to be accommodated. A proper allowance for settlement shall also be provided. Any excess excavated material shall be removed and disposed of per the plans and specifications.

Underground electrical warning (caution) tape shall be installed in the trench above all direct-buried cable. Contractor shall submit a sample of the proposed warning tape for acceptance by the Engineer. If not shown on the plans, the warning tape shall be located 6 inches (150 mm) above the direct-buried cable or the counterpoise wire if present. A 4-6 inch (100 - 150 mm) wide polyethylene film detectable tape, with a metalized foil core, shall be installed above all direct buried cable or counterpoise. The tape shall be of the color and have a continuous legend as indicated on the plans. The tape shall be installed 8 inch (200 mm) minimum below finished grade.

c. Restoration. Following restoration of all trenching near airport movement surfaces, the Contractor shall visually inspect the area for foreign object debris (FOD) and remove any that is found. Where soil and sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by work shall be restored to its original condition. The restoration shall include the **seeding** as shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. When trenching is through paved areas, restoration shall be equal to existing conditions and compaction shall meet the requirements of Item P-152. Restoration shall be considered incidental to the pay item of which it is a component part.

108-3.4 Cable markers for direct-buried cable. The location of direct buried circuits shall be marked by a concrete slab marker, 2 feet (60 cm) square and 4-6 inch (10 - 15 cm) thick, extending approximately one inch (25 mm) above the surface. Each cable run from a line of lights and signs to the equipment vault shall be marked at approximately every 200 feet (61 m) along the cable run, with an additional marker at each change of direction of cable run. All other direct-buried cable shall be marked in the same manner. Cable markers shall be installed directly above the cable. The Contractor shall impress the word “CABLE” and directional arrows on each cable marking slab. The letters shall be approximately 4 inches (100 mm) high and 3 inches (75 mm) wide, with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep.

At the location of each underground cable connection, except at lighting units, or isolation transformers, or power a concrete marker slab must mark adapters placed above the connection. The Contractor shall impress the word “SPLICE” on each slab. The Contractor also shall impress additional circuit identification symbols on each slab as directed by the Engineer. All cable markers and splice markers shall be painted international orange. Paint shall be specifically manufactured for uncured exterior concrete. After placement, all cable or splice markers shall be given one coat of high-visibility aviation orange paint as approved by the Engineer. Furnishing and installation of cable markers is incidental to the respective cable pay item.

108-3.5 Splicing. Connections of the type shown on the plans shall be made by experienced personnel regularly engaged in this type of work and shall be made as follows:

a. Cast splices. These shall be made by using crimp connectors for jointing conductors. Molds shall be assembled, and the compound shall be mixed and poured per the manufacturer’s instructions and to the satisfaction of the Engineer.

~~**b. Field-attached plug-in splices.** These shall be assembled per the manufacturer’s instructions. These splices shall be made by plugging directly into mating connectors. In all cases the joint where the connectors come together shall be wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint.~~

b. Field-attached plug-in splices. Install connector according to the manufacturer’s instructions. Minimize the circuit length while maintaining a minimum of 3 feet of slack of 5kV L-824C cable above each L-867B can rim (for new cables) after the new L-823 connections are

mated with the isolation transformer for a total of ten (10) feet of make-up cable. When using the AMERACE part number 54SUPER D4-D4 (C, E, F & Z) requirements of 108-3.5d are deleted.

c. Factory-molded plug-in splices. These shall be made by plugging directly into mating connectors. In all cases, the joint where the connectors come together shall be wrapped with at least one layer of rubber or synthetic rubber tape and one layer of plastic tape, one-half lapped, extending at least 1-1/2 inches (38 mm) on each side of the joint.

~~**d. Taped or heat-shrink splices.** A taped splice shall be made in the following manner:~~

~~Bring the cables to their final position and cut so that the conductors will butt. Remove insulation and jacket allowing for bare conductor of proper length to fit compression sleeve connector with 1/4 inch (6 mm) of bare conductor on each side of the connector. Prior to splicing, the two ends of the cable insulation shall be penciled using a tool designed specifically for this purpose and for cable size and type. Do not use emery paper on splicing operation since it contains metallic particles. The copper conductors shall be thoroughly cleaned. Join the conductors by inserting them equidistant into the compression connection sleeve. Crimp conductors firmly in place with crimping tool that requires a complete crimp before tool can be removed. Test the crimped connection by pulling on the cable. Scrape the insulation to assure that the entire surface over which the tape will be applied (plus 3 inches (75 mm) on each end) is clean. After scraping wipe the entire area with a clean lint-free cloth. Do not use solvents.~~

~~Apply high-voltage rubber tape one-half lapped over bare conductor. This tape should be tensioned as recommended by the manufacturer. Voids in the connector area may be eliminated by highly elongating the tape, stretching it just short of its breaking point. Throughout the rest of the splice less tension should be used. Always attempt to exactly half-lap to produce a uniform buildup. Continue buildup to 1-1/2 times cable diameter over the body of the splice with ends tapered a distance of approximately one inch (25 mm) over the original jacket. Cover rubber tape with two layers of vinyl pressure-sensitive tape one-half lapped. Do not use glyptol or lacquer over vinyl tape as they react as solvents to the tape. No further cable covering or splice boxes are required.~~

~~Heat shrinkable tubing shall be installed following manufacturer's instructions. Direct flame heating shall not be permitted unless recommended by the manufacturer. Cable surfaces within the limits of the heat-shrink application shall be clean and free of contaminates prior to application.~~

~~Surfaces of equipment or conductors being terminated or connected shall be prepared in accordance with industry standard practice and manufacturer's recommendations. All surfaces to be connected shall be thoroughly cleaned to remove all dirt, grease, oxides, nonconductive films, or other foreign material. Paints and other nonconductive coatings shall be removed to expose base metal. Clean all surfaces at least 1/4 inch (6.4 mm) beyond all sides of the larger bonded area on all mating surfaces. Use a joint compound suitable for the materials used in the connection. Repair painted/coated surface to original condition after completing the connection~~.

108-3.6 Bare counterpoise wire installation for lightning protection and grounding. If shown on the plans or included in the job specifications, bare solid #**6 AWG** copper counterpoise wire shall be installed for lightning protection of the underground cables. The Engineer shall select one of two methods of lightning protection for the airfield lighting circuit based on the frequency of local lightning:

a. Equipotential. – may be used by the Engineer for areas that have high rates of lightning strikes. This is where the counterpoise is bonded to the light base (edge lights included) and counterpoise size is determined by the Engineer.

b. Isolation – used in areas where lightning strikes are not common. The counterpoise is not bonded to edge light fixtures, in-pavement fixtures are boned to the counterpoise. Counterpoise size is selected by the Engineer.

Counterpoise wire shall be installed in the same trench for the entire length of buried cable, conduits and duct banks that are installed to contain airfield cables.

For edge light fixtures installed in turf (stabilized soils) and for raceways or cables adjacent to the full strength pavement edge, the counterpoise conductor shall be installed halfway between the pavement edge and the light base, mounting stake, raceway, or cable. The counterpoise conductor shall be installed 8 inches (203 mm) minimum below grade. Each light base or mounting stake shall be provided with a grounding electrode.

When a metallic light base is used, the grounding electrode shall be bonded to the metallic light base or mounting stake with a No. 6 AWG bare, annealed or soft drawn, solid copper conductor.

When a nonmetallic light base is used, the grounding electrode shall be bonded to the metallic light fixture or metallic base plate with a No. 6 AWG bare, annealed or soft drawn, solid copper conductor.

The counterpoise wire shall also be exothermically welded to ground rods installed as shown on the plans but not more than 500 feet (150 m) apart around the entire circuit. The counterpoise system shall be continuous and terminate at the transformer vault or at the power source. It shall be securely attached to the vault or equipment external ground ring or other made electrode-grounding system. The connections shall be made as shown on the plans and in the specifications.

If shown on the plans or in the specifications, a separate equipment (safety) ground system shall be provided in addition to the counterpoise wire using one of the following methods:

c. A ground rod installed at and securely attached to each light fixture base, mounting stake, and to all metal surfaces at junction/access structures via #6 AWG wire.

d. For parallel voltage systems only, install a #6 AWG green insulated equipment ground conductor internal to the conduit system and securely attached it to each light fixture base internal grounding lug and to all metal surfaces at junction/access structures. Dedicated ground rods shall be installed and exothermically welded to the counterpoise wires at each end of a duct bank crossing under pavement.

Where an existing airfield lighting system is being extended or modified, the new counterpoise conductors shall be interconnected to existing counterpoise conductors at each intersection of the new and existing airfield lighting counterpoise systems.

108-3.7 Counterpoise installation above multiple conduits and duct banks. Counterpoise wires shall be installed above multiple conduits/duct banks for airfield lighting cables, with the intent being to provide a complete area of protection over the airfield lighting cables. When multiple conduits and/or duct banks for airfield cable are installed in the same trench, the number and location of counterpoise wires above the conduits shall be adequate to provide a complete cone of protection measured 22-1/2 degrees each side of vertical.

Where duct banks pass under pavement to be constructed in the project, the counterpoise shall be placed above the duct bank. Reference details on the construction plans.

108-3.8 Counterpoise installation at existing duct banks. When airfield lighting cables are indicated on the plans to be routed through existing duct banks, the new counterpoise wiring shall be terminated at ground rods at each end of the existing duct bank where the cables being

protected enter and exit the duct bank. The new counterpoise conductor shall be bonded to the existing counterpoise system.

108-3.9 Exothermic bonding. Bonding of counterpoise wire shall be by the exothermic welding process. Only personnel experienced in and regularly engaged in this type of work shall make these connections.

Contractor shall demonstrate to the satisfaction of the Engineer, the welding kits, materials and procedures to be used for welded connections prior to any installations in the field. The installations shall comply with the manufacturer's recommendations and the following:

a. All slag shall be removed from welds.

b. Using an exothermic weld to bond the counterpoise to a lug on a galvanized light base is not recommended unless the base has been specially modified. Consult the manufacturer's installation directions for proper methods of bonding copper wire to the light base. See also AC 150/5340-30 for galvanized light base exception.

c. If called for in the plans, all buried copper and weld material at weld connections shall be thoroughly coated with 6 mm of 3M™ Scotchkote™, or approved equivalent, or coated with coal tar Bitumastic® material to prevent surface exposure to corrosive soil or moisture.

108-3.10 EXISTING CABLE REMOVAL. The Contractor shall remove the existing cables in conduits and ducts rendered useless by this project. Any material wanted by the Owner shall be delivered to the Owner's storage facility. Any materials not wanted by the owner shall be legally disposed of by the Contractor at a site off of airport property. Any direct burial cable shall be abandoned in place.

108-3.11 Testing. The Contractor shall furnish all necessary equipment and appliances for testing the airport electrical systems and underground cable circuits before and after installation. The Contractor shall perform all tests in the presence of the Engineer. The Contractor shall demonstrate the electrical characteristics to the satisfaction of the Engineer. All costs for testing are incidental to the respective item being tested. For phased projects, the tests must be completed by phase. The Contractor must maintain the test results throughout the entire project as well as during the warranty period that meet the following:

a. Earth resistance testing methods shall be submitted to the Engineer for approval. Earth resistance testing results shall be recorded on an approved form and testing shall be performed in the presence of the Engineer. All such testing shall be at the sole expense of the Contractor.

b. Should the counterpoise or ground grid conductors be damaged or suspected of being damaged by construction activities the Contractor shall test the conductors for continuity with a low resistance ohmmeter. The conductors shall be isolated such that no parallel path exists and tested for continuity. The Engineer shall approve of the test method selected. All such testing shall be at the sole expense of the Contractor.

After installation, the Contractor shall test and demonstrate to the satisfaction of the Engineer the following:

c. That all affected lighting power and control circuits (existing and new) are continuous and free from short circuits.

d. That all affected circuits (existing and new) are free from unspecified grounds.

e. That the insulation resistance to ground of all new non-grounded high voltage series circuits or cable segments is not less than **500** megohms.

f. That the insulation resistance to ground of all new non-grounded conductors of new multiple circuits or circuit segments is not less than 100 megohms.

g. That all affected circuits (existing and new) are properly connected per applicable wiring diagrams.

h. That all affected circuits (existing and new) are operable. Tests shall be conducted that include operating each control not less than 10 times and the continuous operation of each lighting and power circuit for not less than 1/2 hour.

i. That the impedance to ground of each ground rod does not exceed 25 ohms prior to establishing connections to other ground electrodes. The fall-of-potential ground impedance test shall be used, as described by American National Standards Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) Standard 81, to verify this requirement. As an alternate, clamp-on style ground impedance test meters may be used to satisfy the impedance testing requirement. Test equipment and its calibration sheets shall be submitted for review and approval by the Engineer prior to performing the testing.

Two copies of tabulated results of all cable tests performed shall be supplied by the Contractor to the Engineer. Where connecting new cable to existing cable, ground resistance tests shall be performed on the new cable prior to connection to the existing circuit.

There are no approved “repair” procedures for items that have failed testing other than complete replacement.

METHOD OF MEASUREMENT

108-4.1 Trenching for counterpoise installation where not shown to be installed with the conduits or ducts shall be measured by the linear feet (meters) of trench, including the excavation, backfill, and restoration, completed, measured as excavated, and accepted as satisfactory.

108-4.2 New cable or counterpoise wire installed in trench, duct bank or conduit shall be measured by the number of linear feet of cable or counterpoise wire installed in trenches, duct bank or conduit, including trench marking tape, ready for operation, and accepted as satisfactory. Separate measurement shall be made for each cable or counterpoise wire installed in trench, duct bank or conduit. The measurement for this item shall include additional quantities required for slack. Make-up cable shall be neatly looped at each light fixture. Allowances will be made for cable make-up at lights from isolation transformer as follows:

Light Base	-10 feet L-824-C Cable
	(allows for 2 feet in base and 3 feet above finished
	elevation for each conductor)

Allowances for cables in handholes shall be as follows. Each cable installed through the handhole shall be equal to the depth of the handhole plus 5 feet above the finished elevation. All cables shall be neatly looped inside the handhole and installed in cable racks and have I.D. tags.

108-4.3 <u>Ground rods shall be inclusive to the counterpoise, light base and handhole installation. No separate payment will be made for ground rods.</u>

BASIS OF PAYMENT

108-5.1 Payment will be made at the contract unit price for trenching, cable and bare counterpoise wire installed in trench (direct-buried), or cable and equipment ground installed in duct bank or conduit, in place by the Contractor and accepted by the Engineer. This price shall be full compensation for furnishing all materials and for all preparation and installation of these materials, and for all labor, equipment, tools, and incidentals, including ground rods and ground connectors and trench marking tape, necessary to complete this item.

Payment will be made under:

Item L-108.1	Cable, 1/C #8 5kV, L-824C Installed in Conduit or Duct Bank- per liner foot
Item L-108.2	Counterpoise, # 6 Bare Solid Copper, Including Ground Rods and Connections. - per linear foot

MATERIAL REQUIREMENTS

AC 150/5340-26	Maintenance of Airport Visual Aid Facilities
AC 150/5340-30	Design and Installation Details for Airport Visual Aids
AC 150/5345-7	Specification for L-824 Underground Electrical Cable for Airport Lighting Circuits
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Cable Connectors
AC 150/5345-53	Airport Lighting Equipment Certification Program
Commercial Item Description A-A-59544	Cable and Wire, Electrical (Power, Fixed Installation)
Commercial Item Description A-A-55809	Insulation Tape, Electrical, Pressure-Sensitive Adhesive, Plastic
ASTM B3	Standard Specification for Soft or Annealed Copper Wire
ASTM B8	Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B33	Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes
ASTM D4388	Standard Specification for Nonmetallic Semi-Conducting and Electrically Insulating Rubber Tapes
FED SPEC J-C-30	Cable and Wire, Electrical (Power, Fixed Installation)
MIL-I-24391	Insulation Tape, Electrical, Plastic, Pressure Sensitive

REFERENCE DOCUMENTS

NFPA-70	National Electrical Code (NEC)
NFPA-780	Standard for the Installation of Lightning Protection Systems

MIL-S-23586F	Performance Specification: Sealing Compound (with Accelerator), Silicone Rubber, Electrical
ANSI/IEEE STD 81	IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System

END OF ITEM L-108

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Item L-110 Airport Underground Electrical Duct Banks and Conduits

DESCRIPTION

110-1.1 This item shall consist of underground electrical conduits and duct banks (single or multiple conduits encased in concrete or buried in sand) installed per this specification at the locations and per the dimensions, designs, and details shown on the plans. This item shall include furnishing and installing of all underground electrical duct banks and individual and multiple underground conduits. It shall also include all turfing trenching, backfilling, removal, and restoration of any paved or turfed areas; concrete encasement, mandrelling, pulling lines, duct markers, plugging of conduits, and the testing of the installation as a completed system ready for installation of cables per the plans and specifications. This item shall also include furnishing and installing conduits and all incidentals for providing positive drainage of the system. Verification of existing ducts is incidental to the pay items provided in this specification.

EQUIPMENT AND MATERIALS

110-2.1 General.

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

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

c. All materials and equipment used to construct this item shall be submitted to the Engineer for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided. Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be made bold and clear with arrows or circles (highlighting is not acceptable). The Contractor is solely responsible for delays in project that accrue directly or indirectly from late submissions or resubmissions of submittals.

d. The data submitted shall be sufficient, in the opinion of the Engineer, to determine compliance with the plans and specifications. The Contractor's submittals shall be neatly bound in a properly sized 3-ring binder, tabbed by specification section. The Engineer reserves the right to reject any and all equipment, materials or procedures that do not meet the system design and the standards and codes specified in this document. The Contractor may elect to submit color PDF submittals electronically.

e. All equipment and materials furnished and installed under this section shall be guaranteed against defects in materials and workmanship for a period of at least twelve (12) months from

final acceptance by the Owner. The defective materials and/or equipment shall be repaired or replaced, at the Owner's discretion, with no additional cost to the Owner.

110-2.2 Steel conduit. Rigid galvanized steel (RGS) conduit and fittings shall be hot dipped galvanized inside and out and conform to the requirements of Underwriters Laboratories Standards 6, 514B, and 1242. All RGS conduits or RGS elbows installed below grade, in concrete, permanently wet locations or other similar environments shall be painted with a 10 mil thick coat of asphaltum sealer or shall have a factory bonded polyvinyl chloride (PVC) cover. Any exposed galvanizing or steel shall be coated with 10 mil of asphaltum sealer. When using PVC coated RGS conduit, care shall be exercised not to damage the factory PVC coating. Damaged PVC coating shall be repaired per the manufacturer's written instructions.

110-2.3 Plastic conduit. Plastic conduit and fittings-shall conform to the following requirements:

- UL 514B covers W-C-1094-Conduit fittings all types, classes 1 thru 3 and 6 thru 10.
- UL 514C covers W-C-1094- all types, Class 5 junction box and cover in plastic (PVC).
- UL 651 covers W-C-1094-Rigid PVC Conduit, types I and II, Class 4.
- UL 651A covers W-C-1094-Rigid PVC Conduit and high density polyethylene (HDPE) Conduit type III and Class 4.

Underwriters Laboratories Standards UL-651 and Article 352 of the current National Electrical Code shall be one of the following, as shown on the plans:

a. Type I–Schedule 40 PVC suitable for underground use either direct-buried or encased in concrete.

b. Type II–Schedule 40 PVC suitable for either above ground or underground use.

c. Type III – Schedule 80 PVC suitable for either above ground or underground use either direct-buried or encased in concrete.

d. Type III –HDPE pipe, minimum standard dimensional ratio (SDR) 11, suitable for placement with directional boring under pavement.

The type of solvent cement shall be as recommended by the conduit/fitting manufacturer.

110-2.4 Split conduit. Split conduit shall be pre-manufactured for the intended purpose and shall be made of steel or plastic.

110-2.5 Conduit spacers. Conduit spacers shall be prefabricated interlocking units manufactured for the intended purpose. They shall be of double wall construction made of high grade, high density polyethylene complete with interlocking cap and base pads, They shall be designed to accept No. 4 reinforcing bars installed vertically.

110-2.6 Concrete. Concrete shall conform to Item P-610, Structural Portland Cement Concrete, using coarse aggregate, as per P-610, with a minimum 28-day compressive strength as indicated in P-610 and as indicated on the drawings. Where reinforced duct banks are specified, reinforcing steel shall conform to ASTM A615 Grade 60. Concrete and reinforcing steel are incidental to the respective pay item of which they are a component part.

110-2.7 Flowable backfill. Flowable material used to back fill conduit and duct bank trenches shall conform to the requirements of Item P-153, Controlled Low Strength Material. Fill shall be designed to achieve a 28-day compressive strength of 200 psi (1.4 MPa) under pavement.

110-2.8 Detectable warning tape. Plastic, detectable, American Wood Preservers Association (AWPA) Red (electrical power lines, cables, conduit and lighting cable) with continuous legend magnetic tape shall be polyethylene film with a metallized foil core and shall be 3-6 inches (75-150 mm) wide. Detectable tape is incidental to the respective bid item.

CONSTRUCTION METHODS

110-3.1 General. The Contractor shall install underground duct banks and conduits at the approximate locations indicated on the plans. The Engineer shall indicate specific locations as the work progresses, if required to differ from the plans. Duct banks and conduits shall be of the size, material, and type indicated on the plans or specifications. Where no size is indicated on the plans or in the specifications, conduits shall be not less than 2 inches (50 mm) inside diameter or comply with the National Electrical Code based on cable to be installed, whichever is larger. All duct bank and conduit lines shall be laid so as to grade toward access points and duct or conduit ends for drainage. Unless shown otherwise on the plans, grades shall be at least 3 inches (75 mm) per 100 feet (30 m). On runs where it is not practicable to maintain the grade all one way, the duct bank and conduit lines shall be graded from the center in both directions toward access points or conduit ends, with a drain into the storm drainage system. Pockets or traps where moisture may accumulate shall be avoided. No duct bank or underground conduit shall be less than 18 inches (0.5 m) below finished grade. Where under pavement, the top of the duct bank shall not be less than 18 inches (0.5 m) below the subgrade.

The Contractor shall mandrel each individual conduit whether the conduit is direct-buried or part of a duct bank. An iron-shod mandrel, not more than 1/4 inch (6 mm) smaller than the bore of the conduit shall be pulled or pushed through each conduit. The mandrel shall have a leather or rubber gasket slightly larger than the conduit hole.

The Contractor shall swab out all conduits/ducts and clean base can, manhole, pull boxes, etc., interiors IMMEDIATELY prior to pulling cable. Once cleaned and swabbed the light bases, manholes, pull boxes, etc., and all accessible points of entry to the duct/conduit system shall be kept closed except when installing cables. Cleaning of ducts, base cans, manholes, etc., is incidental to the pay item of the item being cleaned. All raceway systems left open, after initial cleaning, for any reason shall be recleaned at the Contractor’s expense. All accessible points shall be kept closed when not installing cable. The Contractor shall verify existing ducts proposed for use in this project as clear and open. The Contractor shall notify the Engineer of any blockage in the existing ducts.

For pulling the permanent wiring, each individual conduit, whether the conduit is direct-buried or part of a duct bank, shall be provided with a 200 pound (90 kg) test polypropylene pull rope. The ends shall be secured and sufficient length shall be left in access points to prevent it from slipping back into the conduit. Where spare conduits are installed, as indicated on the plans, the open ends shall be plugged with removable tapered plugs, designed for this purpose.

All conduits shall be securely fastened in place during construction and shall be plugged to prevent contaminants from entering the conduits. Any conduit section having a defective joint shall not be installed. Ducts shall be supported and spaced apart using approved spacers at intervals not to exceed 5 feet (1.5 m).

Unless otherwise shown on the plans, concrete encased duct banks shall be used when crossing under pavements expected to carry aircraft loads, such as runways, taxiways, taxilanes, ramps and aprons. When under paved shoulders and other paved areas, conduit and duct banks shall be encased using flowable fill for protection.

All conduits within concrete encasement of the duct banks shall terminate with female ends for ease in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Where turf is well established and the sod can be removed, it shall be carefully stripped and properly stored.

Trenches for conduits and duct banks may be excavated manually or with mechanical trenching equipment unless in pavement, in which case they shall be excavated with mechanical trenching equipment. Walls of trenches shall be essentially vertical so that a minimum of shoulder surface is disturbed. Blades of graders shall not be used to excavate the trench.

When rock is encountered, the rock shall be removed to a depth of at least 3 inches (75 mm) below the required conduit or duct bank depth and it shall be replaced with bedding material of earth or sand containing no mineral aggregate particles that would be retained on a 1/4 inch (6 mm) sieve. Flowable backfill may alternatively be used The Contractor shall ascertain the type of soil or rock to be excavated before bidding. All such rock removal shall be performed and paid for under Item P-152.

Underground electrical warning (Caution) tape shall be installed in the trench above all underground duct banks and conduits in unpaved areas. Contractor shall submit a sample of the proposed warning tape for approval by the Engineer. If not shown on the plans, the warning tape shall be located 6 inches above the duct/conduit or the counterpoise wire if present.

Joints in plastic conduit shall be prepared per the manufacturer's recommendations for the particular type of conduit. Plastic conduit shall be prepared by application of a plastic cleaner and brushing a plastic solvent on the outside of the conduit ends and on the inside of the couplings. The conduit fitting shall then be slipped together with a quick one-quarter turn twist to set the joint tightly. Where more than one conduit is placed in a single trench, or in duct banks, joints in the conduit shall be staggered a minimum of 2 feet (60 cm).

Changes in direction of runs exceeding 10 degrees, either vertical or horizontal, shall be accomplished using manufactured sweep bends.

Whether or not specifically indicated on the drawings, where the soil encountered at established duct bank grade is an unsuitable material, as determined by the Engineer, the unsuitable material shall be removed per Item P-152 and replaced with suitable material. Alternatively, additional duct bank supports that are adequate and stable shall be installed, as approved by the Engineer.

All excavation shall be unclassified and shall be considered incidental to the respective L-110 pay item of which it is a component part. Dewatering necessary for duct installation, erosion and turbidity control, per Federal, state, and local requirements is incidental to its respective pay item as a part of Item L-110. The cost of all excavation regardless of type of material encountered, shall be included in the unit price bid for the L-110 Item.

Unless otherwise specified, excavated materials that are deemed by the Engineer to be unsuitable for use in backfill or embankments shall be removed and disposed of offsite.

Any excess excavation shall be filled with suitable material approved by the Engineer and compacted per Item P-152.

It is the Contractor's responsibility to locate existing utilities within the work area prior to excavation. Where existing active cables) cross proposed installations, the Contractor shall ensure that these cables are adequately protected. Where crossings are unavoidable, no splices will be allowed in the existing cables, except as specified on the plans. Installation of new cable where such crossings must occur shall proceed as follows:

a. Existing cables shall be located manually. Unearthed cables shall be inspected to assure absolutely no damage has occurred

b. Trenching, etc., in cable areas shall then proceed with approval of the Engineer, with care taken to minimize possible damage or disruption of existing cable, including careful backfilling in area of cable.

In the event that any previously identified cable is damaged during the course of construction, the Contractor shall be responsible for the complete repair.

110-3.2 Duct banks. Unless otherwise shown in the plans, duct banks shall be installed so that the top of the concrete envelope is not less than 18 inches (0.5 m) below the bottom of the base or stabilized base course layers where installed under runways, taxiways, aprons, or other paved areas, and not less than 18 inches (0.5 m) below finished grade where installed in unpaved areas.

Unless otherwise shown on the plans, duct banks under paved areas shall extend at least 3 feet (1 m) beyond the edges of the pavement or 3 feet (1 m) beyond any under drains that may be installed alongside the paved area. Trenches for duct banks shall be opened the complete length before concrete is placed so that if any obstructions are encountered, provisions can be made to avoid them. Unless otherwise shown on the plans, all duct banks shall be placed on a layer of concrete not less than 3 inches (75 mm) thick prior to its initial set. The Contractor shall space the conduits not less than 3 inch (75 mm) apart (measured from outside wall to outside wall). All such multiple conduits shall be placed using conduit spacers applicable to the type of conduit. As the conduit laying progresses, concrete shall be placed around and on top of the conduits not less than 3 inches (75 mm) thick unless otherwise shown on the plans. All conduits shall terminate with female ends for ease of access in current and future use. Install factory plugs in all unused ends. Do not cover the ends or plugs with concrete.

Conduits forming the duct bank shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth prior to placing the concrete encasement. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the Engineer for review prior to use.

When specified, the Contractor shall reinforce the bottom side and top of encasements with steel reinforcing mesh or fabric or other approved metal reinforcement. When directed, the Contractor shall supply additional supports where the ground is soft and boggy, where ducts cross under roadways, or where shown on the plans. Under such conditions, the complete duct structure shall be supported on reinforced concrete footings, piers, or piles located at approximately 5-foot (1.5-m) intervals.

All pavement surfaces that are to have ducts installed therein shall be neatly saw cut to form a vertical face. All excavation shall be included in the contract with price for the duct.

Install a plastic, detectable, color as noted, 3 to 6 inches (75 to 150 mm) wide tape, 8 inches (200 mm) minimum below grade above all underground conduit or duct lines not installed under pavement. Utilize the 3-inch (75-mm) wide tape only for single conduit runs. Utilize the 6-inch (150-mm) wide tape for multiple conduits and duct banks. For duct banks equal to or greater than 24 inches (600 mm) in width, utilize more than one tape for sufficient coverage and identification of the duct bank as required.

When existing cables are to be placed in split duct, encased in concrete, the cable shall be carefully located and exposed by hand tools. Prior to being placed in duct, the Engineer shall be

notified so that he may inspect the cable and determine that it is in good condition. Where required, split duct shall be installed as shown on the drawings or as required by the Engineer.

110-3.3 Conduits without concrete encasement. Trenches for single-conduit lines shall be not less than 6 inches (150 mm) nor more than 12 inches (300 mm) wide. The trench for 2 or more conduits installed at the same level shall be proportionately wider. Trench bottoms for conduits without concrete encasement shall be made to conform accurately to grade so as to provide uniform support for the conduit along its entire length.

Unless otherwise shown on the plans, a layer of fine earth material, at least 4 inches (100 mm) thick (loose measurement) shall be placed in the bottom of the trench as bedding for the conduit. The bedding material shall consist of soft dirt, sand or other fine fill, and it shall contain no particles that would be retained on a 1/4 inch (6 mm) sieve. The bedding material shall be tamped until firm. Flowable backfill may alternatively be used.

Unless otherwise shown on plans, conduits shall be installed so that the tops of all conduits within the Airport's secured area where trespassing is prohibited are at least 18 inches (0.5 m) below the finished grade. Conduits outside the Airport's secured area shall be installed so that the tops of the conduits are at least 24 inches (60 cm) below the finished grade per National Electric Code (NEC), Table 300.5.

When two or more individual conduits intended to carry conductors of equivalent voltage insulation rating are installed in the same trench without concrete encasement, they shall be spaced not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and not less than 6 inches (150 mm) apart in a vertical direction. Where two or more individual conduits intended to carry conductors of differing voltage insulation rating are installed in the same trench without concrete encasement, they shall be placed not less than 3 inches (75 mm) apart (measured from outside wall to outside wall) in a horizontal direction and lot less than 6 inches (150 mm) apart in a vertical direction.

Trenches shall be opened the complete length between normal termination points before conduit is installed so that if any unforeseen obstructions are encountered, proper provisions can be made to avoid them.

Conduits shall be installed using conduit spacers. No. 4 reinforcing bars shall be driven vertically into the soil a minimum of 6 inches (150 mm) to anchor the assembly into the earth while backfilling. For this purpose, the spacers shall be fastened down with locking collars attached to the vertical bars. Spacers shall be installed at 5-foot (1.5-m) intervals. Spacers shall be in the proper sizes and configurations to fit the conduits. Locking collars and spacers shall be submitted to the Engineer for review prior to use.

110-3.4 Markers. The location of each end and of each change of direction of conduits and duct banks shall be marked by a concrete slab marker 2 feet (60 cm) square and 4 - 6 inches (100 - 150 mm) thick extending approximately one inch (25 mm) above the surface. The markers shall also be located directly above the ends of all conduits or duct banks, except where they terminate in a junction/access structure or building. Each cable or duct run from a line of lights and signs to the equipment vault must be marked at approximately every 200 feet (61 m) along the cable or duct run, with an additional marker at each change of direction of cable or duct run.

The Contractor shall impress the word "DUCT" or "CONDUIT" on each marker slab. Impression of letters shall be done in a manner, approved by the Engineer, for a neat, professional appearance. All letters and words must be neatly stenciled. After placement, all markers shall be given one coat of high-visibility orange paint, as approved by the Engineer. The Contractor shall also impress on the slab the number and size of conduits beneath the marker along with all other necessary information as determined by the Engineer. The letters shall be 4 inches (100 mm)

high and 3 inches (75 mm) wide with width of stroke 1/2 inch (12 mm) and 1/4 inch (6 mm) deep or as large as the available space permits. Furnishing and installation of duct markers is incidental to the respective duct pay item.

110-3.5 Backfilling for conduits. For conduits, 8 inches (200 mm) of sand, soft earth, or other fine fill (loose measurement) shall be placed around the conduits ducts and carefully tamped around and over them with hand tampers. The remaining trench shall then be backfilled and compacted per Item P-152 “Excavation and Embankment” except that material used for back fill shall be select material not larger than 4 inches (100 mm) in diameter.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during back filling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the Engineer.

110-3.6 Backfilling for duct banks. After the concrete has cured, the remaining trench shall be backfilled and compacted per Item P-152 “Excavation and Embankment” except that the material used for backfill shall be select material not larger than 4 inches (100 mm) in diameter. In addition to the requirements of P-152, where duct banks are installed under pavement, one moisture/density test per lift shall be made for each 250 linear feet (76 m) of duct bank or one work period’s construction, whichever is less.

Flowable backfill may alternatively be used.

Trenches shall not contain pools of water during backfilling operations.

The trench shall be completely backfilled and tamped level with the adjacent surface; except that, where sod is to be placed over the trench, the backfilling shall be stopped at a depth equal to the thickness of the sod to be used, with proper allowance for settlement.

Any excess excavated material shall be removed and disposed of per instructions issued by the Engineer.

110-3.7 Restoration. Where sod has been removed, it shall be replaced as soon as possible after the backfilling is completed. All areas disturbed by the work shall be restored to its original condition. The restoration shall include **seeding** shown on the plans. The Contractor shall be held responsible for maintaining all disturbed surfaces and replacements until final acceptance. All restoration shall be considered incidental to the respective L-110 pay item. Following restoration of all trenching near airport movement surfaces, the Contractor shall thoroughly visually inspect the area for foreign object debris (FOD), and remove any such FOD that is found. This FOD inspection and removal shall be considered incidental to the pay item of which it is a component part.

METHOD OF MEASUREMENT

110-4.1 Underground conduits shall be measured by the linear feet (meter) of conduits installed, including encasement, locator tape, trenching and backfill with designated material, all measured in place, completed, and accepted. Separate measurement shall be made for the various types and sizes.

BASIS OF PAYMENT

110-5.1 Payment will be made at the contract unit price per linear foot for each type and size of conduit completed and accepted, including trench and backfill with the designated material. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item per the provisions and intent of the plans and specifications.

Payment will be made under:

Item L-110.1	Electrical Conduit, 1-Way, 2” Schedule-40 PVC, Direcrt Earth Burial, Earth Backfill - per linear foot
Item L-110.2	Electrical Conduit, 1-Way, 2” Schedule-40 PVC, Concrete Encased, Installed Under New PCC Runway Pavement- per linear foot

MATERIAL REQUIREMENTS

Advisory Circular (AC) 150/5340-30
Design and Installation Details for Airport Visual Aids

AC 150/5345-53	Airport Lighting Equipment Certification Program
ASTM A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
ASTM D1556	Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D1557	Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft^3(2,700 kN-m/m^3))
ASTM D2167	Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D2922	Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
NFPA-70	National Electrical Code (NEC)

Underwriters Laboratories Standard 6
Electrical Rigid Metal Conduit - Steel

Underwriters Laboratories Standard 514B
Conduit, Tubing, and Cable Fittings

Underwriters Laboratories Standard 514C
Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers

Underwriters Laboratories Standard 1242
Electrical Intermediate Metal Conduit Steel

Underwriters Laboratories Standard 651
Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings

Underwriters Laboratories Standard 651A
Type EB and A Rigid PVC Conduit and HDPE Conduit

END OF ITEM L-110

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ITEM L-125 AIRPORT LIGHTING SYSTEMS

DESCRIPTION

125-1.1 This item shall consist of airport lighting systems furnished and installed in accordance with this specification, the referenced specification, and the applicable advisory circulars. The systems are installed at the location and in accordance with the dimension, design, and details shown in the plans. This item shall include the furnishing of all equipment, materials, services, and incidentals necessary to place the systems in operation as completed units to the satisfaction of the engineer.

125-1.2 Additional details pertaining to a specific system covered in this item are contained in the advisory circulars listed below.

125-1.3 AC 150/5340-30, Design and Installation Details for Airport Visual Aids.

EQUIPMENT AND MATERIALS

125-2.1 GENERAL.

A. Proposed airport lighting equipment and materials shall be listed in FAA Bulletin and certified by an independent testing laboratory which has been approved for testing by the FAA. Other equipment and materials not listed in the FAA Bulletin shall be tested and certified by an independent testing laboratory which has been approved for testing by the FAA.

B. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through the manufacturer's certification of compliance with the applicable specifications.

C. Manufacturer's certifications shall not relieve the Contractor of the Contractor’s responsibility to provide materials in accordance with these specifications and acceptable to the Engineer. All equipment and materials provided by the Contractor shall have a 3rd party certification such as ETL, UL, etc. Materials supplied and/or installed that do not materially comply with these specifications shall be removed, when directed by the Engineer and replaced with materials, which do comply with these specifications, at the sole cost of the Contractor.

D. Installation and materials shall be in accordance with the latest edition of the National Electrical Code, all applicable Building Codes, and all local codes. Apply and pay for all permits and fees required for this construction.

E. Lists of the equipment and materials required for a particular system are contained in the applicable advisory circulars.

F. All materials and equipment used to construct this item shall be submitted to the Engineer for approval prior to ordering the equipment. Submittals consisting of marked catalog sheets or shop drawings shall be provided.

Submittal data shall be presented in a clear, precise and thorough manner. Original catalog sheets are preferred. Photocopies are acceptable provided they are as good a quality as the original. Clearly and boldly mark each copy to identify pertinent products or models applicable to this project. Indicate all optional equipment and delete non-pertinent data. Submittals for components of electrical equipment and systems shall identify the equipment for which they apply on each submittal sheet. Markings shall be boldly and clearly made with arrows or circles (highlighting is not acceptable). Contractor is solely responsible for delays in project accruing directly or indirectly from late submissions or resubmissions of submittals.

G. The data submitted shall be sufficient, in the opinion of the Engineer, to determine compliance with the plans and specifications. The Contractor's submittals shall be neatly bound in a properly sized 3-ring binder, tabbed by specification section. The Contractor shall provide seven (7) copies of each submittal. The Contractor may elect to submit color PDF submittals electronically. The Engineer reserves the right to reject any and all equipment, materials or procedures, which, in the Engineer's opinion, does not meet the system design and the standards and codes, specified herein.

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

125-2.2 FAA SPEC EQUIPMENT.

A. Certain items of airport lighting systems are covered by individual FAA equipment specifications. These specifications are listed below. The contractor shall furnish copies of Certification from an approved independent testing laboratory that the equipment proposed has been satisfactorily tested and is in compliance with the applicable FAA specifications. All equipment shall be furnished by manufacturers who have been continuously engaged in the manufacture of the products proposed for a minimum period of three (3) consecutive years immediately preceding the bid date.

1. IN-PAVEMENT MEDIUM INTENSITY RUNWAY EDGE LIGHT. AC 150/5345-46. The L-852D fixture shall be ETL certified. The L-852D taxiway light is to be used as a medium intensity runway light as indicated in AC 150/5340-30, Chapter 2, Section 2.1.2.(2)(b)i. FAA Type L-852D, style 3 low profile, photometrics per FAA spec L-852D requirements, with 6.6 Amp, 2-32 watt maximum quartz lamps. Light fixtures shall be suitable for mounting on a size B, 12-inch diameter Type L-868 transformer base. Non-metallic bodies are not acceptable.

2. ISOLATION TRANSFORMERS - AC 150/5345-47. FAA Spec L-830, 6.6/6.6 amps. 30/45 watts for L-861T (L) taxiway edge lights, 65 watts for L-852D in-pavement taxiway light used as a medium intensity runway edge light.

3. TRANSFORMER BASES FOR AIRFIELD LIGHTING SYSTEMS - AC 150/5345-42. Non-metallic bodies are NOT acceptable.

   For non-load bearing light bases in earth for elevated lights, where shown on the drawings, use FAA Type L-867, Class I, Size B, 12 inches diameter, 24 inches deep, non-load bearing, with two (2) 2-inch holes with rubber grommets (Flex-Connex) spaced at 180 degrees, 3/4-inch drain hole, and internal and external ground lugs. Provide third 2-inch hole with rubber grommets (Flex-Connect) spaced at 90 degrees, for home run routing where three conduits intercept at one base.

   For load bearing light bases in full strength PCC pavement, use FAA Type L-868, Class I, Size B, 12 inches diameter, 24 inches deep, load bearing, load ring, anti-rotation feet, with two (2) 2-inch holes with rubber grommets (Flex-Connex) spaced at 180 degrees, external and internal ground lugs. Provide third 2-inch hole with rubber grommets (Flex-Connect) spaced at 90 degrees, for home run lights routing where three conduits intercept at one base.

4. CONNECTORS - AC 150/5345-26. FAA Spec L-823. Type I for primary connections for isolating transformers; Type II for secondary connections to isolating transformers.

B. All other equipment and materials covered by other referenced specifications shall be subject to acceptance through the manufacturer's certification of compliance with the applicable specifications.

125-2.3 CONCRETE. Concrete for elevated medium intensity lights and elevated high intensity runway edge lights base encasement shall be P-610, 4000 psi. Concrete for in-pavement light foundations shall be P-610, 4500 psi.

125-2.4 TAPE. Rubber and plastic electrical tapes shall be Scotch Electrical Tape Numbers 23 and 88, respectively, as manufactured by the Minnesota Mining and Manufacturing Company, or an approved equal.

125-2.5 ANTI-SEIZE COMPOUND. The anti-seize compound shall be Ideal "Noalox" or approval equal. Use Dow Corning Compound III valve lubricant non-curing sealant to seal between sections of base cans, spacer rings, adapter rings or fixtures.

125-2.6 FILLERS AND ADHESIVES. Joint sealing filler shall be FAA type P-605 and adhesive compounds shall be FAA type P-606. The P-605 and P-606 shall be formulated so they are compatible with the pavement type with which they are to be used.

CONSTRUCTION METHODS

125-3.1 GENERAL. The installation and testing details for the systems shall be as specified in the applicable advisory circulars.

125-3.2 PLACING LIGHTS. The light fixtures shall be installed at the approximate location indicated in the plans. The exact location shall be as directed by the engineer.

125-3.3 LIGHT BASE IN EARTH SHOULDER. The light base shall be installed on undisturbed soil as shown on the details. If the soil is unsuitable, then an adequate depth of soil should be removed and replaced with compacted acceptable material. The cable entrance hubs shall be oriented in the proper direction. Level the base so that the mounting flange surface is approximately 1 inch above the finished grade. With the base properly oriented and held at the proper elevation, place approximately 4 inches of concrete backfill around the outside of the base. The top of the concrete is sloped away from the flange portion of the base so the sloped outer edges of the concrete are at surface grade. Provide concrete maintenance pad as shown on the drawings. Provide sonotube of size required for installation. The cost of the sonotubes shall be considered incidental and NO separate pay item shall be made. The concrete maintenance pad shall be inclusive to the light installation pay item.

125-3.4 RUNWAY AND TAXIWAY EDGE LIGHT FIXTURES – GENERAL. The light fixture will be supplied unassembled and consist of an optical system, lamp, connecting leads, and a mounting assembly. The installer shall assemble, connect to mounting, level, and adjust the light fixture in accordance with the manufacturer's instructions. Care shall be taken that the lamp specified by the manufacturer, for the particular use of the light fixture, is installed. The light fixtures shall be leveled and aligned, where appropriate, within 1 degree. In order to facilitate maintenance of light fixtures, identification numbers shall be installed by the following or similar methods. Each elevated runway or taxiway light shall have an I.D. tag installed. Identification tags shall be inclusive light installation pay item.

A. I.D. tag shall be a brass disk with an aluminum wire to attach it to the light. The ID tag shall face the closest edge of pavement. See plans for details, and coordinate numbering method with the owner.

125-3.5 RELOCATE EXISTING L-861 MEDIUM INTENSITY RUNWAY LIGHT WITH NEW L-867B BASE IN EARTH SHOULDER. The Contractor shall provide all labor and materials to disconnect, remove, store and reinstall the existing L-861 medium intensity runway edge light as shown on the drawings. The Contractor shall provide a new L-867B light base, isolation transformer, cover plate and concrete maintenance pad. The relocated light base and concrete pad shall be located such that the light is in alignment with the existing runway edge lights that remain in place. Each light and location shall be cataloged such that light color and color orientation is reinstalled to match existing conditions. The Contractor shall inventory all existing lights that are shown to be relocated prior to the light removal. A written report dated and signed by the Contractor’s authorized representative shall be furnished to the Engineer and the Owner’s authorized representative indicating the condition of each light fixture shown to be relocated such that any prior defects can be documented. If no report is furnished, prior to fixture removal, it will be the Contractor’s responsibility to replace any fixture or correct light fixture defects at no cost to the Owner. The existing isolation transformer shall be turned over to the Owner for use as a spare. Deliver to the Owner’s on site storage location as directed. Provide a new L-830, 6.6/6.6 amps 30/45 watt isolation transformer and connect complete using L-823 connector kits with watertight molded pull over sleeves (Super Kits). The light base shall be connected to a 3/4” diameter x 10’ long copper-clad steel driven ground rod with a #6 bare solid copper safety equipment ground jumper. In order to minimize splices in cables and where shown on the drawings, the existing 1/C #8 5KV, L-824C cables shall be carefully pulled back through the existing conduit at the existing

L-8667 light base used as handhole, coiled and protected to allow re-installation and connection to the relocated runway light. Tape cable ends to protect against water entry into the cable insulation. The cable removal, re-installation and reconnection shall be inclusive to the pay item for the light relocation. The per each pay item shall be inclusive of all labor and materials for a complete and operational unit. The cable connector kits with watertight molded pull over sleeves shall be inclusive to the "L-125" per each pay item for the light relocation. Conduit shall be inclusive to the L-110 per linear foot pay item for conduit installation.

125-3.6 RELOCATE EXISTING L-861T MEDIUM INTENSITY TAXIWAY LIGHT WITH NEW L-867B BASE IN EARTH SHOULDER. The Contractor shall provide all labor and materials to disconnect, remove, store and reinstall the existing L-861T medium intensity taxiway edge light as shown on the drawings. The Contractor shall provide a new L-867B light base, isolation transformer, cover plate and concrete maintenance pad. The Contractor shall inventory all existing lights that are shown to be relocated prior to the light removal. A written report dated and signed by the Contractor's authorized representative shall be furnished to the Engineer and the Owner's authorized representative indicating the condition of each light fixture shown to be relocated such that any prior defects can be documented. If no report is furnished, prior to fixture removal, it will be the Contractor's responsibility to replace any fixture or correct light fixture defects at no cost to the Owner. The existing isolation transformer shall be turned over to the Owner for use as a spare. Deliver to the Owner's on site storage location as directed. Provide a new L-830, 6.6/6.6 amps 30/45 watt isolation transformer and connect complete using L-823 connector kits with watertight molded pull over sleeves (Super Kits). The light base shall be connected to a 3/4" diameter x 10' long copper-clad steel driven ground rod with a #6 bare solid copper safety equipment ground jumper. The per each pay item shall be inclusive of all labor and materials for a complete and operational unit. The cable, connector kits with watertight molded pull over sleeves shall be inclusive to the "L-108" per linear foot pay item for the cable installation. Conduit shall be inclusive to the L-110 per linear foot pay item for conduit installation.

125-3.7 NEW L-852D IN-PAVEMENT MEDIUM INTENSITY RUNWAY EDGE INSTALLED ON NEW L-868B BASE IN NEW PCC PAVEMENT. The contractor shall furnish and install a new L-852D medium intensity taxiway edge light (used as medium intensity runway edge light) complete with new L-868B base, lamps and isolation transformer where shown on the drawings. Installation of the in-pavement light base shall follow the phasing schedule as indicated in the specifications and drawings. All work shall be coordinated with the project engineer and airport operations. The contractor shall have a representative of the base manufacturer on site for the installation. The travel cost and expenses of the base representative shall be considered incidental to the project and shall be included in the contractors bid. This work shall be performed in new concrete pavement. The contractor shall verify the exact depths of the pavement as the sections shown.

This work shall be performed for new concrete pavement. The Contractor shall verify the exact depths of the pavement sections. A 36 inch diameter hole shall be excavated to the required depth for installation of the of the L-868B light bases as shown on the details on the drawings. The light base shall be installed using a setting jig. Conduit and counterpoise shall be installed with conduit extended into the light base and counterpoise bonded to the light base. The equipment safety ground shall be installed and connected to the light base consisting of ground rod and #6 AWG copper jumper. Concrete backfill shall be installed for the 2" conduit system and light base. The counterpoise shall be installed 4 inches above the 2 inch conduit. The conduit trench above the conduit encasement shall be backfilled to proper compaction requirements. Conduit trench shall be backfilled and compacted by this Contractor. The in-pavement light base shall be installed at the correct elevation, alignment and azimuth for installation of the L-852D

style 3 taxiway light used as a medium intensity runway edge light. The counterpoise and equipment safety ground system shall be installed as shown on the drawings. Provide and install all necessary spacer rings for a complete installation. New bolts and stainless steel two piece lock washers shall be provided. **All bolts and two piece lock washers shall be new**. Bolts, two piece lock washers and bolt torque shall meet the requirements of FAA engineering brief 83 and manufacturer's tolerance. Torque all bolts with a calibrated torque wrench to light manufacturer's tolerance for bolts with anti-seize applied. Impact wrenches and non-torque wrenches are **NOT** allowed. The complete installation shall be level and in compliance with FAA advisory circular tolerance criteria. See installation details on the drawings. All labor and materials shall be inclusive to the specification L-125 per each pay item for the light installation. L-823 connector kits with watertight molded pull over sleeves (Super Kits), connections and conduit shall be inclusive to the L-108 and L-110 per linear foot pay items for cable and conduit installation.

125-3.8 Remove Existing Concrete Light Base and Concrete Pad. The Contractor shall remove the existing old military style concrete encased light base where shown on the drawings (no operational light exists). Holes created by demolition work, shall be backfilled with suitable compacted earth fill material. The per each pay item shall be shall be inclusive of all labor and materials. The light bases and concrete pads shall be removed from Airport property and legally disposed.

125-3.9 Temporary Lights and Cable. Temporary lights and cable shall be required to keep all circuits continuous and operational. The contractor shall be allowed to connect the existing circuits to the new circuits to keep them operational. The cost of the temporary lights and cable shall be considered incidental to this project and NO separate pay item shall be made.

125-3.10 Demolition Work. The contractor shall remove the existing light fixtures, isolation transformers, and bases as indicated on the drawings. Holes created by demolition work, shall be backfilled with suitable earth fill material. Light fixtures, bases, and isolation transformers shall be removed and delivered to the owner's storage facility as directed, along with any other materials that are wanted by the owner. Any materials not wanted by the owner shall be legally disposed of by the contractor at a site off of airport property.

METHOD OF MEASUREMENT

125-4.1 The quantity of new in-pavement runway edge lights, relocated runway edge lights, relocated taxiway edge lights and removal of light base encased in concrete to be paid for under this item shall be the number of each size and type installed as completed units in place, ready for operation, and accepted by the engineer.

BASIS OF PAYMENT

125-5.1 Payment will be made at the contract unit price for each complete new in-pavement runway edge lights, relocated runway edge lights, relocated taxiway edge lights installed in place by the Contractor and accepted by the Engineer. This price shall be full compensation for furnishing all materials and for all preparation, assembly, and installation of these materials, and for all labor, equipment, tools, and incidentals necessary to complete this item.

Payment will be made under:

Item L-125.1	Relocated L-861T Medium Intensity Taxiway Edge Light, New L-867B Base, Isolation Transformer, Cover Plate in Earth Shoulder, Installed Complete—per each.
Item L-125.2	Relocated L-861 Medium Intensity Runway Edge Light, New L-867B Base, Isolation Transformer, Cover Plate in Earth Shoulder, Installed Complete—per each.
Item L-125.3	New L-852D In-pavement Medium Intensity Runway Edge Light Installed on New L-868B Base in New PCC Pavement, Installed Complete—per each.
Item L-125.4	Remove Concrete Encased Light Base—per each.

FEDERAL SPECIFICATIONS REFERENCED IN ITEM L-125

Number	Title
WW-C-581	Conduit, Metal, Rigid; and Coupling, Elbow; and Nipple, Electrical Conduit: Zinc-Coated.

FAA SPECIFICATIONS REFERENCED IN ITEM L-125

Number	Title
AC 150/5340-30	Design and Installation Details for Airport Visual Aids.
AC 150/5340-18	Standards for Airport Sign Systems.
AC 150/5345-47	Isolation Transformers for Airport Lighting Systems.
AC 150/5345-51	Specification for Discharge-Type Flashing Light Equipment
AC 150/5345-46	Runway and Taxiway Light Fixtures.
AC 150/5345-44	Specification for Taxiway and Runway Signs.
AC 150/5345-42	Specification for Airport Light Base and Transformer Housings.
AC 150/5345-26	Specification for L-823 Plug and Receptacle, Connectors, Cable.

END OF ITEM L-125

Item T-901 Seeding

DESCRIPTION

901-1.1 This item shall consist of soil preparation, seeding, fertilizing, ~~liming~~ the areas shown on the plans or as directed by the Engineer in accordance with these specifications.

MATERIALS

901-2.1 Seed. The species and application rates of grass, legume, and cover-crop seed furnished shall be those stipulated herein. Seed shall conform to the requirements of Federal Specification JJJ-S-181, Federal Specification, Seeds, Agricultural.

Seed shall be furnished separately or in mixtures in standard containers labeled in conformance with the Agricultural Marketing Service (AMS) Seed Act and applicable state seed laws with the seed name, lot number, net weight, percentages of purity and of germination and hard seed, and percentage of maximum weed seed content clearly marked for each kind of seed. The Contractor shall furnish the Engineer duplicate signed copies of a statement by the vendor certifying that each lot of seed has been tested by a recognized laboratory for seed testing within six (6) months of date of delivery. This statement shall include: name and address of laboratory, date of test, lot number for each kind of seed, and the results of tests as to name, percentages of purity and of germination, and percentage of weed content for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed. Wet, moldy, or otherwise damaged seed will be rejected.

Seeds shall be applied as follows:

Seed shall be selected on the basis of five general soil areas as follows:

(1) Alluvial soils of Mississippi and Red River bottoms.

(2) Mississippi terraces and loessial hill soils.

(3) Coastal plain soils (rolling, hilly and flatwoods areas in central, northern and eastern part of the State).

(4) Coastal prairie soils.

(5) Ouachita River bottom.

with consideration to the Seeding table below:

Seeding

Type	Seed Mixtures[1]	Pounds/ Acre	Soil Area[2]	Planting Dates
A	Hulled Bermuda	30	1,2,3,4,5	Mar.-Sep.
B	Hulled Bermuda Crimson Clover[3]	20 25	1,2,3,5	Feb.-Mar.
C	Kentucky 31 Fescue Unhulled Bermuda	25 20	1,2,3,4,5	Sep.-Feb.
D	Unhulled Bermuda Crimson Clover[3]	20 40	1,2,3,4,5	Sep.-Feb.
E	Pensacola Bahia[4]	25	1,2,3,5	Mar.-Sep.
F	Ball Clover Unhulled Bermuda	25 20	1,2,3,4,5	Feb.-Mar.
G	Vetch (Common) Unhulled Bermuda	40 20	1,2,3,4,5	Sep.-Oct.
H[5]	Browntop Millet Hulled Bermuda Pensacola Bahia	6 20 15	1,2,3,4,5	Mar.-Jul.
I	Annual Rye	30	1,2,3,4,5	Sep.-Jan.[6]

1 Only Hulled Bermuda or Unhulled Bermuda shall be planted in rest areas.
2 See 717.03.
3 Inoculated prior to planting with proper bacterial culture.
4 Type E shall be used only upon the approval of the Roadside Development Specialist.
5 This planting mixture is to be used in the Kisatchie National Forest areas only.
6 Annual Rye grass shall not be planted before September 20. Annual Rye grass may be planted as late as January 15 if climatic conditions and soil temperatures will allow germination.

The seed establishment period shall begin on the first day of seeding work under the contract and shall end 3 months after the last day of the seeding operation. The contractor shall provide a written calendar time period for the seed establishment period. When there is more than one seed establishment period, the boundaries of each seeded area covered by each period shall be described. The seed establishment period may be modified for inclement weather, shut down periods, or for separate completion dates of areas as approved by the engineer.

901-2.2 Lime. ~~Lime shall be ground limestone containing not less than 85% of total carbonates, and shall be ground to such fineness that 90% will pass through a No. 20 mesh sieve and 50% will pass through a No. 100 mesh sieve. Coarser material will be acceptable, providing the rates of application are increased to provide not less than the minimum quantities and depth specified in the special provisions on the basis of the two sieve requirements above. Dolomitic lime or a high magnesium lime shall contain at least 10% of magnesium oxide. Lime shall be applied at the rate of **2 tons per acre**. All liming materials shall conform to the requirements of ASTM C602.~~

901-2.3 Fertilizer. Fertilizer shall be standard commercial fertilizers supplied separately or in mixtures containing the percentages of total nitrogen, available phosphoric acid, and water-soluble potash. They shall be applied at the rate and to the depth specified, and shall meet the requirements of applicable state laws. They shall be furnished in standard containers with name,

weight, and guaranteed analysis of contents clearly marked thereon. No cyanamide compounds or hydrated lime shall be permitted in mixed fertilizers.

The fertilizers may be supplied in one of the following forms:

a. A dry, free-flowing fertilizer suitable for application by a common fertilizer spreader;

b. A finely-ground fertilizer soluble in water, suitable for application by power sprayers; or

c. A granular or pellet form suitable for application by blower equipment.

Fertilizers shall be **16-16-16** commercial fertilizer and shall be spread at the rate of **500 pounds per acre** or at another approved rate meeting the requirements of the Louisiana Department of Agriculture and Forestry per the LADOT Specifications section 718.

901-2.4 Soil for repairs. The soil for fill and topsoiling of areas to be repaired shall be at least of equal quality to that which exists in areas adjacent to the area to be repaired. The soil shall be relatively free from large stones, roots, stumps, or other materials that will interfere with subsequent sowing of seed, compacting, and establishing turf, and shall be approved by the Engineer before being placed.

CONSTRUCTION METHODS

901-3.1 Advance preparation and cleanup. After grading of areas has been completed and before applying fertilizer and ground limestone, areas to be seeded shall be raked or otherwise cleared of stones larger than 2 inches (50 mm) in any diameter, sticks, stumps, and other debris that might interfere with sowing of seed, growth of grasses, or subsequent maintenance of grass-covered areas. If any damage by erosion or other causes has occurred after the completion of grading and before beginning the application of fertilizer and ground limestone, the Contractor shall repair such damage include filling gullies, smoothing irregularities, and repairing other incidental damage.

An area to be seeded shall be considered a satisfactory seedbed without additional treatment if it has recently been thoroughly loosened and worked to a depth of not less than 5 inches (125 mm) as a result of grading operations and, if immediately prior to seeding, the top 3 inches (75 mm) of soil is loose, friable, reasonably free from large clods, rocks, large roots, or other undesirable matter, and if shaped to the required grade.

When the area to be seeded is sparsely sodded, weedy, barren and unworked, or packed and hard, any grass and weeds shall first be cut or otherwise satisfactorily disposed of, and the soil then scarified or otherwise loosened to a depth not less than 5 inches (125 mm). Clods shall be broken and the top 3 inches (75 mm) of soil shall be worked into a satisfactory seedbed by discing, or by use of cultipackers, rollers, drags, harrows, or other appropriate means.

901-3.2 Dry application method.

a. Liming. ~~Lime shall be applied separately and prior to the application of any fertilizer or seed and only on seedbeds that have previously been prepared as described above. The lime shall then be worked into the top 3 inches (75 mm) of soil after which the seedbed shall again be properly graded and dressed to a smooth finish.~~

b. Fertilizing. Following advance preparations and cleanup fertilizer shall be uniformly spread at the rate that will provide not less than the minimum quantity stated in paragraph 901-2.3.

c. Seeding. Grass seed shall be sown at the rate specified in paragraph 901-2.1 immediately after fertilizing. The fertilizer and seed shall be raked within the depth range stated in the special provisions. Seeds of legumes, either alone or in mixtures, shall be inoculated before mixing or

sowing, in accordance with the instructions of the manufacturer of the inoculant. When seeding is required at other than the seasons shown on the plans or in the special provisions, a cover crop shall be sown by the same methods required for grass and legume seeding.

d. Rolling. After the seed has been properly covered, the seedbed shall be immediately compacted by means of an approved lawn roller, weighing 40 to 65 pounds per foot (60 to 97 kg per meter) of width for clay soil (or any soil having a tendency to pack), and weighing 150 to 200 pounds per foot (223 to 298 kg per meter) of width for sandy or light soils.

901-3.3 Wet application method.

a. General. The Contractor may elect to apply seed and fertilizer (and lime, if required) by spraying them on the previously prepared seedbed in the form of an aqueous mixture and by using the methods and equipment described herein. The rates of application shall be as specified in the special provisions.

b. Spraying equipment. The spraying equipment shall have a container or water tank equipped with a liquid level gauge calibrated to read in increments not larger than 50 gallons (190 liters) over the entire range of the tank capacity, mounted so as to be visible to the nozzle operator. The container or tank shall also be equipped with a mechanical power-driven agitator capable of keeping all the solids in the mixture in complete suspension at all times until used.

The unit shall also be equipped with a pressure pump capable of delivering 100 gallons (380 liters) per minute at a pressure of 100 lb / sq inches (690 kPa). The pump shall be mounted in a line that will recirculate the mixture through the tank whenever it is not being sprayed from the nozzle. All pump passages and pipe lines shall be capable of providing clearance for 5/8 inch (16 mm) solids. The power unit for the pump and agitator shall have controls mounted so as to be accessible to the nozzle operator. There shall be an indicating pressure gauge connected and mounted immediately at the back of the nozzle.

The nozzle pipe shall be mounted on an elevated supporting stand in such a manner that it can be rotated through 360 degrees horizontally and inclined vertically from at least 20 degrees below to at least 60 degrees above the horizontal. There shall be a quick-acting, three-way control valve connecting the recirculating line to the nozzle pipe and mounted so that the nozzle operator can control and regulate the amount of flow of mixture delivered to the nozzle. At least three different types of nozzles shall be supplied so that mixtures may be properly sprayed over distance varying from 20 to 100 feet (6 to 30 m). One shall be a close-range ribbon nozzle, one a medium-range ribbon nozzle, and one a long-range jet nozzle. For case of removal and cleaning, all nozzles shall be connected to the nozzle pipe by means of quick-release couplings.

In order to reach areas inaccessible to the regular equipment, an extension hose at least 50 feet (15 m) in length shall be provided to which the nozzles may be connected.

c. Mixtures. Lime, if required, shall be applied separately, in the quantity specified, prior to the fertilizing and seeding operations. Not more than 220 pounds (100 kg) of lime shall be added to and mixed with each 100 gallons (380 liters) of water. Seed and fertilizer shall be mixed together in the relative proportions specified, but not more than a total of 220 pounds (100 kg) of these combined solids shall be added to and mixed with each 100 gallons (380 liters) of water.

All water used shall be obtained from fresh water sources and shall be free from injurious chemicals and other toxic substances harmful to plant life. Brackish water shall not be used at any time. The Contractor shall identify to the Engineer all sources of water at least two (2) weeks prior to use. The Engineer may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content. The Contractor shall not use any water from any source that is disapproved by the Engineer following such tests.

All mixtures shall be constantly agitated from the time they are mixed until they are finally applied to the seedbed. All such mixtures shall be used within two (2) hours from the time they were mixed or they shall be wasted and disposed of at approved locations.

d. Spraying. Lime, if required, shall be sprayed only upon previously prepared seedbeds. After the applied lime mixture has dried, the lime shall be worked into the top 3 inches (75 mm), after which the seedbed shall again be properly graded and dressed to a smooth finish.

Mixtures of seed and fertilizer shall only be sprayed upon previously prepared seedbeds on which the lime, if required, shall already have been worked in. The mixtures shall be applied by means of a high-pressure spray that shall always be directed upward into the air so that the mixtures will fall to the ground like rain in a uniform spray. Nozzles or sprays shall never be directed toward the ground in such a manner as might produce erosion or runoff.

Particular care shall be exercised to ensure that the application is made uniformly and at the prescribed rate and to guard against misses and overlapped areas. Proper predetermined quantities of the mixture in accordance with specifications shall be used to cover specified sections of known area.

Checks on the rate and uniformity of application may be made by observing the degree of wetting of the ground or by distributing test sheets of paper or pans over the area at intervals and observing the quantity of material deposited thereon.

On surfaces that are to be mulched as indicated by the plans or designated by the Engineer, seed and fertilizer applied by the spray method need not be raked into the soil or rolled. However, on surfaces on which mulch is not to be used, the raking and rolling operations will be required after the soil has dried.

901-3.4 Maintenance of seeded areas. The Contractor shall protect seeded areas against traffic or other use by warning signs or barricades, as approved by the Engineer. Surfaces gullied or otherwise damaged following seeding shall be repaired by regrading and reseeding as directed. The Contractor shall mow, water as directed, and otherwise maintain seeded areas in a satisfactory condition until final inspection and acceptance of the work.

When either the dry or wet application method outlined above is used for work done out of season, it will be required that the Contractor establish a good stand of grass of uniform color and density to the satisfaction of the Engineer. A grass stand shall be considered adequate when bare spots are one square foot (0.01 sq m) or less, randomly dispersed, and do not exceed 3% of the area seeded.

METHOD OF MEASUREMENT

901-4.1 The quantity of seeding to be paid for shall be the number of acres measured on the ground surface, completed and accepted.

BASIS OF PAYMENT

901-5.1 Payment shall be made at the contract unit price per acre or fraction thereof, which price and payment shall be full compensation for furnishing and placing all material and for all labor, equipment, tools, and incidentals necessary to complete the work prescribed in this item.

Payment will be made under:

Item 901 Seeding (Hydroseed) - per acre

MATERIAL REQUIREMENTS

ASTM C602	Standard Specification for Agricultural Liming Materials
ASTM D977	Standard Specification for Emulsified Asphalt
FED SPEC	JJJ-S-181, Federal Specification, Seeds, Agricultural

END OF ITEM T-901

Item T-905 Topsoiling

DESCRIPTION

905-1.1 This item shall consist of preparing the ground surface for topsoil application, removing topsoil from designated stockpiles or areas to be stripped on the site or from approved sources off the site, and placing and spreading the topsoil on prepared areas in accordance with this specification at the locations shown on the plans or as directed by the Engineer.

MATERIALS

905-2.1 Topsoil. Topsoil shall be the surface layer of soil with no admixture of refuse or any material toxic to plant growth, and it shall be reasonably free from subsoil and stumps, roots, brush, stones (2 inches (50 mm) or more in diameter), and clay lumps or similar objects. Brush and other vegetation that will not be incorporated with the soil during handling operations shall be cut and removed. Ordinary sod and herbaceous growth such as grass and weeds are not to be removed, but shall be thoroughly broken up and intermixed with the soil during handling operations. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means, shall be removed. The topsoil or soil mixture, unless otherwise specified or approved, shall have a pH range of approximately 5.5 pH to 7.6 pH, when tested in accordance with the methods of testing of the Association of Official Agricultural Chemists in effect on the date of invitation of bids. The organic content shall be not less than 3% nor more than 20% as determined by the wet-combustion method (chromic acid reduction). There shall be not less than 20% nor more than 80% of the material passing the 200 mesh (0.075 mm) sieve as determined by the wash test in accordance with ASTM C117.

Natural topsoil may be amended by the Contractor with approved materials and methods to meet the above specifications.

905-2.2 Inspection and tests. Within 10 days following acceptance of the bid, the Engineer shall be notified of the source of topsoil to be furnished by the Contractor. The topsoil shall be inspected to determine if the selected soil meets the requirements specified and to determine the depth to which stripping will be permitted. At this time, the Contractor may be required to take representative soil samples from several locations within the area under consideration and to the proposed stripping depths, for testing purposes as specified in paragraph 905-2.1.

CONSTRUCTION METHODS

905-3.1 General. Areas to be topsoiled shall be shown on the plans. If topsoil is available on the site, the location of the stockpiles or areas to be stripped of topsoil and the stripping depths shall be shown on the plans.

Suitable equipment necessary for proper preparation and treatment of the ground surface, stripping of topsoil, and for the handling and placing of all required materials shall be on hand, in good condition, and approved by the Engineer before the various operations are started.

905-3.2 Preparing the ground surface. Immediately prior to dumping and spreading the topsoil on any area, the surface shall be loosened by discs or spike-tooth harrows, or by other means

approved by the Engineer, to a minimum depth of 2 inches (50 mm) to facilitate bonding of the topsoil to the covered subgrade soil. The surface of the area to be topsoiled shall be cleared of all stones larger than 2 inches (50 mm) in any diameter and all litter or other material which may be detrimental to proper bonding, the rise of capillary moisture, or the proper growth of the desired planting. Limited areas, as shown on the plans, which are too compact to respond to these operations shall receive special scarification.

Grades on the area to be topsoiled, which have been established by others as shown on the plans, shall be maintained in a true and even condition. Where grades have not been established, the areas shall be smooth-graded and the surface left at the prescribed grades in an even and compacted condition to prevent the formation of low places or pockets where water will stand.

905-3.3 Obtaining topsoil. Prior to the stripping of topsoil from designated areas, any vegetation, briars, stumps and large roots, rubbish or stones found on such areas, which may interfere with subsequent operations, shall be removed using methods approved by the Engineer. Heavy sod or other cover, which cannot be incorporated into the topsoil by discing or other means shall be removed.

When suitable topsoil is available on the site, the Contractor shall remove this material from the designated areas and to the depth as directed by the Engineer. The topsoil shall be spread on areas already tilled and smooth-graded, or stockpiled in areas approved by the Engineer. Any topsoil stockpiled by the Contractor shall be rehandled and placed without additional compensation. Any topsoil that has been stockpiled on the site by others, and is required for topsoiling purposes, shall be removed and placed by the Contractor. The sites of all stockpiles and areas adjacent thereto which have been disturbed by the Contractor shall be graded if required and put into a condition acceptable for seeding.

When suitable topsoil is secured off the airport site, the Contractor shall locate and obtain the supply, subject to the approval of the Engineer. The Contractor shall notify the Engineer sufficiently in advance of operations in order that necessary measurements and tests can be made. The Contractor shall remove the topsoil from approved areas and to the depth as directed. The topsoil shall be hauled to the site of the work and placed for spreading, or spread as required. Any topsoil hauled to the site of the work and stockpiled shall be rehandled and placed without additional compensation.

905-3.4 Placing topsoil. The topsoil shall be evenly spread on the prepared areas to a uniform depth of inches (50 mm) after compaction, unless otherwise shown on the plans or stated in the special provisions. Spreading shall not be done when the ground or topsoil is frozen, excessively wet, or otherwise in a condition detrimental to the work. Spreading shall be carried on so that turfing operations can proceed with a minimum of soil preparation or tilling.

After spreading, any large, stiff clods and hard lumps shall be broken with a pulverizer or by other effective means, and all stones or rocks (2 inches (50 mm) or more in diameter), roots, litter, or any foreign matter shall be raked up and disposed of by the Contractor. After spreading is completed, the topsoil shall be satisfactorily compacted by rolling with a cultipacker or by other means approved by the Engineer. The compacted topsoil surface shall conform to the required lines, grades, and cross-sections. Any topsoil or other dirt falling upon pavements as a result of hauling or handling of topsoil shall be promptly removed.

METHOD OF MEASUREMENT

905-4.1 Topsoil obtained on the site shall be considered incidental to the project for topsoil measured in its original position and stripped or excavated. Topsoil stockpiled by others and removed for topsoiling by the Contractor shall be considered incidental to the project for topsoil

measured in the stockpile. ~~Topsoil shall be measured by volume in cubic yards computed by the method of end areas.~~ This item is included for reference only.

905-4.2 Topsoil obtained off the site shall be considered incidental to the project for topsoil measured in its original position and stripped or excavated. ~~Topsoil shall be measured by volume in cubic yards computed by the method of end areas.~~ This item is included for reference only.

BASIS OF PAYMENT

905-5.1 Payment will be made as incidental to the project for topsoiling (obtained on the site). This price shall be full compensation for furnishing all materials and for all preparation, placing, and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item. This item is included for reference only.

905-5.2 Payment will be made as incidental to the project for topsoiling (obtained off the site). This price shall be full compensation for furnishing all materials and for all preparation, placing, and spreading of the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item. This item is included for reference only.

TESTING MATERIALS

ASTM C117	Materials Finer than 75 μm (No. 200) Sieve in Mineral Aggregates by Washing

END OF ITEM T-905

Item T-908 Mulching

DESCRIPTION

908-1.1 This item shall consist of furnishing, hauling, placing, and securing mulch on surfaces indicated on the plans or designated by the Engineer.

MATERIALS

908-2.1 Mulch material. Acceptable mulch shall be the materials listed below or any approved locally available material that is similar to those specified. Mulch shall be free from noxious weeds, mold, and other deleterious materials. Mulch materials, which contain matured seed of species that would volunteer and be detrimental to the proposed overseeding, or to surrounding farm land, will not be acceptable. Straw or other mulch material which is fresh and/or excessively brittle, or which is in such an advanced stage of decomposition as to smother or retard the planted grass, will not be acceptable.

~~**a. Hay**. Hay shall be native hay in an air-dry condition and of proper consistency for placing with commercial mulch blowing equipment. Hay shall be sterile, containing no fertile seed.~~

~~**b. Straw.** Straw shall be the stalks from threshed plant residue of oats, wheat, barley, rye, or rice from which grain has been removed. Furnish in air-dry condition and of proper consistency for placing with commercial mulch blowing equipment. Straw shall contain no fertile seed.~~

~~**c. Hay mulch containing seed**. Hay mulch shall be mature hay containing viable seed of native grasses or other desirable species stated in the special provisions or as approved by the Engineer. The hay shall be cut and handled so as to preserve the maximum quantity of viable seed. Hay mulch that cannot be hauled and spread immediately after cutting shall be placed in weather-resistant stacks or baled and stored in a dry location until used.~~

d. Manufactured mulch. Cellulose-fiber or wood-pulp mulch shall be products commercially available for use in spray applications.

e. Asphalt binder. Asphalt binder material shall conform to the requirements of ASTM D977, Type SS-1 or RS-1.

908-2.2 Inspection. The Engineer shall be notified of sources and quantities of mulch materials available and the Contractor shall furnish him with representative samples of the materials to be used 30 days before delivery to the project. These samples may be used as standards with the approval of the Engineer and any materials brought on the site that do not meet these standards shall be rejected.

CONSTRUCTION METHODS

908-3.1 Mulching. Before spreading mulch, all large clods, stumps, stones, brush, roots, and other foreign material shall be removed from the area to be mulched. Mulch shall be applied immediately after seeding. The spreading of the mulch may be by hand methods, blower, or other mechanical methods, provided a uniform covering is obtained.

Mulch material shall be furnished, hauled, and evenly applied on the area shown on the plans or designated by the Engineer. Straw or hay shall be spread over the surface to a uniform thickness at the rate of 2 to 3 tons per acre (1800 - 2700 kg per acre) to provide a loose depth of not less than 1-1/2 inches (38 cm) nor more than 3 inches (75 mm). Other organic material shall be spread at the rate directed by the Engineer. Mulch may be blown on the slopes and the use of cutters in the equipment for this purpose will be permitted to the extent that at least 95% of the mulch in place on the slope shall be 6 inches (150 mm) or more in length. When mulches applied by the blowing method are cut, the loose depth in place shall be not less than one inch (25 mm) nor more than 2 inches (50 mm).

908-3.2 Securing mulch. The mulch shall be held in place by light discing, a very thin covering of topsoil, pins, stakes, wire mesh, asphalt binder, or other adhesive material approved by the Engineer. Where mulches have been secured by either of the asphalt binder methods, it will not be permissible to walk on the slopes after the binder has been applied. When an application of asphalt binder material is used to secure the mulch, the Contractor must take every precaution to guard against damaging or disfiguring structures or property on or adjacent to the areas worked and will be held responsible for any such damage resulting from the operation.

If the “peg and string” method is used, the mulch shall be secured by the use of stakes or wire pins driven into the ground on 5-foot (1.5-m) centers or less. Binder twine shall be strung between adjacent stakes in straight lines and crisscrossed diagonally over the mulch, after which the stakes shall be firmly driven nearly flush to the ground to draw the twine down tight onto the mulch.

908-3.3 Care and repair.

a. The Contractor shall care for the mulched areas until final acceptance of the project. Care shall consist of providing protection against traffic or other use by placing warning signs, as approved by the Engineer, and erecting any barricades that may be shown on the plans before or immediately after mulching has been completed on the designated areas.

b. The Contractor shall be required to repair or replace any mulch that is defective or becomes damaged until the project is finally accepted. When, in the judgment of the Engineer, such defects or damages are the result of poor workmanship or failure to meet the requirements of the specifications, the cost of the necessary repairs or replacement shall be borne by the Contractor.

c. If the “asphalt spray” method is used, all mulched surfaces shall be sprayed with asphalt binder material so that the surface has a uniform appearance. The binder shall be uniformly applied to the mulch at the rate of approximately 8 gallons (32 liters) per 1,000 square feet (100 sq m), or as directed by the Engineer, with a minimum of 6 gallons (24 liters) and a maximum of 10 gallons (40 liters) per 1,000 square feet (100 sq m) depending on the type of mulch and the effectiveness of the binder securing it. Bituminous binder material may be sprayed on the mulched slope areas from either the top or the bottom of the slope. An approved spray nozzle shall be used. The nozzle shall be operated at a distance of not less than 4 feet (1.2 m) from the surface of the mulch and uniform distribution of the bituminous material shall be required. A pump or an air compressor of adequate capacity shall be used to ensure uniform distribution of the bituminous material.

d. If the “asphalt mix” method is used, the mulch shall be applied by blowing, and the asphalt binder material shall be sprayed into the mulch as it leaves the blower. The binder shall be uniformly applied to the mulch at the rate of approximately 8 gallons (32 liters) per 1,000 square feet (100 sq m) or as directed by the Engineer, with a minimum of 6 gallons (24 liters) and a maximum of 10 gallons (40 liters) per 1,000 square feet (100 sq m) depending on the type of mulch and the effectiveness of the binder securing it.

METHOD OF MEASUREMENT

908-4.1 Mulching shall be considered as incidental to the project on the basis of the actual surface area acceptably mulched. This item is included for reference only.

BASIS OF PAYMENT

908-5.1 Payment will be considered incidental to the project for mulching. The price shall be full compensation for furnishing all materials and for placing and anchoring the materials, and for all labor, equipment, tools, and incidentals necessary to complete the item. This item is included for reference only.

MATERIAL REQUIREMENTS

ASTM D977	Standard Specification for Emulsified Asphalt

END OF ITEM T-908

APPENDIX "A"

Geotechnical Engineering Report

Hammond North Shore Regional Airport - Runway Rehabilitation
Hammond, Louisiana
March 28, 2013
Terracon Project No. EH125076

Prepared for:
The LPA Group
Baton Rouge, Louisiana

Prepared by:
Terracon Consultants, Inc.
Baton Rouge, Louisiana

Offices Nationwide
Employee-Owned
Established in 1965
terracon.com

Terracon

Geotechnical ■ Environmental ■ Construction Materials ■ Facilities

March 28, 2013

The LPA Group
5757 Corporate Blvd.
Suite 200
Baton Rouge, Louisiana 70808

Attn: Natalie Graham
The LPA/Group/ Michael Baker Corporation

Re: Geotechnical Engineering Report
Hammond North Shore Regional Airport
Runway Rehabilitation
Hammond, Louisiana
Terracon Project Number: EH125076

Dear Ms. Graham:

We have completed the geotechnical engineering services for the above-referenced project. This work was performed in accordance with our proposal number PEH125076 dated December 4, 2012.

This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of runway pavements for the proposed project.

We should collaborate with you as you finalize the designs. We should also review the pertinent aspects of the plans and specifications and provide construction materials and engineering testing services when the project moves into construction.

Sincerely,
Terracon Consultants, Inc.

Rebecca S. Cavataio, P.E.
Project Engineer

Stephen E. Greaber, P.E.
Principal

Enclosure

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Exhibit A-3	Field Exploration and Methods
Borings B-1 to B-15	Boring Logs

APPENDIX B – LABORATORY TESTING

Exhibit B-1	Laboratory Testing Description
Exhibit B-2	CBR Results
Exhibit B-3	Moisture-Density Relationship

APPENDIX C – SUPPORTING DOCUMENTS

Exhibit C-1	Explanation of Soil Boring Information
Exhibit C-2	Unified Soil Classification System

GEOTECHNICAL ENGINEERING REPORT
Hammond North Shore Regional Airport - Runway Rehabilitation
Hammond, Louisiana
Terracon Project Number EH125076
March 28, 2013

1.0 INTRODUCTION

Michael Baker Corporation (Michael Baker) is planning the rehabilitation of runways at the Hammond North Shore Regional Airport in Hammond, Louisiana. Fifteen (15) borings, designated B-1 through B-15, were performed to an approximate depth of 10 feet below the existing pavement surface within the existing runway alignment. Logs of the borings along with a site location map, and soil boring location plan are included in Appendix A of this report.

We performed this exploration to provide information and geotechnical engineering recommendations relative to:

- soil conditions
- groundwater conditions
- site preparation
- pavement design and construction

2.0 PROJECT INFORMATION

The following paragraphs present the project information that was available at the time this report was prepared. Should this information be incorrect, or changed, please contact this office so that we could reevaluate our analysis and recommendations.

2.1 Information Sources

Project information was provided by Michael Baker representative, Brad Homan, who provided a runway layout and general information regarding the plan rehabilitation effort. Additional information regarding the site was obtained from on-line FAA resources.

2.2 Project Description

Item	Description
Site layout	See Exhibit A-2, Boring Location Plan
Pavement construction	New concrete pavement for airport runways.
Grading	Minimal, required to match existing grade.

2.3 Site Location and Description

Item	Description
Location	Hammond North Shore Regional Airport, Hammond Louisiana Approximate Latitude: 30.52516 degrees Longitude 90.42150 degrees
Existing improvements	Existing airport and Runways 18/36 and 13/31.
Current Runway Surfaces	Concrete with adjacent grass shoulders. Runway 13/31 has an asphalt paved section on its northwest extent.
Existing topography	Relatively Flat.

3.0 SUBSURFACE CONDITIONS

The soil borings encountered conditions that are typical for the geologic setting, based upon our experience in the vicinity of this site. The following paragraphs summarize our findings and opinions relative to the subsurface conditions.

3.1 Geology

The property is located within an area of Prairie Terrace deposits. These Pleistocene Age deposits typically consist of medium stiff to very stiff tan and light gray silty clays and clays with silt and sand layering. The soils within the Prairie Terrace typically provide good foundation support for relatively light to moderate structures, are overconsolidated, and normally only marginally compressible. In some areas, the potential for expansive properties exists, but these conditions are not typical of the Prairie Terrace deposits.

3.2 Soil Conditions

Beneath approximately 6 inches of concrete and 0 to 2 feet of sand fill material, the soil borings typically encountered medium stiff to stiff silty clays and clays with sand (Unified Soil Classification System symbol, CL-ML and CL) from the existing ground surface through the boring termination depth of 10 feet. Exceptions included boring B-1, which encountered a stiff fat clay (CH) below the pavement to a depth of approximately 6 feet. Borings B-9 and B-10 identified a low plasticity silt (ML) to a depth of approximately 6 and 10 feet, respectively.

A bulk sample of soil representative of the lean clay (CL) with sand noted below the fill sand at a majority of the boring locations was collected from along the edges of the pavement. This bulk sample was tested to provide an estimate of the California Bearing Ratio (CBR) for the existing lean clay subgrade at various degrees of compaction or in-situ unit weight. The CBR compaction percentages were set based upon a Modified Proctor (ASTM D1557) of the material. A chart of dry density (pcf) vs. CBR is included on the test report in Appendix B.

Conditions encountered at each boring location are indicated on the individual boring logs. Stratification boundaries on the boring logs represent the approximate location of changes in soil types; in situ, the transition between materials may be gradual. Details for each of the borings can be found on the boring logs in Appendix A of this report. Additional laboratory test results, if any, are presented in Appendix B.

3.3 Groundwater Conditions

The boreholes were observed while drilling and after completion of drilling for the presence and level of groundwater. At boring B-6, groundwater was encountered at a depth of about 8 feet below grade. The drilling operations were suspended for about 15 minutes to observe the change in water level over that time period. The water level rose to a depth of about 5 feet.

Groundwater was not observed in the remaining borings while drilling or for the short duration that the borings were allowed to remain open. However, this does not necessarily mean these borings terminated above groundwater levels. Due to the relatively low permeability of the soils encountered in the borings, a relatively long period of time may be necessary for the groundwater level to develop and stabilize in a borehole in these materials. Long term observations in piezometers or observation wells sealed from the influence of surface water are often required to define the field or in-situ groundwater level in materials of this type.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff, and other factors that are not evident at the time of drilling. Therefore, the groundwater levels that may prevail during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for this project.

4.0 RECOMMENDATIONS FOR PAVEMENT REHABILITATION

The information provided by the program managers for this project has been combined with our findings from the site investigation to develop guideline recommendations for the new pavement design and construction. Terracon referred to the design guidelines published by FAA in *Airport Pavements Design & Evaluation* (FAA Circular AC-150/5320-6E), dated 6/17/2010 to aid in development of our pavement rehabilitation design guidelines.

Information provided from available on-line FAA resources, the Hammond North Shore Airport is currently servicing single wheel aircraft with gross take-off weight of less than 27,000 lbs or dual wheel aircraft with gross take-off weight of 41,000 lbs. The airport has an average of 210 takeoff/landings per week and the runway was characterized as being in good condition. It is understood an increase in aircraft weight or change in aircraft type is not planned in the near

future. It is understood that a portion of Runway 13/31 starting at just south of the junction with Runway 18/36 and extending to the asphalt section at the north end will be replaced. Similarly, a portion of Runway 18/36 will be replaced.

In 2012, an engineer from Terracon visited the project site with Michael Baker representatives to observe the general conditions of the existing runway and to develop a work scope for this evaluation. According to the airport manager, it is understood that the existing concrete pavement is on the order of 50+ years old. Minimal cracking and distress of the concrete pavement was noted; however, some indications of potential formation of voids below the pavement and observations of water pumping through the joints (from foot pressure only) was noted. Some corner cracking was noted at only a few panels, and the overall condition of the pavement was characterized as fair to good.

It is understood that replacement of the runway sections must be accomplished while maintaining at least one runway operational, with perhaps only minimal closure periods (e.g., night or weekend closures). Based upon this requirement, the design of the pavement replacement within the junction of the two runways including the safety areas will require a plan that allows for relatively rapid construction, from demolition of the existing pavements, degrading the site to accommodate the new design pavement system section, installation of a compacted base, and placing/finishing/curing the concrete.

In order to accelerate construction time, it would be advantageous to reduce or eliminate reprocessing and compaction of the existing subgrade soils, especially within the junction area. The results of the subsurface exploration indicated the presence of a fill sand layer below the approximate 6-inch pavement overlying relatively competent stiff lean clays and silty clays with sand (CL) at a majority of the boring locations. CBR testing of the underlying silty clay with sand (CL) revealed a CBR of 26 for material compacted to a minimum 95% of Modified Proctor at (± 2% of optimum moisture) and using a 30-lb surcharge weight. The fill sand, properly compacted, would be expected to provide a CBR of not greater than 10.

If the construction schedule allows for the pavement subgrade consisting of lean clay with sand to be scarified and recompacted to 95% compaction, a design CBR value of 20 (Resilient modulus of approximately 30,000 psi, k=240 psi) is reasonable for the pavement section design calculations.

Based upon a review of the in-situ dry density data within the upper approximate two feet of the site, a subgrade CBR of 7 (Resilient modulus of 10,500 psi, k=100 psi) is recommended for the pavement design, if the base and new pavement will be placed over the existing subgrade materials (either existing sand fill densified with a plate compactor or stable existing lean clay without processing and compaction effort).
Estimates of Minimum Pavement Thickness

Recommendations for the minimum pavement section thickness were performed using the computer program FAARFIELD, developed by FAA for runway pavement section design. The FAARFIELD Software is applicable for use with aircraft equipment with gross weights greater than 30,000 lbs. The current design aircraft and take-off/landing frequency provided in Section 4.0 was used for the analysis. A minimum flexural strength of 650 psi for the paving concrete and installation of compacted aggregate base of either limestone (P-209) or crushed recycled concrete (P-219) was considered in the design analysis.

Pavement sections were designed considering two options: 1) recompaction of the existing subgrade to 95% Modified Proctor and 2) placement of the pavement section over existing densified sand fill or in-situ stable lean clay subgrade without processing or compaction. The results of the analysis are provided below:

Minimum Pavement Section Recommendations

Processed and Compacted Existing Lean Clay Subgrade Subgrade CBR = 20 (k = 240 psi)	
Pavement Layer	**Layer Thickness (in)**
P-501 Portland Cement Concrete[1,2]	8.0
P-209/P-219 Aggregate Base[3]	8.0
In-situ Densified Sand Fill or Stable Lean Clay Subgrade Without Compaction Subgrade CBR=7 (k = 100 psi)	
Pavement Layer	**Layer Thickness (in)**
P-501 Portland Cement Concrete[1,2]	10.0
P-209/P-219 Aggregate Base[3]	8.0

1. Design 650 psi flexural strength at 28 days, and 4 to 7 percent air entrained.
2. Standard design and construction details for rigid jointed pavements are contained in FAA Circular AC150/5320-6E. It is recommended that the design engineer refer to this document for more detailed information. A critical aspect of concrete pavements for facilities of this nature is joint spacing, load transfer and related details. FAA Circular AC150/5320-6E addresses these important details.
3. Aggregate base course should be as specified in FAA Specification compacted to minimum 95% of its max dry density as determined by ASTM D-1557, Modified Proctor Test with stability present. The base course should be placed over a non-woven geotextile fabric (TerraTex N-06, or equivalent).

4.1.1 Pavement Drainage

Pavements should be provided with adequate slopes to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration.

4.1.2 Pavement Maintenance

The pavement sections provided in this report represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. We recommend that preventive maintenance should be planned and provided for through an on-going pavement management program. Preventive maintenance activities are intended to slow the rate of pavement deterioration, and to preserve the pavement investment. Preventive maintenance consists of crack and joint sealing, and patching as necessary. Preventive maintenance is usually the first priority when implementing a planned pavement maintenance program and provides the highest return on investment for pavements. Prior to implementing any maintenance, additional engineering observation is recommended to determine the type and extent of preventive maintenance. Even with periodic maintenance, some movements and related cracking may still occur and repairs may be required.

4.2 Earthwork Considerations

A critical aspect of the successful construction project is the earthwork. Good earthwork is also critical to the overall performance of the pavement system. This section provides recommendations for site preparation, material types, compaction requirements, grading and drainage, and construction considerations.

4.2.1 Site Preparation

After the concrete pavements have been demolished and the site degraded to accommodate the planned new pavement section the area to receive paving should be proof-rolled or otherwise evaluated to observe for the presence of weak, yielding or pumping foundation soils. A heavily loaded rubber-tired vehicle or construction equipment is ideal for the proof-rolling operation. The vehicle should weigh between 15 and 20 Tons, total vehicle weight. The proof-rolling operation should not be performed during or immediately following a precipitation event.

It is not uncommon to encounter wet and unstable soils below paved areas. If soft areas are encountered, they should be mitigated. If the areas are isolated, mitigation by limited overexcavation to more competent soils and replacement with compacted engineering fill or additional aggregate base thickness should suffice.

4.2.2 Excavations

It is anticipated that excavations will be limited to degrading the area below the pavements to accommodate the new pavement section thickness. Shallow excavations into the firm to stiff lean clay (CL) with sand should remain stable for normal construction periods. However, areas with sand fill may experience sloughing. Some groundwater/surface water seepage is anticipated but should be controllable with standard sump pump techniques.

At a minimum, all temporary excavations should be sloped or braced as required by Occupational Health and Safety Administration (OSHA) regulations to provide stability and safe

working conditions. Temporary excavations greater than 5 feet in depth may be required during grading operations. The grading contractor, by his contract, is responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of the excavations as required, to maintain stability of both the excavation sides and bottom. All excavations should comply with applicable local, state and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards.

4.2.3 Material Types

Engineering fill for embankment/subgrade construction (P-152) should meet the following material property requirements:

Fill Type [1]	USCS Classification	Acceptable Location for Placement
Lean Clay, Clayey Sand	CL, SC (LL<45, 8<PI<25)	All locations and elevations
On-site soils	CL, CL-ML	The on-site soils as represented by the tests on bulk samples performed for this report, classified as CL or CL-ML, are acceptable for use as engineering fill.

1. Controlled, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type from off-site sources should be submitted to the geotechnical engineer for evaluation. Confirmatory CBR testing should be performed to verify compliance with the design parameters used.

4.2.4 Compaction Requirements

Item	Description
Fill Lift Thickness	9 inches or less in loose thickness
Compaction Requirements [1]	95% of the modified Proctor maximum dry density (ASTM D 1557)
Moisture Content of Cohesive Soil	Within the range of 2% below to 2% above the optimum moisture content value as determined by the modified Proctor test at the time of placement and compaction.

1. We recommend that engineering fill be tested for moisture content and compaction during placement. Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested as required until the specified moisture and compaction requirements are achieved.
2. Specifically, moisture levels should be maintained low enough to allow for satisfactory compaction to be achieved without the cohesionless fill material pumping when proof-rolled.

4.2.5 Construction Considerations

Although a majority of the exposed subgrade is anticipated to be relatively stable below the pavements upon initial exposure, some soft areas can be anticipated and unstable subgrade

conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. The use of light or low ground pressure construction equipment would aid in reducing subgrade disturbance. Should unstable subgrade conditions develop, stabilization measures will need to be employed.

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become frozen, desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to base course or pavement construction.

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation; proof-rolling; placement and compaction of controlled compacted fills/bases, and just prior to construction of pavements.

5.0 GENERAL COMMENTS

Terracon should be retained to review the final design plans and specifications so comments can be made regarding interpretation and implementation of our geotechnical recommendations in the design and specifications. Terracon should also be retained to provide observation and testing services during grading, excavation, foundation construction and other earth-related construction phases of the project.

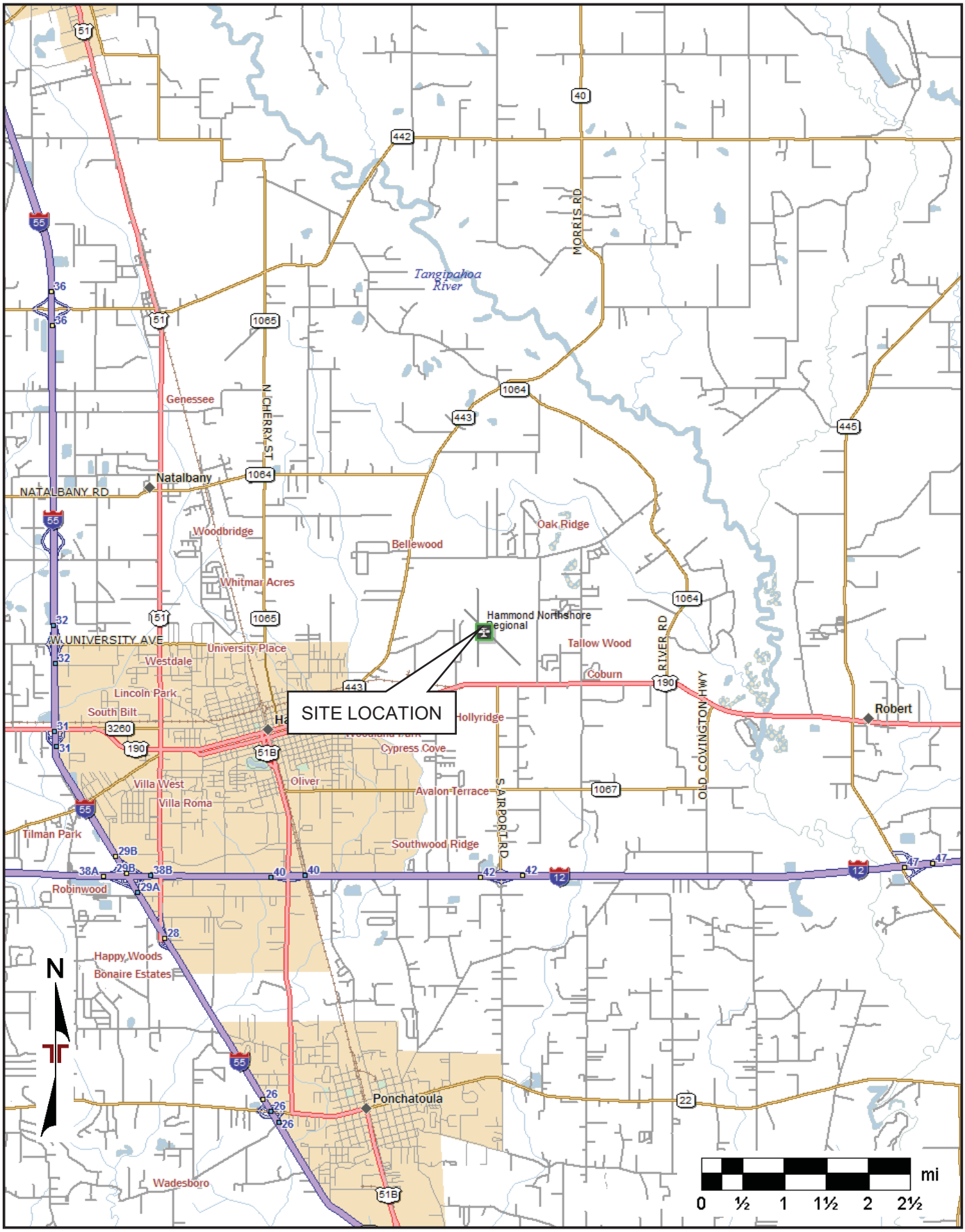
The analysis and recommendations presented in this report are based upon the data obtained from the borings performed at the indicated locations and from other information presented earlier in the report. This report does not reflect variations that may occur between borings, across the site, or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. If variations appear, we should be immediately notified so that further evaluation and supplemental recommendations can be provided.

The scope of services for this project does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

This report has been prepared for the exclusive use of our client for specific application to the project discussed and in accordance with generally accepted geotechnical engineering practices. No warranties, either express or implied, are intended or made. Site safety,

excavation support, and dewatering requirements are the responsibility of others. In the event that changes in the nature, design, or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the changes and either verifies or modifies the conclusions of this report in writing.

APPENDIX A
FIELD EXPLORATION AND METHODS



Project Manager: LER	Project No. EH125076	Terracon	SITE LOCATION PLAN
Drawn by: MIS	Scale: See Above	2822 O'Neal Lane Building B Baton Rouge, Louisiana 70816	HAMMOND NORTHSHORE REGIONAL AIRPORT
Checked by: LER	File Name: A-1	PH. (225) 344-6052 FAX. (225) 344-6346	HAMMOND, LOUISIANA
Approved by: LER	Date: 2/6/2013		EXHIBIT A-1

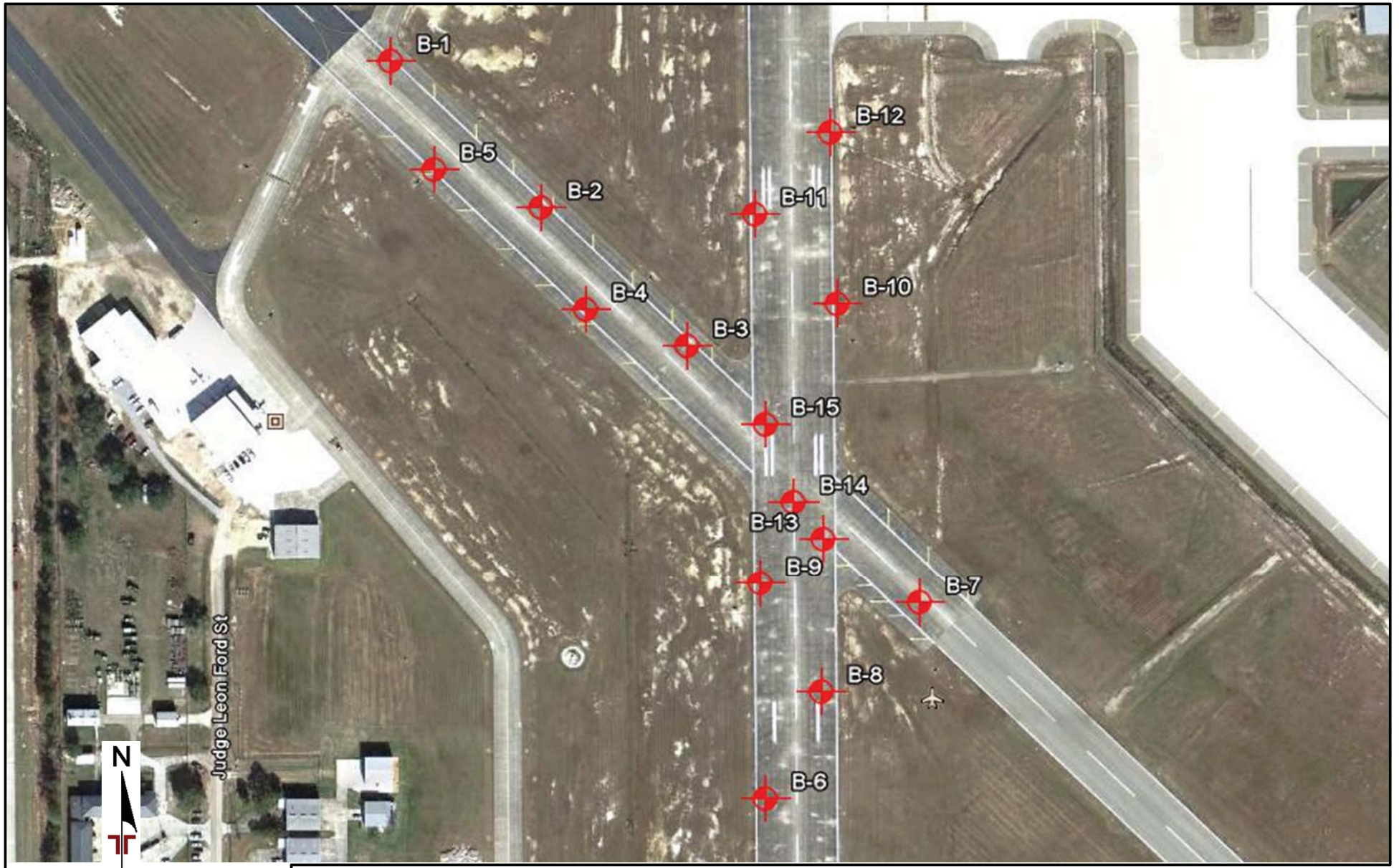


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

Project Manager:	LER
Drawn by:	MIS
Checked by:	LER
Approved by:	LER

Project No.	EH125076
Scale:	See inset
File Name:	Exhibit A-2
Date:	3/5/2013

Terracon
2822 O'Neal Lane, Building B Baton Rouge, LA 70816
PH. (255) 344-6052 FAX. (225) 344-6346

BORING LOCATION PLAN

HAMMOND NORTHSHORE REGIONAL AIRPORT

600 JUDGE LEON FORD DRIVE
HAMMOND, LOUISIANA

EXHIBIT

A-2

FIELD EXPLORATION AND METHODS

The field exploration was conducted utilizing standard procedures developed by Terracon Consultants, Inc. (Terracon) for studies of this nature. The information collected during the field exploration was documented by a Terracon Engineering Technician. The following paragraphs describe the field methods utilized. One or more soil borings were performed for this study. This Appendix includes detailed soil boring log(s) which present the data collected and provide a description of soil and groundwater conditions encountered. A legend that describes the terms and symbols used in the boring log(s) is included in **APPENDIX C**.

Soil Exploration and Sampling

The soil boring(s) were advanced using our track-mounted drilling rig and equipment at the approximate location(s) shown on Exhibit A-2, Boring Location Plan. The location(s) were measured from known points.

Soil Boring: The boring(s) were advanced by rotating a four-inch diameter, continuous-flight earth auger with the drilling rig, removing the auger from each boring, and cleaning the cuttings from the auger before sampling or reinserting the auger back into the bore hole. This technique allowed for the observation of soil cuttings and description of soil conditions encountered. This dry auger technique allows detection of free groundwater within the boring.

Below the groundwater table, the deep borings were advanced using the rotary wash boring technique by using a four-inch diameter drill bit, and circulating cuttings to the ground surface using drilling fluids injected through the drill stem. The drilling fluids stabilized the bore hole during sampling procedures and masked any further detection of groundwater.

Soil Sampling: The soil sampling program included the collection of undisturbed and representative soil samples. Relatively undisturbed samples, usually collected in cohesive soils, were obtained by pushing a three-inch diameter, Shelby tube sampler a distance of two feet into the soil in general accordance with ASTM D1587. Depths at which these undisturbed samples were obtained are indicated by a shaded portion in the "Samples" column of the attached boring log(s).

After the Shelby tube was removed from each boring, the sample was visually classified. Relative strength estimates of the sample were obtained by a hand-held pocket penetrometer. These penetrometer readings showing the estimated unconfined compressive strength in units of tons per square foot are indicated by the symbol "(HP)" in the "Field Test Results" column of each boring log. The sample was extruded in the field and the samples were wrapped and sealed to minimize moisture loss. The sample was placed in a crate and transported to the Terracon laboratory.

Representative samples are usually performed in granular soils and in stiff to hard clay in conjunction with the standard penetration test (SPT). The test is performed by driving a two-inch OD split-spoon sampler a distance of 18 inches into the soil with blows from a 140-lb hammer falling a distance of 30 inches (ASTM D 1586). Depths at which split-spoon samples were taken are indicated in the "Samples" column of the boring logs. The number of blows required to drive the sampler for each six-inch increment was recorded. The penetration resistance is the number of blows required to drive the split-spoon sampler the final 12 inches of penetration. Information related to the penetration resistance is presented in the "Field Test Results" column of the boring logs as the number of blows per foot. The SPT samples were placed in sealed containers to minimize moisture loss during transport to the laboratory and storage.

Disturbed soil samples were also collected during the exploration by the auger method in accordance with ASTM D 1452 (AASHTO T203). The spiral-type (solid-stem) auger consisted of a flat thin metal strip, machine twisted to a spiral configuration of uniform pitch having at one end, a sharpened or hardened point, with a means of attaching a shaft or extension at the opposite end. Depths at which these auger samples were obtained are indicated in the attached boring logs. The soil content from the auger was visually classified, labeled and placed in a sealed container to minimize moisture loss during transportation to the laboratory.

Groundwater Observations: During the soil boring advancement and sampling operation, observations for free groundwater were made. Information regarding water level observations is recorded in the “groundwater” column on the soil boring log(s). Other information regarding water level observations has been noted under “Groundwater Level Data” at the bottom of each log.

Boring Abandonment: Upon completion of the field exploration phase of this study, each boring was sealed in accordance with State regulations.

BORING LOG NO. B-1

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.52516° Longitude: -90.4215°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	FAT CLAY (CH), gray to brown, stiff, with silt streaks				2.25 (HP)	UC	1.53	14.5	24	104	67-17-50	
					2.75 (HP)							
		5			2.25 (HP)							
	6.0											
	SILTY CLAY (CL-ML), gray to brown, stiff, with sand				1.50 (HP)	UC	1.13	3.7	14	118	19-13-6	
					2.50 (HP)							
	10.0											
	Boring Terminated at 10 Feet	10										

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/27/2013 | Boring Completed: 2/27/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-4

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-2

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.52428° Longitude: -90.42085°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), gray to brown, stiff, with silt pockets				1.50 (HP)				18			72
					1.00 (HP)	UC	1.34	6.7	20	111	29-14-15	
		5			1.00 (HP)							
	very stiff, with silt seams and ferrous nodules				4.00 (HP)	UC	2.05	3.8	16	117	34-14-20	
					4.50 (HP)							
	10.0	10										
	Boring Terminated at 10 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/27/2013 | Boring Completed: 2/27/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-5

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-3

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.52353° Longitude: -90.4198°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	FILL - SAND (SP), gray, with gravel								13			
	2.0											
	LEAN CLAY (CL), gray to brown, stiff, with sand seams											
		5			1.75 (HP)	UC	1.31	10.5	22	106	43-13-30	
					1.50 (HP)							
	10.0											
	Boring Terminated at 10 Feet	10										

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/27/2013 | Boring Completed: 2/27/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-6

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-4

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.52307° Longitude: -90.4203°

GRAPHIC LOG / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
FILL - SAND (SP), tan								12			
2.0											
SILTY CLAY (CL-ML), gray, medium stiff to stiff								16		21-15-6	
	5			2.25 (HP)							
6.0											
LEAN CLAY (CL), gray to brown, medium stiff, with sand				0.50 (HP)	UC	0.72	14.3	26	100	46-16-30	
				1.50 (HP)							
10.0	10										
Boring Terminated at 10 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/27/2013 | Boring Completed: 2/27/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-7

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-5

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.52445° Longitude: -90.42118°

DEPTH	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
0											
	FILL - SAND (SP), tan										
1.0											
	LEAN CLAY (CL), gray, medium stiff, with sand streaks and pockets										
				0.50 (HP)	UC	0.92	13.5	21	106	35-13-22	
5				2.75 (HP)							
				1.75 (HP)	UC	0.99	5.5	16	115	22-11-11	
				1.25 (HP)							
10.0											
10	***Boring Terminated at 10 Feet***										

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/27/2013 | Boring Completed: 2/27/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-8

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-6

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.5221° Longitude: -90.41849°

DEPTH	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
0											
	FILL - SAND (SP), tan, with gravel							12			
1.0											
	LEAN CLAY (CL), brown to gray, with sand										
				2.00 (HP)	UC	1.12	6.5	18	114	35-13-22	
4.0											
	SAND WITH CLAY (SP-SC), brown to gray										12
5											
								20			
8.0											
	LEAN CLAY (CL), gray, with sand										
10.0											
10	***Boring Terminated at 10 Feet***										

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/27/2013 | Boring Completed: 2/27/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-9

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-7

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.52218° Longitude: -90.41845°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	SILTY CLAY (CL-ML), light gray, stiff, with sand seams								18		22-18-4	62
					3.00 (HP)							
	4.0											
	LEAN CLAY (CL), light gray, stiff, with sand seams	5			1.00 (HP)	UC	1.01	8.5	22	107	40-13-27	
					2.25 (HP)							
					3.75 (HP)							
	10.0	10										
	Boring Terminated at 10 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/28/2013 | Boring Completed: 2/28/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-10

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-8

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.52172° Longitude: -90.41901°

DEPTH	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), gray, medium stiff to stiff							20			
								16		34-13-21	
4.0	**SILTY CLAY (CL-ML)**, brown to gray, very stiff, with sand										
5				1.75 (HP)							
				2.75 (HP)							
				1.75 (HP)	UC	2.50	7.2	16	118	20-13-7	
10.0	***Boring Terminated at 10 Feet***										
10											

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/28/2013 Boring Completed: 2/28/2013

Drill Rig: Geoprobe Driller: J. Osiek

Project No.: EH125076 Exhibit: A-11

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-9

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.52228° Longitude: -90.41936°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	SILT (ML), light gray, medium stiff, wtih sand								19			64
					1.50 (HP)							
		5			1.00 (HP)	UC	0.83	3.2	16	115	21-18-3	
					3.00 (HP)							
					0.75 (HP)							
	10.0	10										
	Boring Terminated at 10 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/28/2013 Boring Completed: 2/28/2013

Drill Rig: Geoprobe Driller: J. Osiek

Project No.: EH125076 Exhibit: A-12

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-10

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.52372° Longitude: -90.41892°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	FILL - SAND (SP), brown, with clay chucks, gravel, and crushed concrete								10			
	2.0											
	SILT (ML), tan, stiff to very stiff								13		16-16-NP	
	6.0	5										
	LEAN CLAY (CL), brown to gray, stiff, with sand				1.75 (HP)							
					0.75 (HP)	UC	1.08	7.5	19	111	23-13-10	
	10.0	10										
	Boring Terminated at 10 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/28/2013 | Boring Completed: 2/28/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-13

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-11

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.52418° Longitude: -90.41939°

DEPTH	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), light gray to brown, stiff								18		30-15-15	88
					1.75 (HP)							
		5			1.25 (HP)							
					2.50 (HP)	UC	1.73	7.7	18	115	28-14-14	
					3.25 (HP)							
10.0		10										
	Boring Terminated at 10 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/28/2013 | Boring Completed: 2/28/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-14

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-12

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.5246° Longitude: -90.41896°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	FILL - SAND (SP), tan, with clay and gravel								11			
	2.0											
	LEAN CLAY (CL), brown to light gray, with sand								18		36-13-23	
		5			2.50 (HP)							
					3.00 (HP)	UC	1.78	8.4	17	116	24-13-11	
					4.00 (HP)							
	10.0	10										
	Boring Terminated at 10 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/28/2013 | Boring Completed: 2/28/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-15

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-13

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.52251° Longitude: -90.414°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	FILL - SAND (SP), tan, with sand and gravel								13			
	2.0											
	LEAN CLAY (CL), light gray, with sand and silt pockets											
		5							22		34-13-21	
						UC	1.86	5.7	17	116	22-14-8	
	10.0	10										
	Boring Terminated at 10 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/28/2013 | Boring Completed: 2/28/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-16

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-14

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.5227° Longitude: -90.41917°

GRAPHIC LOG / DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
FILL - SAND (SP), tan, with gravel								8			
2.0											
SILTY CLAY (CL-ML), gray, with sand								15		17-13-4	
	5			2.75 (HP)							
6.0											
LEAN CLAY (CL), tan to brown, stiff, with sand				3.00 (HP)	UC	1.10	8	16	114	23-12-11	
10.0											
Boring Terminated at 10 Feet	10										

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/28/2013 | Boring Completed: 2/28/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-17

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

BORING LOG NO. B-15

PROJECT: Hammond Regional Airport

CLIENT: The LPA Group
Baton Rouge, LA

SITE: Hammond Regional Airport
Hammond, Louisiana

LOCATION See Exhibit A-2

Latitude: 30.5231° Longitude: -90.41933°

GRAPHIC LOG	DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST: TEST TYPE	STRENGTH TEST: COMPRESSIVE STRENGTH (tsf)	STRENGTH TEST: STRAIN (%)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS: LL-PL-PI	PERCENT FINES
	LEAN CLAY (CL), brown, stiff, with sand								15		26-14-12	
		5			3.00 (HP)							
					1.50 (HP)	UC	1.14	9	20	110	28-13-15	
					2.75 (HP)							
	10.0	10										
	Boring Terminated at 10 Feet											

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
0' - 10' - Short-flight auger

Abandonment Method:
Borings backfilled with soil cuttings upon completion.

See Exhibit A-3 for description of field procedures.

See Appendix B for description of laboratory procedures and additional data (if any).

See Appendix C for explanation of symbols and abbreviations.

Notes:
6" Concrete

WATER LEVEL OBSERVATIONS

No free water observed

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

Boring Started: 2/28/2013 | Boring Completed: 2/28/2013

Drill Rig: Geoprobe | Driller: J. Osiek

Project No.: EH125076 | Exhibit: A-18

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

APPENDIX B
LABORATORY TESTING AND TEST METHODS

LABORATORY TESTING AND TEST METHODS

The soil samples were delivered to the Terracon laboratory for testing. The project engineer reviewed each field boring log and assigned laboratory testing on selected samples to provide the data necessary for the anticipated designs.

Laboratory testing was accomplished to determine the engineering properties of the soils encountered. These procedures are discussed below.

Index Properties

Moisture Content: Moisture content tests were performed to better understand the classification and shrink/swell potential of the soils encountered. These tests were performed in general accordance with ASTM D 2216. The results of these tests are tabulated within the Laboratory Data section of the attached boring log(s).

Atterberg Limits: Liquid limit (LL) and plastic limit (PL) determinations were performed to assist in classification by the Unified Soil Classification System (USCS). These tests were performed in general accordance with ASTM D 4318. The plasticity index (PI) was calculated as LL - PL for each Atterberg limit determination. The results of these tests are tabulated within the Laboratory Data section of each boring log.

Grain Size Determinations: Particle gradations were determined for selected granular soil samples to aid in classification and for better understanding the engineering characteristics. These tests were performed in general accordance with AASHTO T 88 and ASTM D 422. The boring log indicates the percent of the soil particles passing the No. 200 sieve (percent fines) in the appropriate column.

Strength Tests

Unconfined Compression: The undrained shear strength of selected undisturbed soil samples was determined by means of unconfined compression tests (ASTM D 2166). In an unconfined compression test, a cylindrical sample of soil is subjected to a uniformly increasing axial strain until failure develops. For cohesive soils, the undrained shear strength, or cohesion, is taken to be equal to one-half of the maximum observed normal compressive stress on the sample during the test.

The results of the unconfined compression tests are provided as undrained shear strength values within the Laboratory Data section of each boring log. Also shown are the natural water contents and unit dry weights determined as a part of each compression test.

California Bearing Ratio (CBR)

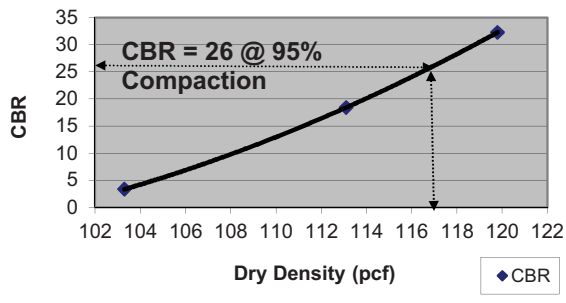
Terracon

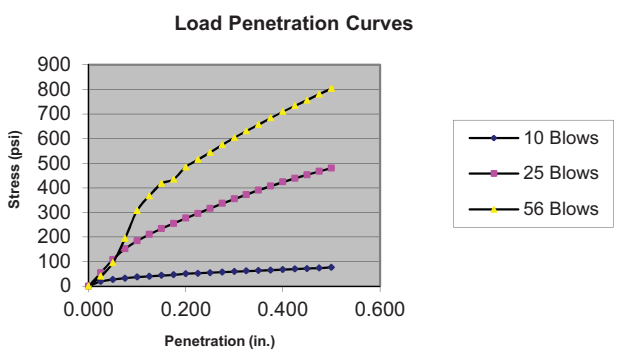
Project: Hammond Northshore Airport
Project No.: EH125076
Proposed Use: Runway Subgrade

Sample Identification: BS-01
Depth: N/A
Date of Testing: 20-Mar-13
Tested By: JR

	10 Blows		25 Blows		56 Blows	
Strain (in.)	**Load (lbs.)**	**Stress (psi)**	**Load (lbs.)**	**Stress (psi)**	**Load (lbs.)**	**Stress (psi)**
0.000	0.0	0	0.0	0	0	0
0.025	55.5	19	160.5	54	119.1	40
0.050	80.0	27	323.8	108	284.1	95
0.075	97.9	33	454.4	151	578.8	193
0.100	**110.6**	**37**	**551.2**	**184**	**920.1**	**307**
0.125	121.1	40	630.1	210	1100	367
0.150	130.3	43	701.1	234	1250.3	417
0.175	138.0	46	764.7	255	1304.2	435
0.200	**150.6**	**50**	**828.6**	**276**	**1452.2**	**484**
0.225	156.0	52	886.4	295	1542.8	514
0.250	163.2	54	947.8	316	1630.9	544
0.275	170.4	57	1007.8	336	1722.3	574
0.300	**178.8**	**60**	**1063.9**	**355**	**1810.4**	**603**
0.325	184.4	61	1115.7	372	1891.6	631
0.350	190.8	64	1169.9	390	1968.3	656
0.375	194.5	65	1220.6	407	2051.2	684
0.400	**200.2**	**67**	**1269.3**	**423**	**2130.2**	**710**
0.425	207.7	69	1314.8	438	2200.4	733
0.450	214.5	72	1357.3	452	2267.9	756
0.475	220.1	73	1399.2	466	2342.6	781
0.500	**228.3**	**76**	**1440.7**	**480**	**2410.7**	**804**

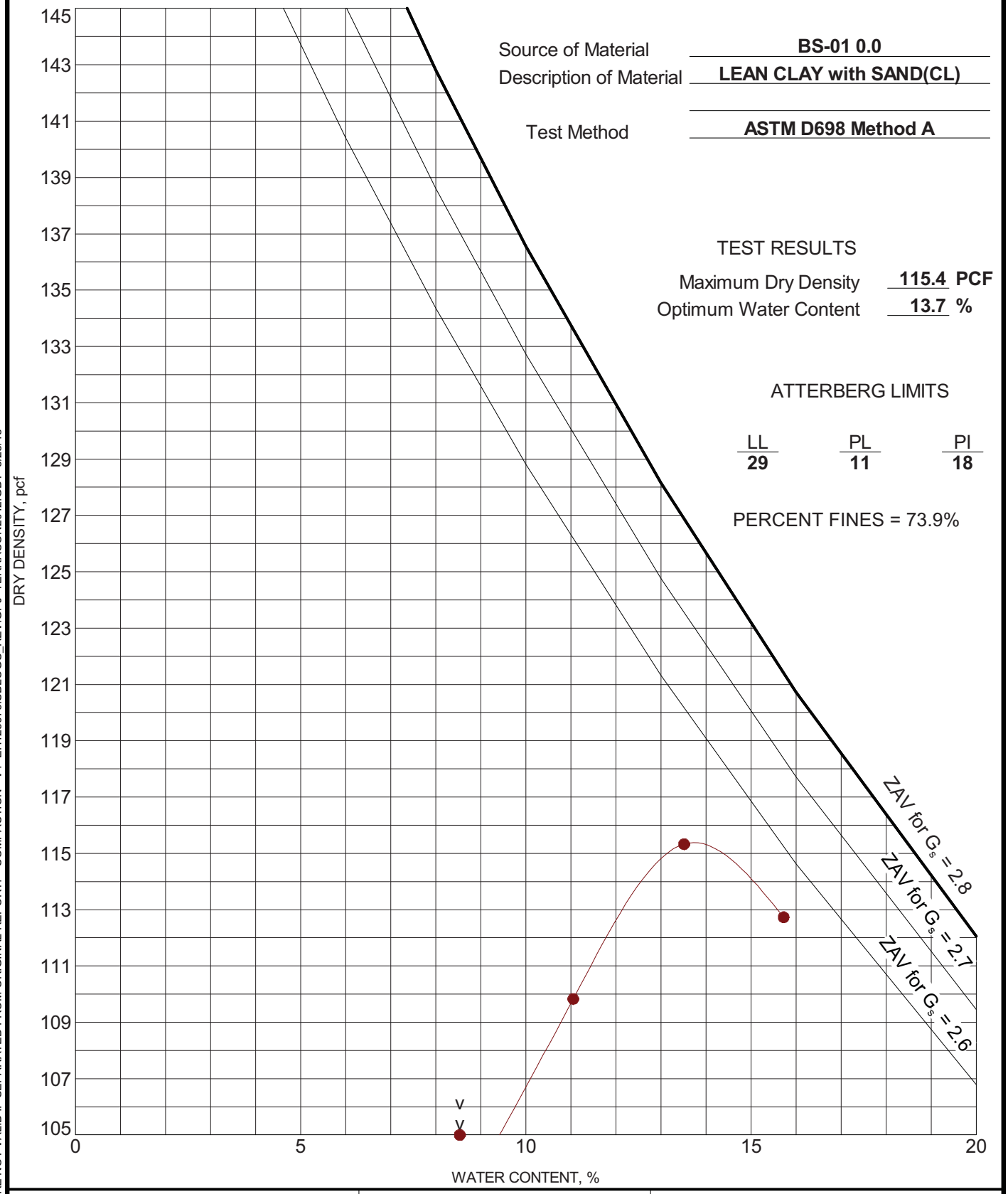
Penetration (In.)	CBR			10 Blows	25 Blows	56 Blows
	10 Blows	25 Blows	56 Blows	Moisture Content of Top Inch After Soak (%)		
0.1	3.7	18.4	30.7			
0.2	**3.3**	**18.4**	**32.3**	Initial Moisture Content (%)		
0.3	3.1	18.7	31.8	11.7	11.5	11.2
0.4	2.9	18.4	30.9	Final Moisture Content (%)		
0.5	2.9	18.5	30.9	20.4	16.0	13.9
Initial Dry Density (pcf)	**103.3**	**113.1**	**119.8**	Notes:		
Final Dry Density (pcf)	103.5	112.9	119.1	1. Sample was soaked for 96 hours prior to performing the Bearing Test.		
Initial Height	4.584	4.584	4.584	2. Samples were compacted with Modified Effort (Maximum Density 122.9).		
Final Height	4.604	4.601	4.596	3. A thirty (30) pound load was used during the swell test and bearing test.		
Swell (%)	**0.44**	**0.37**	**0.26**			





MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Source of Material: **BS-01 0.0**

Description of Material: **LEAN CLAY with SAND(CL)**

Test Method: **ASTM D698 Method A**

TEST RESULTS

Maximum Dry Density: **115.4 PCF**

Optimum Water Content: **13.7 %**

ATTERBERG LIMITS

LL	PL	PI
29	11	18

PERCENT FINES = 73.9%

PROJECT: Hammond Regional Airport

SITE: Hammond Regional Airport
Hammond, Louisiana

Terracon
2822 O'Neal Lane, Building B
Baton Rouge, Louisiana

PROJECT NUMBER: EH125076

CLIENT: The LPA Group
Baton Rouge, LA

EXHIBIT: B-3

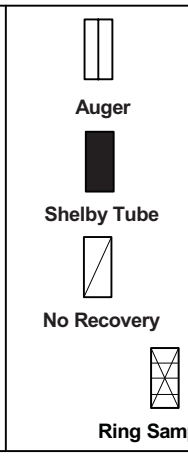
LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V1 EH125076.SBLOGS_REV.GPJ TERRACON2012.GDT 3/28/13

APPENDIX C
SUPPORTING DOCUMENTS

EXPLANATION OF BORING LOG INFORMATION

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING



WATER LEVEL OBSERVATIONS

- Water Level Initially Encountered
- Water Level After a Specified Period of Time
- Water Level After a Specified Period of Time
- No Water Level Observed

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Water level variations will occur over time. In low permeability soils, accurate determination of water levels is not possible with short term water level observations.

FIELD TESTS

(HP)	Hand Penetrometer (tsf)
(T)	Torvane (tsf)
(b/f)	Standard Penetration Test (blows per foot)
(PID)	Photo-Ionization Detector (ppm)
(OVA)	Organic Vapor Analyzer (ppm)

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Std. Penetration Resistance (blows per foot)**	**Descriptive Term (Consistency)**	**Undrained Shear Strength (kips per square foot)**	**Std. Penetration Resistance (blows per foot)**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium-Stiff	0.50 to 1.00	5 - 7
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 14
Very Dense	≥ 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	above 4.00	≥ 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

Descriptive Term(s) of other constituents	Percent of Dry Weight
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	≥ 12

PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	≥ 30

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UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	Cu ≥ 4 and 1 ≤ Cc ≤ 3 [E]		GW	Well-graded gravel [F]
			Cu < 4 and/or 1 > Cc > 3 [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F,G,H]
			Fines classify as CL or CH		GC	Clayey gravel [F,G,H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	Cu ≥ 6 and 1 ≤ Cc ≤ 3 [E]		SW	Well-graded sand [I]
			Cu < 6 and/or 1 > Cc > 3 [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G,H,I]
			Fines classify as CL or CH		SC	Clayey sand [G,H,I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A" line [J]		CL	Lean clay [K,L,M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K,L,M,N]
			Liquid limit - not dried			Organic silt [K,L,M,O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K,L,M]
			PI plots below "A" line		MH	Elastic Silt [K,L,M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K,L,M,P]
			Liquid limit - not dried			Organic silt [K,L,M,Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.

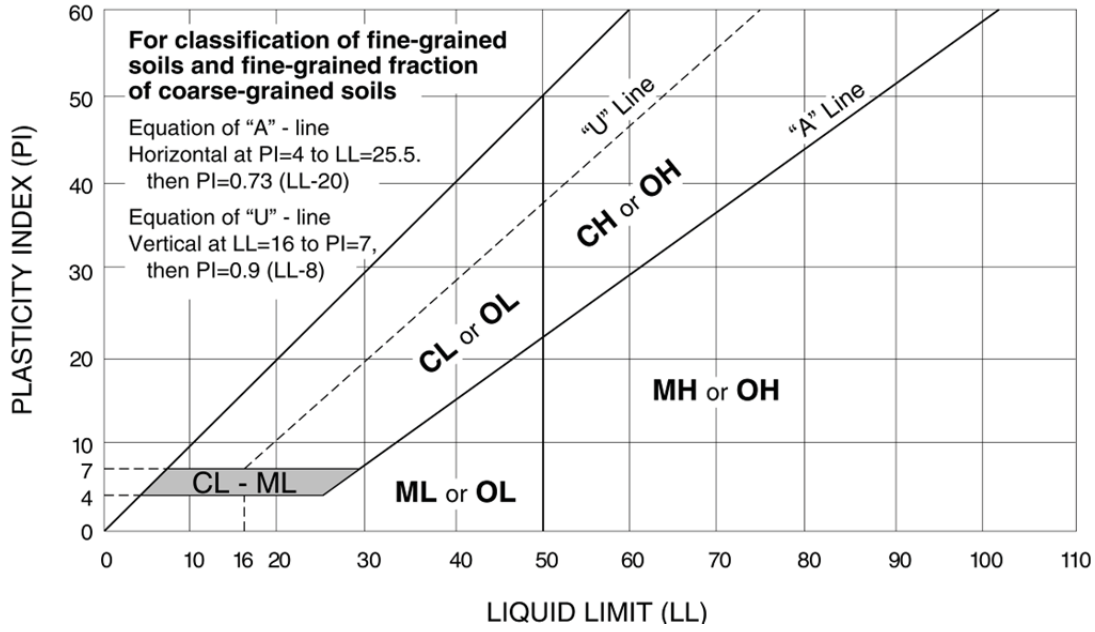

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Exhibit C-2

HAMMOND NORTHSHORE REGIONAL AIRPORT

HAMMOND, LOUISIANA

RUNWAY 18-36 / 13-31 INTERSECTION RECONSTRUCTION

AIP NO. 3-22-0018-019-2016

JULY 2016

VICINITY MAP

PROJECT SITE

AIRPORT INFORMATION

CITY:	HAMMOND, LOUISIANA
ID:	HDC
LATITUDE:	30° 31' 18.0747" NORTH
LONGITUDE:	90° 25' 6.1707" WEST
ELEVATION:	46.5 M.S.L. (NAVD 88)

PROJECT DESCRIPTION

THE WORK GENERALLY CONSISTS OF FULL DEPTH PAVEMENT REMOVAL, NEW PAVEMENT CONSTRUCTION, EDGE DRAIN INSTALLATION, EDGE LIGHT REPLACEMENT, AND PAVEMENT MARKINGS.

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* PROVIDED BY: BATON ROUGE LAND SURVEYING
A DIVISION OF FORTE AND TABLADA, INC.

LOUISIANA DEPARTMENT OF
TRANSPORTATION AND DEVELOPMENT
DIVISION OF AVIATION
PROJECT NUMBER: H.011864
AIP NUMBER: 3-22-0018-019-2016

Sponsored by:

HAMMOND NORTHSHORE REGIONAL AIRPORT 1932

CITY OF HAMMOND
P.O. BOX 2877
HAMMOND, LA 70404
(985)277–5640

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32454
REGISTERED PROFESSIONAL ENGINEER IN CIVIL ENGINEERING
7/5/2016

SET NO. _____

ENGINEERING SERVICES PROVIDED BY:

Michael Baker INTERNATIONAL

2600 Citiplace Drive., Suite 450
Baton Rouge, Louisiana 70808
(225) - 706 - 0744

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BASE BID – CONCRETE RUNWAY 18–36/13–31 INSIDE RSA

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
M–105	MOBILIZATION (SECTION 105)	LUMP SUM	1
M–200	TEMPORARY BARRICADES, LIGHTING AND FACILITIES	LUMP SUM	1
P–101.1	PAVEMENT REMOVAL, 6–INCH CONCRETE	SQUARE YARD	24,461
P–152.1	UNCLASSIFIED EXCAVATION	CUBIC YARD	5,611
P–152.2	UNDERCUT EXCAVATION	CUBIC YARD	4,740
P–156	TEMPORARY SILT FENCE	LINEAR FEET	2,400
P–209.1	CRUSHED AGGREGATE BASE COURSE, 4–INCH DEPTH	SQUARE YARD	21,307
P–501	PCC PAVEMENT, 10.5–INCH DEPTH	SQUARE YARD	20,922
P–602	BITUMINOUS PRIME COAT	GALLON	5,327
P–620.1	PAVEMENT MARKING REMOVAL (100%)	SQUARE FEET	1,800
P–620.2	TEMPORARY RUNWAY MARKING – WHITE	SQUARE FEET	12,332
P–620.3	FINAL RUNWAY MARKING – WHITE	SQUARE FEET	12,332
P–620.4	FINAL OUTLINE MARKING – BLACK	SQUARE FEET	1,016
D–705.1	CORRUGATED POLYETHYLENE UNDERDRAIN, 6–INCH PERFORATED (COMPLETE, INCLUDING POROUS BACKFILL AND FILTER FABRIC)	LINEAR FEET	2,579
D–705.2	CORRUGATED POLYETHYLENE UNDERDRAIN, 6–INCH NON–PERFORATED	LINEAR FEET	961
D–751	UNDERDRAIN CLEANOUT	EACH	12
L–108.1	CABLE, 1/C #8KV, L–824C INSTALLED IN CONDUIT OR DUCT BANK	LINEAR FEET	1,690
L–108.2	COUNTERPOISE, #6 BARE SOLID COPPER, INCLUDING GROUND RODS AND CONNECTIONS	LINEAR FEET	840
L–110.1	ELECTRICAL CONDUIT, 1–WAY, 2" SCHEDULE–40 PVC, DIRECT EARTH BURIAL, EARTH BACKFILL	LINEAR FEET	450
L–110.2	ELECTRICAL CONDUIT, 1–WAY, 2" SCHEDULE–40 PVC, CONCRETE ENCASED, INSTALLED UNDER NEW RUNWAY PAVEMENT	LINEAR FEET	365
L–125.2	RELOCATED L–861 MEDIUM INTENSITY RUNWAY EDGE LIGHT, NEW L–867B BASE, ISOLATION TRANSFORMER, COVER PLATE IN EARTH SHOULDER, INSTALLED COMPLETE	EACH	6
L–125.3	NEW L–852D IN–PAVEMENT MEDIUM INTENSITY RUNWAY EDGE LIGHT INSTALLED ON NEW L–868B BASE IN NEW PCC PAVEMENT, INSTALLED COMPLETE	EACH	4
L–125.4	REMOVE CONCRETE ENCASED LIGHT BASE	EACH	10
T–901	SEEDING (HYDROSEED)	ACRE	2

ADDITIVE ALTERNATE 1 – RECONSTRUCT ASPHALT RUNWAY 13–31 OUTSIDE RSA

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
M–200	TEMPORARY BARRICADES, LIGHTING AND FACILITIES	LUMP SUM	1
P–101.1	PAVEMENT REMOVAL, 6–INCH CONCRETE	SQUARE YARD	11,765
P–152.1	UNCLASSIFIED EXCAVATION	CUBIC YARD	3,420
P–152.2	UNDERCUT EXCAVATION	CUBIC YARD	1,870
P–154	SUBBASE COURSE, 8–INCH DEPTH	SQUARE YARD	7,375
P–156	TEMPORARY SILT FENCE	LINEAR FEET	1,470
P–209.2	CRUSHED AGGREGATE BASE COURSE, 8–INCH DEPTH	SQUARE YARD	7,272
P–401	BITUMINOUS ASPHALT SURFACE COURSE (PG 76–22, GRADATION 2)	TON	1,970
P–602	BITUMINOUS PRIME COAT	GALLON	2,050
P–603	BITUMINOUS TACK COAT	GALLON	820
P–620.2	TEMPORARY RUNWAY MARKING – WHITE	SQUARE FEET	5,130
P–620.3	FINAL RUNWAY MARKING – WHITE	SQUARE FEET	5,130
P–620.5	TEMPORARY TAXIWAY MARKING – YELLOW	SQUARE FEET	593
P–620.6	FINAL TAXIWAY MARKING – YELLOW	SQUARE FEET	593
D–705.1	CORRUGATED POLYETHYLENE UNDERDRAIN, 6–INCH PERFORATED (COMPLETE, INCLUDING POROUS BACKFILL AND FILTER FABRIC)	LINEAR FEET	1,270
D–751	UNDERDRAIN CLEANOUT	EACH	4
L–108.1	CABLE, 1/C #8KV, L–824C INSTALLED IN CONDUIT OR DUCT BANK	LINEAR FEET	175
L–108.2	COUNTERPOISE, #6 BARE SOLID COPPER, INCLUDING GROUND RODS AND CONNECTIONS	LINEAR FEET	350
L–110.1	ELECTRICAL CONDUIT, 1–WAY, 2" SCHEDULE–40 PVC, DIRECT EARTH BURIAL, EARTH BACKFILL	LINEAR FEET	350
L–125.1	RELOCATED L–861T MEDIUM INTENSITY TAXIWAY EDGE LIGHT, NEW L–867B BASE, ISOLATION TRANSFORMER, COVER PLATE IN EARTH SHOULDER, INSTALLED COMPLETE	EACH	2
L–125.2	RELOCATED L–861 MEDIUM INTENSITY RUNWAY EDGE LIGHT, NEW L–867B BASE, ISOLATION TRANSFORMER, COVER PLATE IN EARTH SHOULDER, INSTALLED COMPLETE	EACH	8
L–125.4	REMOVE CONCRETE ENCASED LIGHT BASE	EACH	3
T–901	SEEDING (HYDROSEED)	ACRE	1

ADDITIVE ALTERNATE 3 – RUNWAY 13–31 AND TAXIWAY ALPHA REPAIR

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
M–200	TEMPORARY BARRICADES, LIGHTING AND FACILITIES	LUMP SUM	1
P–101.2	PAVEMENT REMOVAL, 4–INCH ASPHALT	SQUARE YARD	1,500
P–152.1	UNCLASSIFIED EXCAVATION	CUBIC YARD	4,375
P–154	SUBBASE COURSE, 8–INCH DEPTH	SQUARE YARD	1,464
P–209.2	CRUSHED AGGREGATE BASE COURSE, 8–INCH DEPTH	SQUARE YARD	1,440
P–401	BITUMINOUS ASPHALT SURFACE COURSE (PG 76–22, GRADATION 2)	TON	360
P–602	BITUMINOUS PRIME COAT	GALLON	375
P–603	BITUMINOUS TACK COAT	GALLON	150
P–620.5	TEMPORARY TAXIWAY MARKING – YELLOW	SQUARE FEET	50
P–620.6	FINAL TAXIWAY MARKING – YELLOW	SQUARE FEET	50
T–901	SEEDING (HYDROSEED)	ACRE	0.2

ADDITIVE ALTERNATE 2 – RUNWAY 13–31 MARKING

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
P–620.3	FINAL RUNWAY MARKING – WHITE	SQUARE FEET	70,552
P–620.4	FINAL OUTLINE MARKING – BLACK	SQUARE FEET	15,750
P–620.6	FINAL TAXIWAY MARKING – YELLOW	SQUARE FEET	2,400
P–620.7	PAVEMENT MARKING REMOVAL (70%)	SQUARE FEET	18,702

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932
HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

REVISIONS

No.	Description	Date	By

Project Name:
RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:
SUMMARY OF QUANTITIES

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
N/A	Drawing Number: 2

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GENERAL NOTES

1. THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS. THE PROJECT IS SUBJECT TO INSPECTION BY REPRESENTATIVES OF HAMMOND NORTHSHORE REGIONAL AIRPORT, THE ENGINEER, STATE DOTD AND THE FEDERAL AVIATION ADMINISTRATION (FAA). THE CONTRACTOR, SHALL PROVIDE UNRESTRICTED ACCESS TO THE SITE FOR INSPECTION PURPOSES DURING THE ENTIRE CONSTRUCTION PERIOD.
2. CONTRACTOR AND CONSTRUCTION ACTIVITIES SHALL COMPLY WITH ALL FAA ADVISORY CIRCULARS.
3. THE CONTRACTOR SHALL SUBMIT A PROPOSED SCHEDULE OF WORK AT THE PRE-CONSTRUCITON CONFERENCE. NO CONSTRUCTION ACTIVITIES SHALL PROCEED UNTIL THE SCHEDULE IS APPROVED BY THE ENGINEER.
4. THE CONTRACTOR SHALL UPDATE AND SUBMIT HIS/HER CONSTRUCTION WORK SCHEDULE TO THE AIRPORT, ENGINEER AND RESIDENT PROJECT REPRESENTATIVE (RPR) EACH WEEK PROJECTING UPCOMING WORK FOR THE NEXT THREE WEEKS.
5. SCHEDULE WILL BE STRICTLY ENFORCED. SHOULD THE CONTRACTOR FAIL TO MAINTAIN A CONSTRUCTION SCHEDULE THAT REASONABLY REFLECTS ACTUAL AND ANTICIPATED PROGRESS, ANY ADDITIONAL COST NECESSARY TO RESOLVE CONFLICTS WITH THE WORK IN THE ENGINEERS OPINION, COULD HAVE OTHERWISE BEEN FORESEEN AND AVOIDED WILL BE BORNE BY THE CONTRACTOR.
6. ALL MATERIAL SUBMITTALS FOR ITEMS TO BE USED IN CONSTRUCTION OF THE PROJECT SHALL BE SUBMITTED TO THE RPR FOR REVIEW AND APPROVAL 14 DAYS PRIOR TO COMMENCEMENT OF THE ASSOCIATED WORK.
7. CONTRACTOR SHALL COORDINATE WITH AIRPORT MANAGEMENT FOR APPROVAL A MINIMUM OF 72 HOURS PRIOR TO STARTING ANY CONSTRUCTION OR ENTERING THE AIRPORT PROPERTY AND A MINIMUM OF 14 DAYS FOR NIGHT WORK.
8. THE PRIME CONTRACTOR'S PROJECT SUPERINTENDENT SHALL PARTICIPATE IN ALL COORDINATION MEETINGS AND SHALL BE ON SITE DURING ALL ACTIVITIES.
9. THE AIR OPERATIONS AREA (AOA) IS DEFINED AS ALL PAVED AND UNPAVED AREAS OF THE AIRPORT INSIDE THE PERIMETER SECURITY FENCE AND INCLUDES BUT IS NOT LIMITED TO APRONS, TAXIWAYS, RUNWAYS, AND RUNWAY/TAXIWAY SAFETY AREAS. NO VEHICLE OR EQUIPMENT SHALL BE MOVED ONTO ACTIVE AREAS OF THE AOA UNLESS THE VEHICLE IS IDENTIFIED BY COMPANY LOGO AND NAME (10 INCH MINIMUM LETTER HEIGHT) AND IS MONITORING THE APPROPRIATE RADIO FREQUENCY OR IS UNDER THE ESCORT OF A VEHICLE MONITORING THE APPROPRIATE RADIO FREQUENCY. THE CONTRACTOR SHALL PROVIDE THE NECESSARY RADIOS FOR THE VEHICLES AND EQUIPMENT AFTER RECEIVING ENTRY APPROVAL.
10. ENTRY INTO AOA REQUIRES NOTIFICATION OF AND APPROVAL FROM RPR AND AIRPORT OPERATIONS.
11. FLAGS FOR VEHICLES SHALL NOT BE LESS THAN 3'-0" SQUARE CONSISTING OF A CHECKERED PATTERN OF INTERNATIONAL ORANGE AND WHITE SQUARES OF NOT LESS THAN 1'-0" ON EACH SIDE.
12. CONTRACTOR SHALL COMPLY WITH ANY INSTRUCTION ISSUED BY THE AIRPORT MANAGEMENT IN THE EVENT OF AN EMERGENCY.
13. CONTRACTOR SHALL FURNISH RADIO EQUIPMENT TO ALL SUPERVISORY PERSONNEL WHICH IS CAPABLE OF TRANSMITTING AND RECEIVING ON FREQUENCIES 119.85 MHZ AND 120.575 MHZ. CONTRACTOR MUST PROVE KNOWLEDGE OF RADIO OPERATIONS AND PROPER USAGE TO AIRPORT OPERATIONS. CALL SIGNS MUST BE ESTABLISHED BEFORE THE CONTRACTOR CAN USE THE FREQUENCIES.
14. CONTRACTOR SUPERVISORY PERSONNEL SHALL MONITOR ABOVE FREQUENCIES DURING ALL CONSTRUCTION HOURS. ALL COMMUNICATIONS SHALL BE IN ENGLISH.
15. PRIOR TO OPENING ANY WORK AREAS FOR AIRCRAFT OPERATIONS. THE AIRPORT'S REPRESENTATIVE WILL ARRANGE FOR INSPECTION BY AIRPORT OPERATIONS OF ANY AREA THAT HAS BEEN CLOSED FOR WORK OR THAT HAS BEEN USED FOR A CROSSING POINT OR HAUL ROUTE BY THE CONTRACTOR. THESE AREAS MUST COMPLY WITH THE SAFETY REQUIREMENTS DEFINED BY FEDERAL AVIATION REGULATIONS (FAR) PART 139, AND INTERPRETED BY THE AIRPORT OPERATIONS MANAGER, BEFORE PERMISSION WILL BE GRANTED FOR THE CONTRACTOR'S WORK CREWS TO DEPART THE AREA.
16. CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING HAUL ROUTES AS NECESSARY FOR HIS OPERATIONS. THIS ITEM SHALL BE SUBSIDIARY TO OTHER ITEMS IN THE CONTRACT. (INCLUDING PAVEMENT MARKINGS)
17. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SAFETY FOR CONSTRUCTION PERSONNEL, EQUIPMENT AND AIRCRAFT AT ALL TIMES.
18. IT IS THE INTENT OF THESE PLANS TO MINIMIZE INTERFERENCE TO AIRCRAFT MOVEMENT; THEREFORE, IN AREAS OF THE AOA, AIRCRAFT MOVEMENT SHALL HAVE THE RIGHT-OF-WAY.
19. IT SHALL BE THE CONTRACTORS'S RESPONSIBILITY TO COORDINATE ALL OFF-AIRPORT ROUTES WITH THE APPROPRIATE AUTHORITIES. ON-AIRPORT HAULING SHALL BE COORDINATED WITH OWNER AND APPROVED IN ADVANCE TO MINIMIZE IMPACT TO AIRPORT OPERATIONS.
20. CONSTRUCTION EQUIPMENT AND VEHICLES SHALL NOT TRAVEL ON NEWLY OVERLAYED OR CONSTRUCTED ASPHALT PAVEMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIR OF ANY DAMAGE TO THE NEWLY OVERLAYED OR CONSTRUCTED ASPHALT PAVEMENT, ALL REPAIRS SHALL BE AT THE CONTRACTORS OWN EXPENSE.
21. CONTRACTOR MAY SUBMIT ALTERNATIVE ACCESS ROUTES FOR APPROVAL BY THE AIRPORT PRIOR TO THE BEGINNING OF CONSTRUCTION.
22. CONTRACTOR SHALL VERIFY ALL SURVEY CONTROL, ELEVATIONS, AND EXISTING GRADES PRIOR TO BEGINNING CONSTRUCTION. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER PRIOR TO BEGINNING CONSTRUCTION.
23. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL HORIZONTAL AND VERTICAL CONSTRUCTION STAKING AS REQUIRED FOR THE PROJECT DEVELOPMENT.
24. CONTRACTOR SHALL ESTABLISH ANY ADDITIONAL CONTROL POINTS DEEMED NECESSARY BY CONSTRUCTION PERSONNEL PRIOR TO BEGINNING THE WORK.
25. CONTRACTOR SHALL VERIFY LOCATIONS OF UNDERGROUND CONDUITS, UTILITIES, AND STRUCTURES AS NECESSARY IN ADVANCE OF EXCAVATION OPERATIONS. ANY DAMAGE TO UTILITIES SHALL BE REPAIRED IN ACCORDANCE WITH FAA REQUIREMENTS AND ALL COST SHALL BE BOURNE BY CONTRACTOR.
26. CONTRACTOR SHALL NOT BEGIN ANY WORK UNTIL THE LOW PROFILE BARRICADES AND HAUL ROUTES HAVE BEEN APPROVED BY THE RPR AND AIRPORT OPERATIONS.
27. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING HIS/HER OWN PROJECT OFFICE AND COMPLETE UTILITY SERVICES. THE AIRPORT WILL NOT PROVIDE FACILITIES AND SERVICES TO THE CONTRACTOR DURING CONSTRUCTION. THE CONTRACTOR'S PERSONNEL ARE PROHIBITED FROM UTILIZING THE AIRPORT TERMINAL. THE CONTRACTOR SHALL PROVIDE OFFICE FACILITIES FOR THE RPR IN A SEPARATE BUILDING FROM THE CONTRACTOR'S PROJECT OFFICE. ASSOCIATED COST WILL BE SUBSIDIARY TO OTHER ITEMS IN THE CONTRACT.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING AND ACQUIRING AN ACCEPTABLE WATER SOURCE IF NECESSARY FOR CONSTRUCTION, ALL COST TO BE BOURNE BY CONTRACTOR.
29. CONTRACTOR SHALL REPAIR OR REPLACE ALL ITEMS NOT DESIGNATED FOR DEMOLITION OR REMOVAL THAT ARE DAMAGED BY CONSTRUCTION EFFORTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE IMMEDIATE REPAIR OF ANY DAMAGE TO AIRPORT/TENANTS FACILITIES, INCLUDING BUT NOT LIMITED TO EXISTING PAVEMENTS, UNDERGROUND CABLES, LIGHTS, SIGNS, BUILDINGS, FENCES, EQUIPMENT, ETC. CAUSED DURING CONSTRUCTION. ALL REPAIRS MUST BE MADE IN COORDINATION WITH THE OWNER AND TO EQUAL OR BETTER QUALITY AND IN COMPLIANCE WITH AIRPORT AND/OR FAA REQUIREMENTS. ALL REPAIR AND REPLACEMENT COST SHALL BE AT THE EXPENSE OF THE CONTRACTOR.
30. CONTRACTOR SHALL IMMEDIATELY START REPAIR OF AIRPORT FACILITIES THAT ARE DAMAGED BY THE CONTRACTOR AND HIS SUBCONTRACTORS. SHOULD THE CONTRACTOR NOT BE ON SITE, THE CONTRACTOR SHALL RETURN TO THE SITE WITHIN TWO HOURS OF BEING NOTIFIED OR AIRPORT FACILITIES THAT HAVE BEEN DAMAGED THAT MUST BE REPAIRED.
31. CONTRACTOR PERSONNEL AND EQUIPMENT SHALL REMAIN WITHIN THE PROJECT WORK AREA, STAGING AREA, OR HAUL ROUTE. CONTRACTOR WILL BE RESPONSIBLE FOR PROVIDING AND MAINTAINING HAUL ROUTES AS NECESSARY FOR HIS OPERATIONS. THIS ITEM SHALL BE SUBSIDIARY TO OTHER ITEMS IN THE CONTRACT.
32. THE PROJECT PAY ITEMS ARE PROVIDED TO BE INCLUSIVE OF ALL WORK TO BE PERFORMED AS SHOWN IN THESE PLANS. ALL WORK NOT IDENTIFIED WITH A SPECIFIC PAY ITEM IS TO BE CONSIDERED REQUIRED/INCIDENTAL WORK TO COMPLETE THE PROJECT AND IS TO BE INCLUDED IN THE COST OF THE PROJECT PAY ITEMS PROVIDED.
33. STOCKPILES SHALL NOT BE LOCATED INSIDE ANY RUNWAY/TAXIWAY SAFETY AREA (RSA OR TSA) OR CREATE ANY PONDING OF WATER OR ALTER DRAINAGE PATTERNS OF THE AIRPORT PROPERTY. ALL DEMOLITION DEBRIS AND EXCAVATED MATERIAL SHALL BE REMOVED FROM SITE IMMEDIATELY. ALL COST INCLUDING HAULING AND DISPOSAL SHALL BE BOURNE BY THE CONTRACTOR.
34. HAUL TRUCKS TRANSPORTING LOOSE MATERIAL OFF AIRPORT PROPERTY SHALL USE LOAD COVERS AND SHALL BE LOADED SUCH THAT NO SPILLAGE OCCURS DURING TRANSIT. ALL CONTRACTOR EQUIPMENT MUST BE MAINTAINED IN GOOD WORKING ORDER. CONTRACTOR VEHICLES THAT LEAK OR DRIP OIL AND/OR FLUIDS MUST BE IMMEDIATELY REMOVED FROM THE PROJECT FOR REPAIR AND THE SPILL CLEANED UP IN ACCORDANCE WITH STATE AND FEDERAL REQUIREMENTS.
35. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EFFORT AND COST OF IMMEDIATE CLEANING OF EARTH TRACKING AND SPILLS RESULTING FROM THE CONTRACTOR'S OPERATIONS. BECAUSE OF THE POTENTIAL FOR EXTREME DAMAGE TO AIRCRAFT ENGINES BY INGESTION OF FOREIGN OBJECTS, THE CONTRACTOR SHALL OPERATE AND MAINTAIN MECHANICAL SWEEPER/VACUUM DURING ANY HAULING, MILLING, OR OTHER OPERATIONS ACROSS RUNWAYS, TAXIWAYS, TAXILANES, APRONS, OR SERVICE ROADS.
36. WHEN RUNWAYS ARE OPERATIONAL, THE PRIMARY SURFACE AND THE TRANSITIONAL SURFACE SHALL NOT BE PENETRATED WITHOUT PRIOR APPROVAL OF THE OWNER.
37. THE AREAS UTILIZED AS THE CONTRACTOR'S OFFICE, PARKING, LAYDOWN, STORAGE AREA, AND THE HAUL ROUTES ARE TO BE RESTORED TO THE ORIGINAL CONDITION AT THE END OF THE PROJECT. ALL EXISTING ROADS OR PAVEMENTS USED AS ACCESS/HAUL ROADS SHALL BE MAINTAINED AND IMPROVED AS REQUIRED. THE ROAD OR PAVEMENT CONDITIONS WILL BE INSPECTED JOINTLY BY THE ENGINEER AND CONTRACTOR PRIOR TO AND AT THE END OF THE PROJECT. THE CONDITION OF THESE ROADS AND PAVEMENTS SHALL BE EQUAL TO OR BETTER THAN AT THE START OF THE PROJECT AS DETERMINED BY THE ENGINEER.
38. THE OWNER SHALL PROVIDE VERTICAL AND HORIZONTAL CONTROL TO THE CONTRACTOR. ALL CONSTRUCTION STAKING SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL VERIFY THE CONTROL PRIOR TO CONSTRUCTION.
39. CONSTRUCTION AREA LIMITS: THE LIMITS OF CONSTRUCTION MATERIAL STORAGE, PLAN SITE, EQUIPMENT STORAGE, PARKING AND OTHER AREAS DEFINED AS REQUIRED FOR THE CONTRACTOR'S EXCLUSIVE USE DURING CONSTRUCTION SHALL BE MARKED BY THE CONTRACTOR.
40. CONTRACTOR SHALL REMOVE ALL TOOLS, EQUIPMENT, AND CONSTRUCTION MATERIALS FROM THE CONSTRUCTION AREAS AT THE END OF EACH WORKDAY, EXCEPT AS PROVIDED IN THE SAFETY AND SECURITY NOTES.
41. STOCKPILED MATERIALS SHOULD BE CONSTRAINED IN A MANNER TO PREVENT MOVEMENT RESULTING FROM AIRCRAFT JET BLAST OR WIND CONDITIONS.
42. ACCESS TO THE SITE: CONTRACTOR'S ACCESS TO THE SITE SHALL BE AS SHOWN ON PLANS. NO OTHER ACCESS POINTS SHALL BE ALLOWED UNLESS APPROVED BY THE ENGINEER IN WRITING. ALL CONTRACTOR TRAFFIC AUTHORIZED TO ENTER THE SITE SHALL BE EXPERIENCED IN THE ROUTE OR GUIDED BY CONTRACTOR PERSONNEL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR TRAFFIC CONTROL TO AND FROM THE VARIOUS CONSTRUCTION AREAS ON THE SITE. THE CONTRACTOR SHALL NOT PERMIT ANY UNAUTHORIZED CONSTRUCTION PERSONNEL OR TRAFFIC ON THE SITE. THE CONTRACTOR IS RESPONSIBLE FOR IMMEDIATE CLEAN UP OF ANY DEBRIS DEPOSITED ALONG THE ACCESS ROUTE AS A RESULT OF HIS CONSTRUCTION TRAFFIC. DIRECTION SIGNING AT THE ACCESS GATE, ALONG WITH DELIVERY ROUTE TO THE STORAGE AREA, PLAN SITE OR WORK SITE SHALL BE AS DIRECTED BY THE ENGINEER. ANY SIGN PLACED IN THE COURSE OF THE PROJECT SHALL BE IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), THE APPLICABLE FAA ADVISORY CIRCULAR, OR AS APPROVED IN WRITING FROM SHOP DRAWINGS SUBMITTED TO THE ENGINEER PRIOR TO SIGN PLACEMENT. THE CONTRACTOR'S ACCESS TO THE JOB SITE AND WITHIN THE AIRCRAFT OPERATIONS AREA (AOA), SHALL BE LIMITED THROUGH A CONSTRUCTION GATE. THE AOA ACCESS GATE, WHEN UNGUARDED FOR WHATEVER REASON OVER ANY LENGTH OF TIME SHALL BE LOCKED WITH LOCKS PROVIDED BY THE CONTRACTOR AND APPROVED BY AIRPORT OPERATIONS. THE CONTRACTOR WILL BE LIABLE FOR ANY FINES ISSUED BY THE FAA AND/OR TSA FOR SECURITY (OR OTHER) VIOLATIONS FOR WHICH IT IS CITED.
43. THE CONTRACTOR SHALL BE RESPONSIBLE OR COMPLYING WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND WILL OBTAIN ALL NECESSARY PERMITS REQUIRED FOR CONSTRUCTION INCLUDING BUT NOT LIMITED TO LOUISIANA POLLUTANT DISCHARGE ELIMINATION SYSTEM, ETC. AT NO ADDITIONAL COST TO THE OWNER.
44. CONTRACTOR SHALL PROTECT EXISTING RUNWAY AND TAXIWAY LIGHTING SYSTEMS AND APPROACH LIGHTING SYSTEMS AND SHALL REPAIR ANY DAMAGE TO SYSTEMS AT NO COST TO THE OWNER.
45. ANY UNPLANNED, UNAPPROVED OR ACCIDENTAL SHUTDOWN OR INTERRUPTION OF SERVICE TO ANY LIGHTING CIRCUIT OR NAVIGATIONAL AID REQUIRES IMMEDIATE NOTIFICATION OF THE OWNER BY THE CONTRACTOR. ALL NECESSARY REPAIRS WILL BE AT CONTRACTOR'S EXPENSE

HAMMOND NORTHSHORE REGIONAL AIRPORT 1932

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

GENERAL NOTES

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
N/A	Drawing Number: 3

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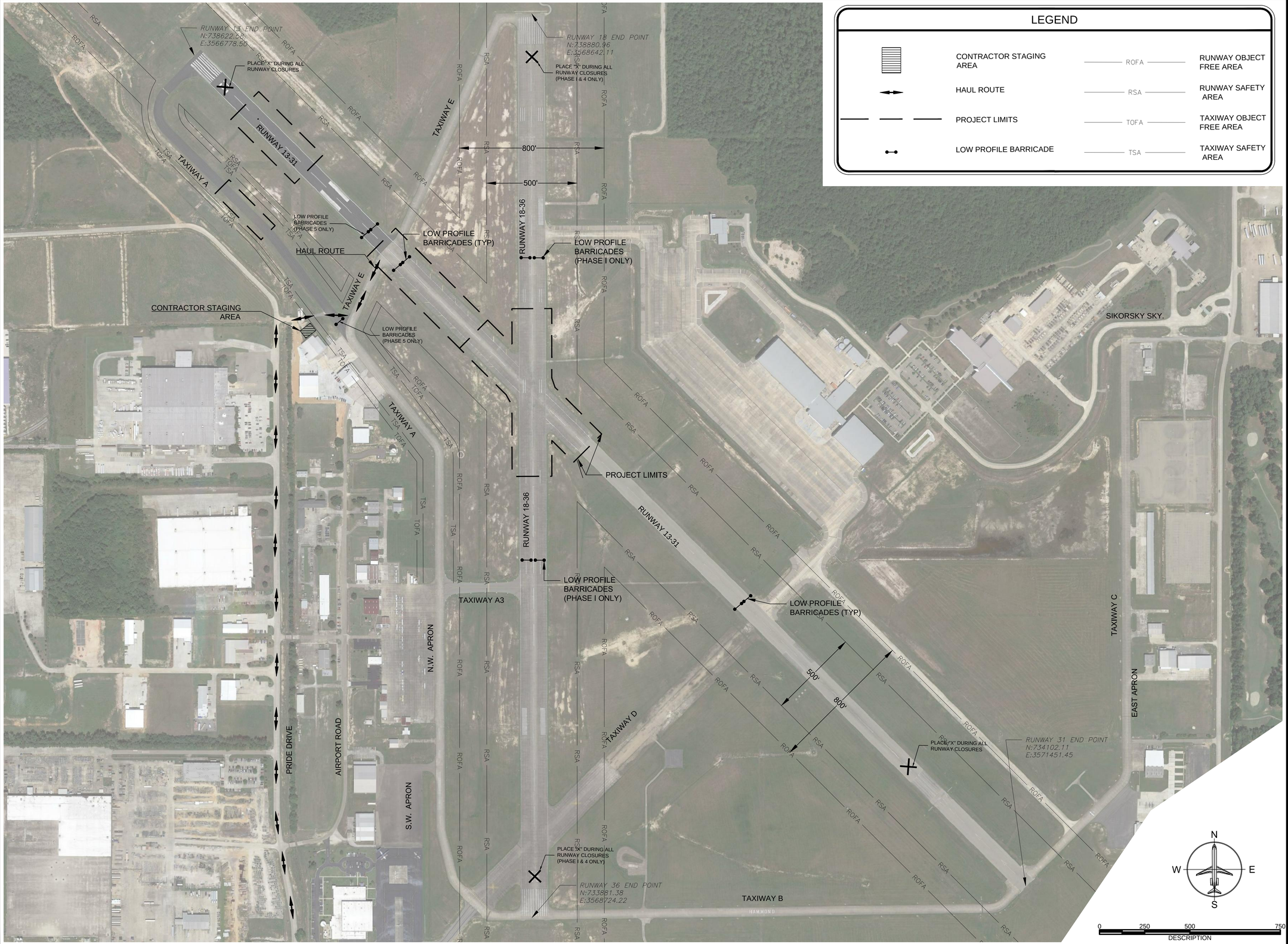

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HAMMOND NORTHSHORE REGIONAL AIRPORT 1932

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
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1. FINAL STAGING LOCATION WILL BE DETERMINED DURING PRE-CONSTRUCTION MTG.
2. NO EMPLOYEE VEHICLES ALLOWED ON AIRFIELD.
3. CONTRACTOR SHALL USE PAPER JOINT TAPERS FOR TEMPORARY TRAFFIC IF REQUIRED BY THE ENGINEER OR AIRPORT. ALL COST SHALL BE INCLUDED IN OTHER ITEMS.

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

SAFETY PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 4

SAFETY NOTES

1. THE CONTRACTOR SHALL OBTAIN, HAVE KNOWLEDGE OF, AND INCORPORATE THE FOLLOWING SAFETY PROVISIONS INTO THE CONSTRUCTION PROJECT:
   –OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION–AC 150/5370–2F OR CURRENT.
   –AIRPORT SAFETY SELF INSPECTION–AC 150/5200–18C OR CURRENT.
   –PAINTING, MARKING AND LIGHTING OF VEHICLES USED ON AIRPORTS–AC 150/5210–5D OR CURRENT.
   –STANDARDS FOR AIRPORT MARKINGS – AC 150/5340 – 1L OR CURRENT.
   COPIES OF THESE DOCUMENTS ARE PROVIDED IN THE CONTRACT DOCUMENTS, ON–LINE, OR IN THE AIRPORT OPERATIONS OFFICE. FOR OTHER CONSIDERATIONS RELATING TO SAFETY, SEE SPECIFICATIONS.

2. ALL VEHICLES AUTHORIZED FOR USE ON THE AIRFIELD SHALL MEET FAA REQUIREMENTS FOR MARKINGS AND LIGHTS. (SEE AC 150/5210–5D). ALL CONTRACTOR VEHICLES SHALL DISPLAY IN FULL VIEW A FLASHING AMBER (YELLOW) DOME–TYPE LIGHT AND/OR ABOVE THE VEHICLE A 3'X 3' OR LARGER, ORANGE AND WHITE CHECKERBOARD FLAG, EACH CHECKERBOARD COLOR OR BEING 1–FOOT SQUARE, (SEE CONSTRUCTION SAFETY FLAG DETAIL, THIS SHEET) AND SAID VEHICLES SHALL BE ESCORTED UNDER THE CONTROL OF A BADGED EMPLOYEE WITH A RADIO EQUIPPED VEHICLE. ANY VEHICLE OPERATING IN THE ACTIVE AOA SHALL UTILIZE ITS FLASHING AMBER (YELLOW) DOME LIGHT, MOUNTED ON TOP OF THE VEHICLE AND OF SUCH INTENSITY TO CONFORM TO LOCAL CODES FOR MAINTENANCE AND EMERGENCY VEHICLES. ALL VEHICLES AND EQUIPMENT WILL BE REQUIRED TO DISPLAY A LARGE COMPANY SIGN ON BOTH SIDES OF THE VEHICLE AND ADVISE AIRPORT OPERATIONS AND SECURITY OF A CURRENT LIST OF COMPANIES AUTHORIZED TO ENTER AND CONDUCT WORK ON THE AIRPORT.

3. ANY CONSTRUCTION ACTIVITY WITHIN 250 FEET OF AN ACTIVE RUNWAY USEABLE PAVEMENT EDGE OR 75 FEET FROM AN ACTIVE TAXIWAY EDGE OR OPEN EXCAVATIONS IN EXCESS OF THREE INCHES DEEP WITHIN THE ABOVE AREAS, WILL REQUIRE CLOSURE OF THE AFFECTED RUNWAY OR TAXIWAY, UNLESS OTHERWISE APPROVED BY AIRPORT OPERATIONS. CLOSURE REQUIRES THE SAME NOTAM PROVISIONS AS DESCRIBED HEREIN.

4. NOTICE TO AIRMEN (NOTAMS) – THE CONTRACTOR WILL PROVIDE THE NECESSARY INFORMATION ON CONSTRUCTION CONDITIONS (PAVEMENT CLOSURE, TIE–INS, ETC.) TO THE OWNER A MINIMUM OF SEVENTY TWO (72) HOURS PRIOR SO THAT A NOTAM CAN BE ISSUED IN ACCORDANCE WITH ESTABLISHED CRITERIA BY THE OWNER TO THE F.A.A. FLIGHT SERVICE STATION. NO RUNWAY, TAXIWAY, APRON OR AIRPORT ROADWAY SHALL BE CLOSED WITHOUT WRITTEN APPROVAL OF AIRPORT OPERATIONS AND TWO (2) WEEKS NOTICE.

5. CONTRACTOR WILL NOT BE ALLOWED TO USE ANY OF THE EXISTING RUNWAYS OR TAXIWAYS AS PART OF THE HAUL ROAD UNLESS INDICATED ON THE DRAWINGS OR SPECIFICALLY AUTHORIZED BY THE OWNER.

6. TRUCK HAUL ROUTES ON THE AIRFIELD SHALL BE DELINEATED WITH LIGHTED LOW PROFILE BARRICADES TO CLEARLY MARK THE ROUTES TO THE WORK SITES SUBJECT TO APPROVAL BY AIRPORT OPERATIONS.

7. NO CONTRACTOR VEHICLES, EQUIPMENT, OR PERSONNEL SHALL CROSS OR BE WITHIN ANY RUNWAY OR TAXIWAY OBJECT FREE AREA, EXCEPT DURING CONSTRUCTION PERIOD CLOSURES OR WHEN CLEARANCE IS REQUIRED FROM AND GRANTED BY AIRFIELD OPERATIONS. WHEN ACCESS IS GRANTED THE CONTRACTOR SHALL BE REQUIRED TO PROVIDE A FLAGMAN ON EACH SIDE OF ACTIVE CROSSING TO DIRECT VEHICULAR TRAFFIC AND PROTECT AIRCRAFT TRAFFIC. THE CONTRACTOR SHALL ALSO HAVE SUITABLE EQUIPMENT APPROVED BY THE ENGINEER AT EACH CROSSING TO KEEP THE CROSSING CLEAN OF ALL DIRT AND DEBRIS SAFE FOR AIRCRAFT TRAFFIC.

8. TAXIWAYS AND EXISTING APRONS SHALL BE KEPT FREE OF ALL DEBRIS, DIRT, ETC., AT ALL TIMES. ANY SPILLAGE OF EXCAVATION OR OTHER MATERIAL SHALL BE CLEANED UP IMMEDIATELY BY THE CONTRACTOR WITH A MOTOR DRIVEN SWEEPER OR VACUUM AS REQUIRED BY THE OWNER. A PROGRAM OF REGULAR TAXIWAY AND APRON INSPECTION WILL BE PLANNED BY THE CONTRACTOR, THE AIRPORT MANAGER AND THE OWNER. DEBRIS, WASTE AND LOOSE MATERIAL CAPABLE OF CAUSING DAMAGE TO AIRCRAFT LANDING GEAR, PROPELLERS OR BEING INGESTED IN JET ENGINES SHALL NOT BE ALLOWED ON ACTIVE AIRCRAFT MOVEMENT AREAS. IF THESE MATERIALS ARE OBSERVED TO BE ON ACTIVE AIRCRAFT MOVEMENT AREAS, THEY WILL BE REMOVED IMMEDIATELY AND CONTINUOUSLY DURING CONSTRUCTION BY THE CONTRACTOR OR IF BY REMOVED BY AIRPORT AT COST PLUS FEE.

9. THE ENGINEER WILL ARRANGE WITH AIRPORT OPERATIONS FOR INSPECTION PRIOR TO OPENING FOR AIRCRAFT USE. ANY RUNWAY OR TAXIWAY THAT HAS BEEN CLOSED FOR WORK, ON OR ADJACENT THERETO, OR THAT HAS BEEN USED FOR A CROSSING POINT OR HAUL ROUTE BY THE CONTRACTOR.

10. PEN FLAME WELDING OR TORCH CUTTING OPERATIONS ARE PROHIBITED UNLESS ADEQUATE FIRE AND SAFETY PRECAUTIONS HAVE BEEN TAKEN AND THE PROCEDURE APPROVED BY AIRPORT OPERATIONS.

11. STOCKPILED MATERIAL SHALL BE CONSTRAINED IN A MANNER TO PREVENT MOVEMENT RESULTING FROM AIRCRAFT JET BLAST OR WIND CONDITIONS IN EXCESS OF TEN KNOTS. STOCKPILE HEIGHT SHALL BE LESS THAN 10 FEET.

12. THE CONTRACTOR SHALL CONDUCT HIS CONSTRUCTION OPERATIONS AS SHOWN ON THE PROJECT LAYOUT SHEET, SAFETY PLANS, AND CONTRACTOR'S APPROVED PHASING PLAN. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION ACTIVITIES WITH THE OWNER TO MINIMIZE INTERFERENCE TO AIRCRAFT OPERATIONS DURING CONSTRUCTION.

13. CONTRACTOR SHALL HAVE A WORKING RADIO ON SITE AT ALL TIMES DURING CONSTRUCTION AND SHALL ASSIGN RESPONSIBLE PERSONNEL INCLUDING ALL FLAGMEN TO CONTINUOUSLY MONITOR GROUND CONTROL (119.85). THE CONTRACTOR WILL ALSO PROVIDE THE RPR WITH AN APPROVED RADIO FOR USE DURING THE DURATION OF CONSTRUCTION.

14. ALL ACTIVE AIRPORT OPERATIONAL AREAS (AOA) WHICH ARE ADJACENT TO A CONSTRUCTION WORK AREA SHALL BE SEPARATED BY LOW PROFILE AIRFIELD BARRICADES WITH RED FLASHING LIGHTS (SEE DETAIL THIS PAGE). NO CONSTRUCTION TRAFFIC WILL CROSS ACTIVE AIRPORT OPERATIONAL AREAS. THE CONTRACTOR SHALL PROVIDE, INSTALL, AND INSPECT THE BARRICADES DAILY.

15. ALL GATES MUST BE LOCKED AT ALL TIMES. A GATE GUARD MAY BE USED. NO ADDITIONAL PAYMENT WILL BE MADE IF CONTRACTOR ELECTS TO USE A GATE GUARD. ONLY EMPLOYEES WHO HAVE BEEN THROUGH "AIRPORT FAMILIARIZATION TRAINING" WILL BE ALLOWED THROUGH GATE. THOSE WHO HAVE NOT BEEN THROUGH TRAINING MUST BE ESCORTED BY A TRAINED CONTRACTOR REPRESENTATIVE.

16. CONTRACTOR AND SUBCONTRACTOR REPRESENTATIVE WILL BE REQUIRED TO ATTEND THE 'CONSTRUCTION SAFETY ON AIRPORTS' MEETING PRIOR TO COMMENCEMENT OF WORK. SAFETY SHALL BE A TOPIC OF DISCUSSION AT EACH CONSTRUCTION PROGRESS MEETING WITH THE ENGINEER. INTERMITTENT SAFETY MEETINGS WILL BE HELD AS REQUIRED.

17. CONSTRUCTION DURING THE PROJECT MAY BE HALTED AT ANY TIME BY AIRPORT OPERATIONS IF IT IS DETERMINED TO BE IN THE BEST INTEREST OF AIRPORT ACTIVITIES, SAFETY, OR SECURITY. THE CONTRACTOR MAY BE DIRECTED TO REMOVE EQUIPMENT AND/OR EVACUATE THE SITE IF DEEMED NECESSARY BY AIRPORT OPERATIONS. NECESSARY EXTENSIONS IN CONTRACT TIME WILL BE GRANTED OR A STOP WORK ORDER WILL BE ISSUED DUE TO THESE DELAYS, HOWEVER, THERE WILL BE NO ADJUSTMENTS IN CONTRACT PRICE DUE TO THESE WORK STOPPAGES.

18. THE CONTRACTOR SHALL CEASE EXCAVATION AND CONTACT AIRPORT FACILITIES UPON THE DISCOVERY OF ANY LINES, CONDUITS, OR PIPES THAT HAVE NOT BEEN PREVIOUSLY IDENTIFIED. EXCAVATION SHALL NOT CONTINUE UNTIL THE ITEM IS IDENTIFIED AND/OR APPROVAL TO CONTINUE IS GRANTED BY THE ENGINEER AND AIRPORT FACILITIES.

19. SECURITY AND SAFETY PLAN: WITHIN 10 DAYS OF NOTIFICATION OF INTENT TO AWARD, THE CONTRACTOR SHALL SUBMIT SEVEN (7) COPIES OF A WRITTEN SECURITY PLAN, A CONSTRUCTION SAFETY AND PHASING PLAN (CSPP), AS WELL AS A CONTINGENCY IF REQUESTED BY OWNER, ABNORMAL FAILURES OR UNEXPECTED DISASTER. THE PLAN SHALL ADDRESS HOW SITE SECURITY WILL BE MAINTAINED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS. THE SAFETY PLAN SHALL SUMMARIZE THE CONTRACTOR'S ACTION TO PROMOTE, MAINTAIN, AND CONTROL ALL PROJECT WORK TO ENSURE SAFETY WORK ENVIRONMENT, AS WELL AS MEET ALL LOCAL, STATE AND FEDERAL CONSTRUCTION SAFETY REGULATIONS. THE FAA, DOTD, AND AIRPORT PROJECT NUMBERS SHALL BE STATED ON THE COVER OF BOTH PLANS.

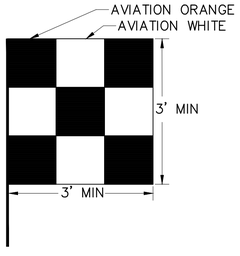
20. GENERAL INTENT: IT IS INTENDED THAT THE CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE AIRPORT SECURITY PLAN AND WITH THE SECURITY REQUIREMENTS SPECIFIED HEREIN BY AIRPORT OPERATIONS. THE CONTRACTOR SHALL DESIGNATE TO THE ENGINEER AND AIRPORT OPERATIONS, IN WRITING, THE NAME OF HIS "CONTRACTOR SECURITY OFFICER (CSO)." THE CSO SHALL REPRESENT THE CONTRACTOR ON THE SECURITY REQUIREMENTS FOR THE CONTRACT. THE CSO SHALL BE RESPONSIBLE FOR BRIEFING ALL EMPLOYEES AND SUBCONTRACTOR PERSONNEL ON SECURITY REQUIREMENTS. ALL NEW CONTRACTOR EMPLOYEES SHALL BE BRIEFED ON SECURITY REQUIREMENTS PRIOR TO WORKING IN THE CONSTRUCTION AREA.

21. CONTRACTOR IS REQUIRED TO HAVE A PERSON ON CALL 24–HOURS A DAY FOR EMERGENCY MAINTENANCE OF AIRPORT HAZARD LIGHTING, BARRICADES, AND EMERGENCY REPAIRS OF PROJECT RELATED WORK. CONTRACTOR MUST INCLUDE THIS INFORMATION IN THE SECURITY PLAN AND FILE THE CONTACT PERSON'S NAME WITH AIRPORT OPERATIONS.

22. FINES: PAYMENT OF ALL FINES ASSESSED TO HAMMOND NORTHSHORE REGIONAL AIRPORT DUE TO VIOLATIONS BY THE CONTRACTOR OF FAA, SAFETY OR ENVIRONMENTAL REQUIREMENTS SHALL BE THE SOLE RESPONSIBILITY OF THE PRIME CONTRACTOR.

23. EACH CONTRACTOR AND SUBCONTRACTOR EMPLOYEE WHO WILL OPERATE A VEHICLE ON ANY PORTION OF THE AIRPORT OPERATIONS AREA (AOA) MUST BE FAMILIAR WITH AND UNDERSTAND THE FOLLOWING:
   A. THE AIRPORTS RULES AND REGULATIONS;
   B. THE AIRPORTS PROCEDURES FOR THE OPERATION OF VEHICLES;
   C. THE DESIGNATED HAUL ROUTE AND OPERATIONAL REQUIREMENTS/ LIMITATIONS FOR THE ROUTE; AND
   D. THE CONSEQUENCES OF NON COMPLIANCE WITH THE ABOVE.

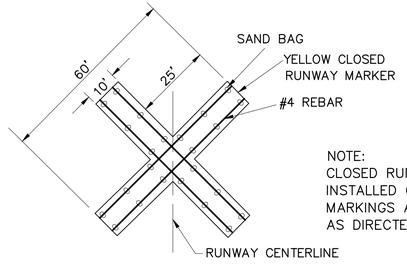
24. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION SIGNAGE THAT MAY BE REQUIRED BY LOCAL AND STATE AUTHORITIES. NO ADDITIONAL PAYMENT WILL BE MADE FOR THIS ITEM.



NOTE:
SAFETY FLAG SHALL BE PROMINENTLY DISPLAYED ON ALL CONSTRUCTION EQUIPMENT. AN AMBER FLASHING LIGHT IS REQUIRED FOR NIGHT WORK AND MAY BE SUBSTITUTED FOR THE FLAG DURING THE DAY.

CONSTRUCTION SAFETY FLAG

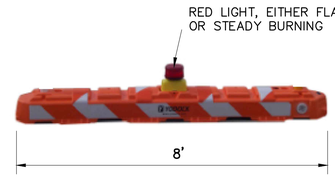
N.T.S.



NOTE:
CLOSED RUNWAY MARKERS SHALL BE INSTALLED ON TOP OF RUNWAY NUMBER MARKINGS AS SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

CLOSED RUNWAY MARKER DETAIL

N.T.S.



BARRICADE NOTES:

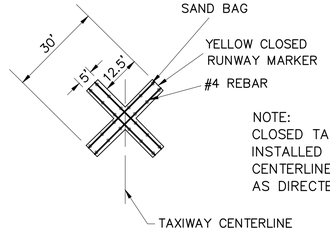
1. BARRICADES SHALL MEET FAA SPECIFICATIONS AS OUTLINED IN CURRENT FAA ADVISORY CIRCULARS.
2. CONTRACTOR SHALL WEIGHT BARRICADE TO PREVENT DISPLACEMENT. METHOD TO BE APPROVED BY THE ENGINEER.
3. BARRICADES SHALL BE LOCATED AS PER A/C 5370–2F AND AS DIRECTED BY THE ENGINEER, BARRICADES USED ON RUNWAYS AND TAXIWAYS MUST BE EASILY COLLAPSIBLE UPON CONTACT WITH AN AIRCRAFT. (NO RAILROAD TIES)
4. POLYETHYLENE BARRICADES ARE RECOMMENDED. (SHERWIN INDUSTRIES OR APPROVED EQUAL.)

LIGHTED BARRICADE DETAILS

N.T.S.

TEMPORARY MARKINGS, BARRICADES, AND TRAFFIC CONTROL

1. SEE SPECIFICATION SECTION 01030, 01530, AND M–200.
2. THE CONTRACTOR SHALL PROVIDE NOTIFICATION OF START OF CONSTRUCTION A MINIMUM OF 15 DAYS PRIOR TO EXPECTED START DATE. CONTRACTOR SHALL INSTALL LIGHTED BARRICADES AND CLOSURE "X"S ACROSS RUNWAYS AND TAXIWAYS AS INDICATED ON CONSTRUCTION SAFETY PLAN, AS WELL AS STANDARD BARRICADES AROUND ANY EXCAVATIONS.
3. THE CONTRACTOR SHALL BE PREPARED TO UPON NOTIFICATION, IMMEDIATELY REMOVE ALL BARRICADES AND TO TAKE OTHER MEASURES AS NEEDED TO ACCOMMODATE EMERGENCY LANDING BY AIRCRAFT WHILE WORK IS IN PROGRESS.



NOTE:
CLOSED TAXIWAY MARKERS SHALL BE INSTALLED ON TOP OF THE TAXIWAY CENTERLINE AS SHOWN ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.

CLOSED TAXIWAY MARKER DETAIL

N.T.S.

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1932
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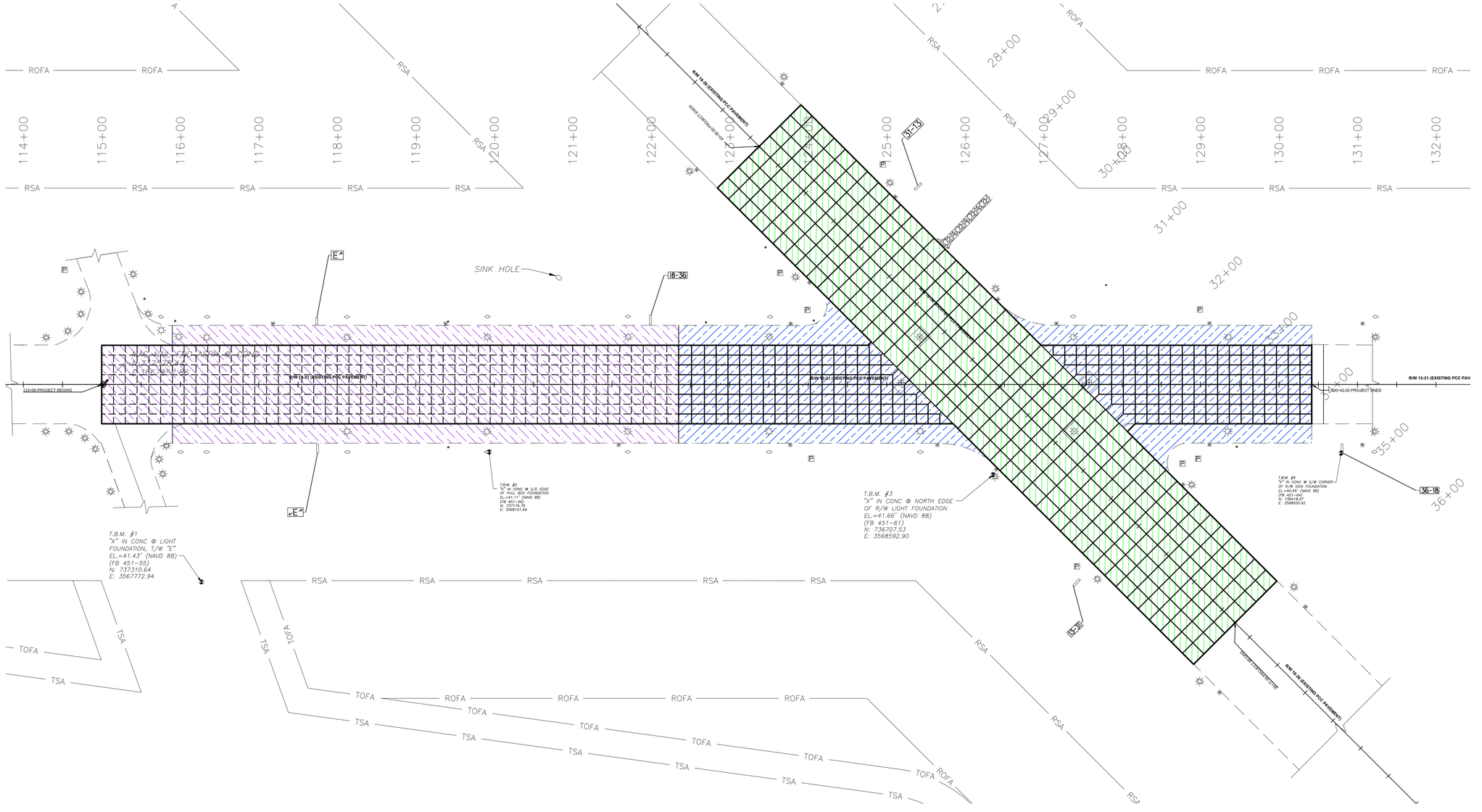

TOTAL PROJECT TIME = 35 CALENDAR DAYS (BASE BID)

PHASING

PHASE	DURATION (CALENDAR DAYS)	LIQUIDATED DAMAGES	DESCRIPTION
1	18 DAYS (TOTAL)	$2,500 / DAY	PHASE 1 - WORK SHALL INCLUDE DEMOLISHION OF EXISTING PAVEMENT, RELOCATION OF MIRLs, EDGE DRAINS, PCC PAVEMENT RECONSTRUCTION AND RUNWAY PAVEMENT STRIPING.
2	17 DAYS (TOTAL)	$2,500 / DAY	PHASE 2 - WORK SHALL INCLUDE DEMOLISHION OF EXISTING PAVEMENT, RELOCATION OF MIRLs, EDGE DRAINS, PCC PAVEMENT RECONSTRUCTION AND RUNWAY PAVEMENT STRIPING. WORK WITHIN PHASE 2 SHALL BE COMPLETED DURING NIGHT HOURS (7:00 PM TO 7:00 AM). DAYTIME WORK IS PERMITTED IN PHASE 2 ON SATURDAY AND SUNDAY WITH PRIOR PERMISSION (72 HRS NOTICE REQUIRED).
3	20 ADDITIONAL DAYS (TOTAL)	$2,500 / DAY	PHASE 3 - WORK SHALL INCLUDE DEMOLISHION OF EXISTING PAVEMENT, RELOCATION OF MIRLs, EDGE DRAINS, ASPHALT PAVEMENT RECONSTRUCTION AND PAVEMENT STRIPING. WORK WITHIN PHASE 3 SHALL BE OUTSIDE OF THE RUNWAY 18-36 RUNWAY SAFETY AREA
4	5 ADDITONAL DAYS (TOTAL)	$2,500 / DAY	PHASE 4 - RUNWAY 18-36 AND RUNWAY 13-31 MARKINGS. ALL RUNWAY MARKING SHALL BE INSTALLED IN ACCORDANCE WITH EXISTING CONDITIONS AND THE LATEST FAA ADVISORY CIRCULAR.
5	20 ADDITIONAL DAYS (TOTAL)	$2,500 / DAY	PHASE 5 - RUNWAY 13-31 AND PARALLEL TAXIWAY REPAIRS. WORK SHALL INCLUDE SAW CUTTING, REMOVAL OF EXISTING PAVEMENT, EXCAVATION AND RECONSTRUCTION OF ASPHALT PAVEMENT.

NOTES:
AFTER COMPLETION OF PAVING OPERATIONS, CONTRACT TIME WILL BE SUSPENDED FOR 60 DAYS. NO OTHER WORK SHALL BE PERFORMED DURING THIS TIME.

PHASING NOTES:

1. PRIOR TO BEGINNING ANY OPERATIONS IN ANY PHASE, ALL NECESSARY BARRICADES AND CLOSURE MARKING MEASURES SHALL BE INSTALLED AND VERIFIED.
2. RUNWAY 13-31 WILL BE CLOSED FOR THE DURATION OF CONSTRUCTION. CLOSURE OF RUNWAY SHALL BE IN ACCORDANCE WITH FAA REQUIREMENTS AND SPECIFICATIONS.
3. NO HOLIDAY WORK WILL BE ALLOWED WITHOUT PRIOR APPROVAL.
4. WEEKEND WORK IS PERMISSIBLE WITH AIRPORT APPROVAL (72 HOUR ADVANCED NOTICE REQUIRED). (24 HOUR NOTICE IS REQUIRED FOR ANY CANCELLATION OF REQUESTED WEEKEND WORK) (CONTRACTOR IS RESPONSIBLE FOR ALL CHARGES DUE TO FAILURE TO NOTIFY AIRPORT OF CANCELLATION.)

0 30 60 120
SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

CONSTRUCTION PHASING PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 6

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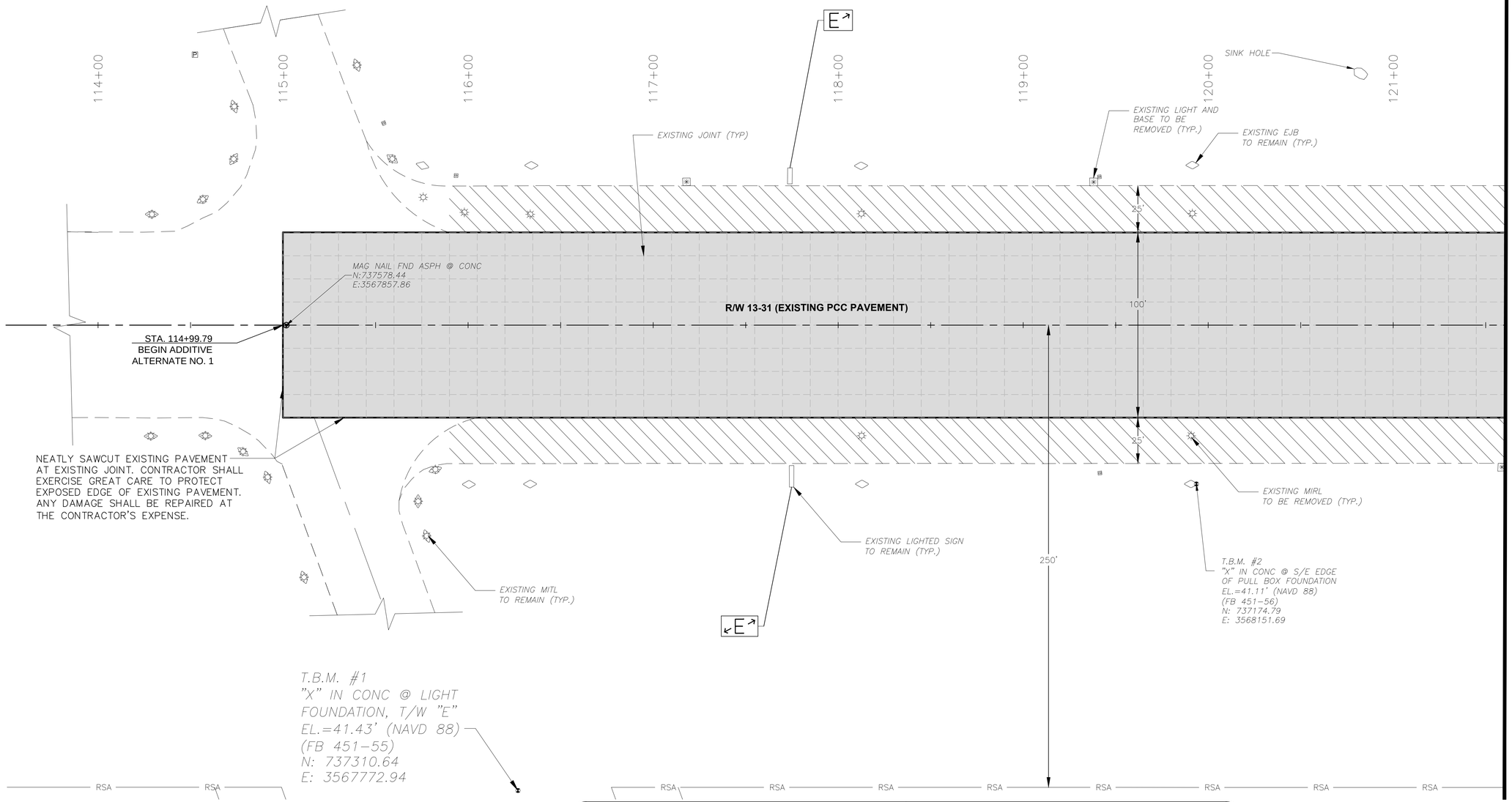

MATCHLINE A (SEE SHEET 8) STA.121+59.56

LEGEND

- PCC RUNWAY PAVEMENT REMOVAL
- SHOULDER PAVEMENT REMOVAL
- EXISTING GRAVEL
- EXISTING LIGHT
- OLD CONCRETE CABLE DUCT MARKER
- ELECTRICAL PULL-BOX WITH CONCRETE FOUNDATION
- OLD RUNWAY LIGHT ON CONCRETE FOUNDATION
- T.B.M. #
- RSA — RUNWAY SAFETY AREA

0 30 60 120
SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932
HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

1. THE CONTRACTOR SHALL EXERCISE EXTREME CARE, PARTICULARLY IN AREAS IMMEDIATELY ADJACENT TO TAXIWAY AND RUNWAY EDGE, TO NOT DISTURB EXISTING PAVEMENTS, UTILITIES, STRUCTURES AND FACILITIES WHICH ARE NOT PART OF THE PROJECT AND WHICH ARE TO REMAIN IN PLACE. CONTRACTOR SHALL REPAIR ANY DAMAGE AT NO COST TO THE OWNER.
2. CONTRACTOR SHALL FIELD VERIFY ALL RUNWAY PAVEMENT REPAIR LOCATIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY.
3. EXISTING DOWELS, TIE BARS, AND REINFORCEMENT ENCOUNTERED AT SAWCUT LINES SHALL BE CUT THROUGH DURING THE SAWING OPERATIONS.
4. SEE ELECTRICAL DEMOLITION PLANS FOR LIGHTING DEMOLITION.

REVISIONS

No.	Description	Date	By

Project Name:
RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:
DEMOLITION PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 7

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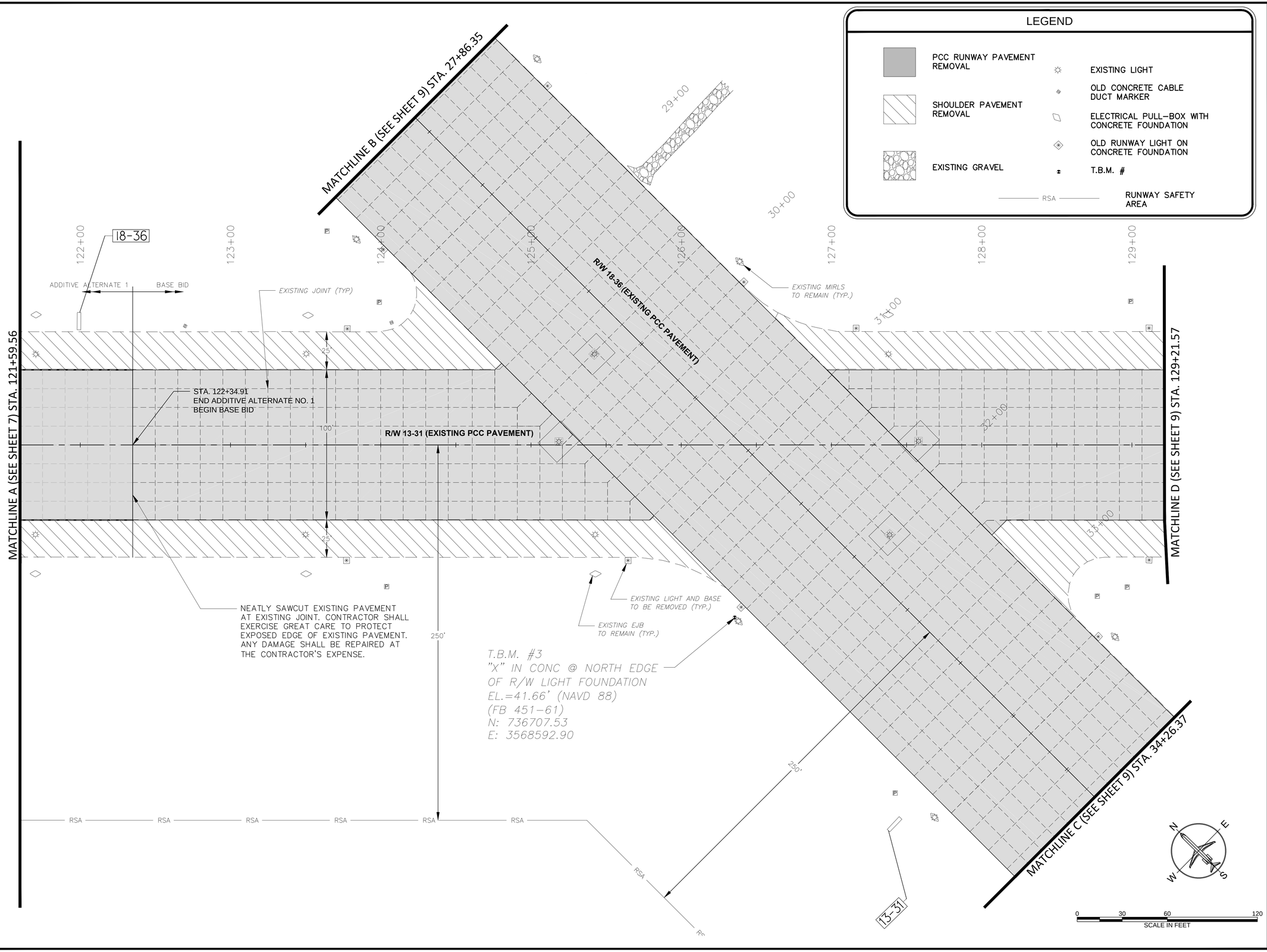

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
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7/5/2016

Designer:	Checked by:
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REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

DEMOLITION PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 8

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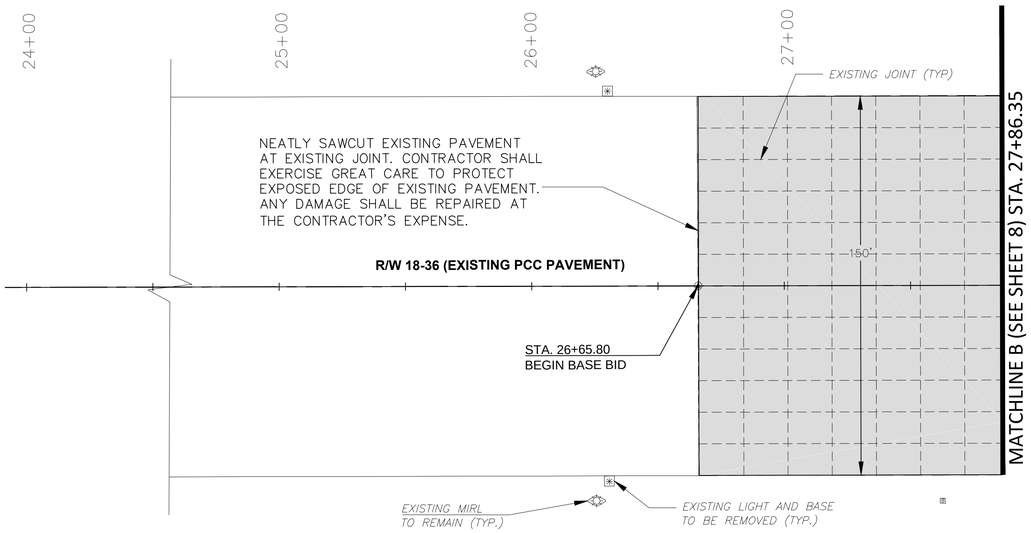

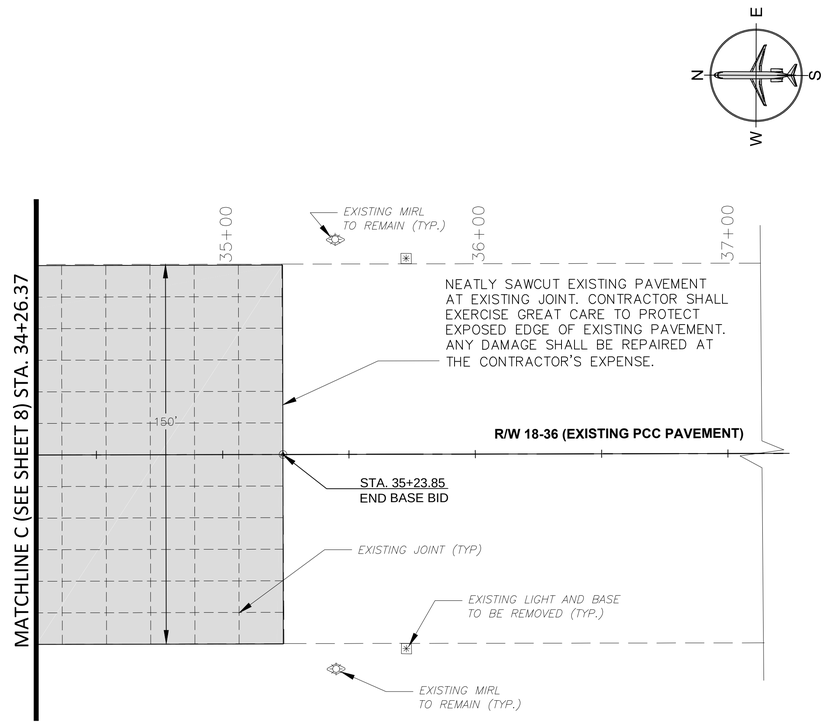

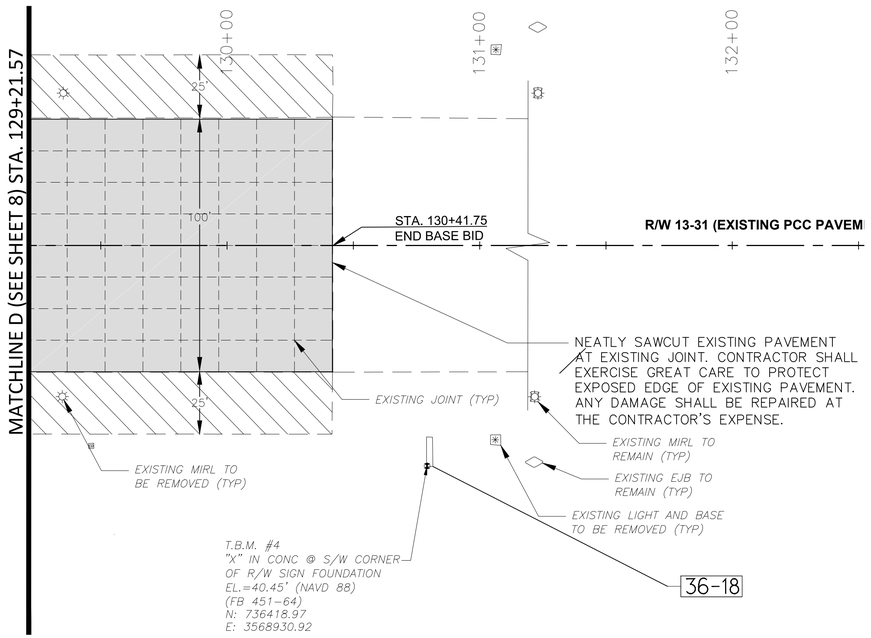

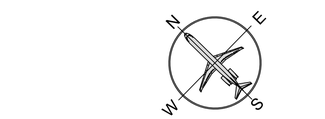

0 30 60 120
SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT 1932

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

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CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
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4. SEE ELECTRICAL DEMOLITION PLANS FOR LIGHTING DEMOLITION.

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

DEMOLITION PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 9

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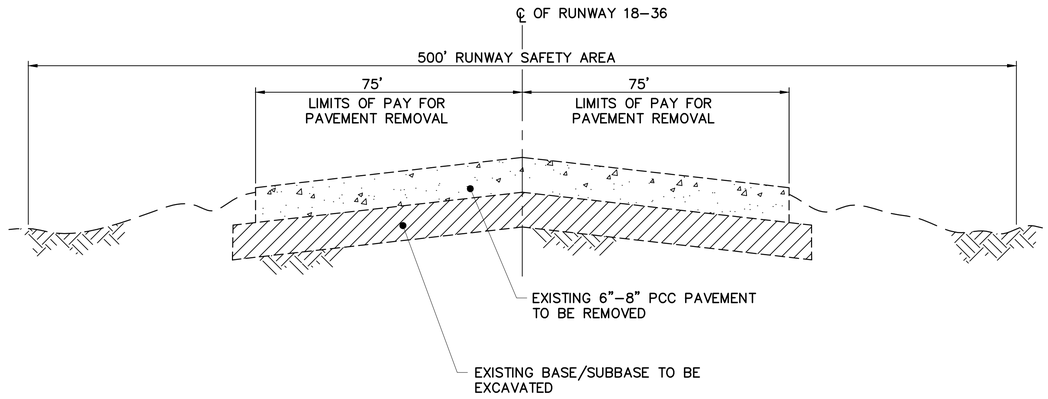
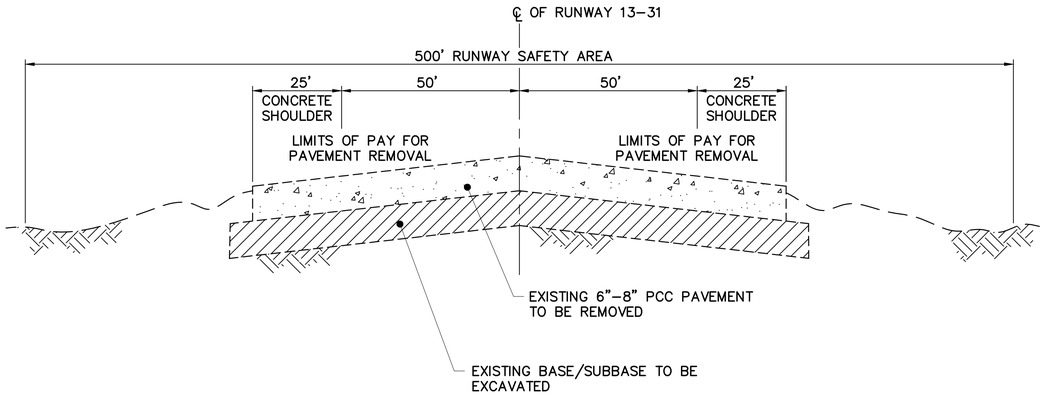


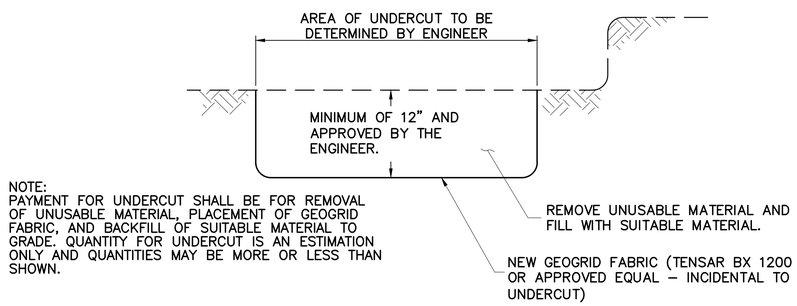
EXISTING RUNWAY 18-36 PAVEMENT

N.T.S.



EXISTING RUNWAY 13/31 PAVEMENT

N.T.S.



NOTE:
PAYMENT FOR UNDERCUT SHALL BE FOR REMOVAL OF UNUSABLE MATERIAL, PLACEMENT OF GEOGRID FABRIC, AND BACKFILL OF SUITABLE MATERIAL TO GRADE. QUANTITY FOR UNDERCUT IS AN ESTIMATION ONLY AND QUANTITIES MAY BE MORE OR LESS THAN SHOWN.

UNDERCUT DETAIL

N.T.S.

NOTES:

1. EXISTING PAVEMENT DEPTHS SHOWN ARE DERIVED FROM THE GEOTECHNICAL AND SUBSURFACE INVESTIGATION DATA AND ARE SHOWN "FOR INFORMATION ONLY". UPON NO CIRCUMSTANCES SHALL THE ENGINEER OR OWNER BE HELD RESPONSIBLE FOR THE ACCURACY OF THIS INFORMATION. HOWEVER, THE CONTRACTOR MAY, AT HIS/HER OWN EXPENSE AND ASSUMING ALL RISKS, MAKE ANY ADDITIONAL INVESTIGATIONS AND TESTS AS HE/SHE DEEMS NECESSARY TO DETERMINE THE EXISTING PAVEMENT AND BASE DEPTHS FOR PERFORMANCE OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. CONTRACTOR SHALL CONTACT PROGRAM MANAGER FOR ACCESS TO THE SITE.

2. PCC AND/OR BITUMINOUS PAVEMENT STRUCTURE MAY EXTEND PAST LIMITS OF RUNWAY OR SHOULDER REMOVAL. THERE WILL BE NO PAYMENT FOR REMOVAL OF THESE MATERIALS OUTSIDE OF RUNWAY/SHOULDER REMOVAL LIMITS. REMOVAL OF MATERIAL ONE (1) FOOT OUTSIDE PCC PAVEMENT FOR PLACEMENT OF SUBBASE AND AS REQUIRED FOR PLACEMENT OF UNDERDRAINS AND ELECTRICAL WORK SHALL BE CONSIDERED INCIDENTAL

3. LENGTHS AND WIDTHS SHOWN OF PCC PAVEMENTS TO BE REMOVED ARE APPROXIMATE. EXACT DIMENSIONS WILL BE DETERMINED IN THE FIELD BY THE CONTRACTOR AND ENGINEER. NO ADDITIONAL PAYMENT WILL BE MADE FOR MATERIAL OUTSIDE OF THE LIMITS AS SHOWN WITHOUT PRIOR APPROVAL OF ENGINEER OR PROGRAM MANAGER.

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
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CIVIL ENGINEERING
7/5/2016

Designer: BSS	Checked by: MDH
Technician: SGK	Project Number: 149090

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

DEMOLITION DETAILS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date: JULY 2016	Division:
Scale: (22x34) N/A	Sheet Number:
	Drawing Number: 10

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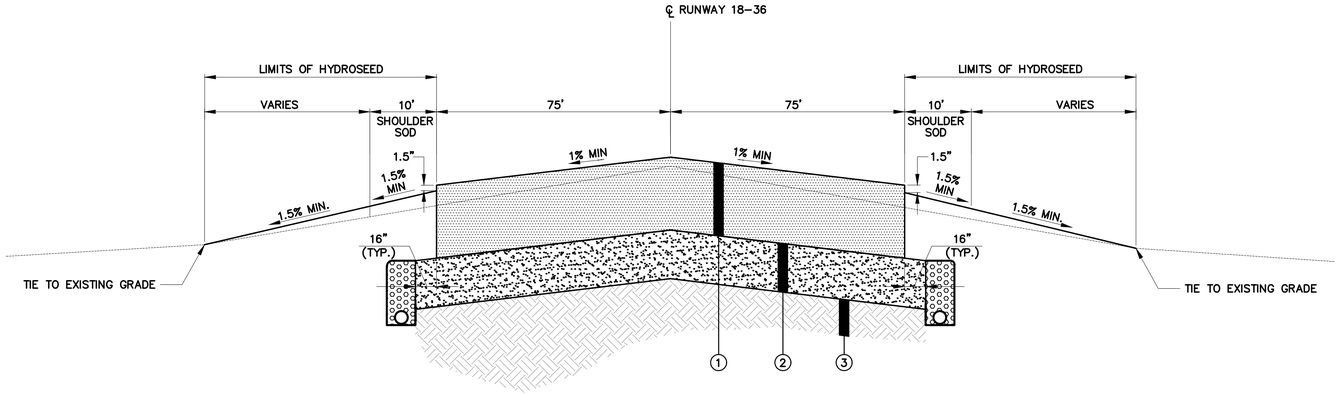
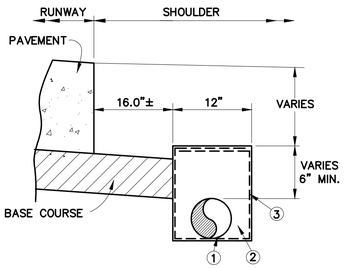
LEGEND

(1)	P-501 PORTLAND CEMENT CONCRETE PAVEMENT, 10.5" DEPTH	(4)	P-401 BITUMINOUS ASPHALT PAVEMENT, 4" DEPTH
(2)	P-209.1 CRUSHED AGGREGATE BASE COURSE, 4" DEPTH	(5)	P-209.2 CRUSHED AGGREGATE BASE COURSE, 8" DEPTH
(3)	COMPACTED SUBGRADE	(6)	P-154 SUBBASE COURSE, 8" DEPTH



TYPICAL SECTION - RUNWAY 18-36 -
PCC PAVEMENT - BASE BID

N.T.S.

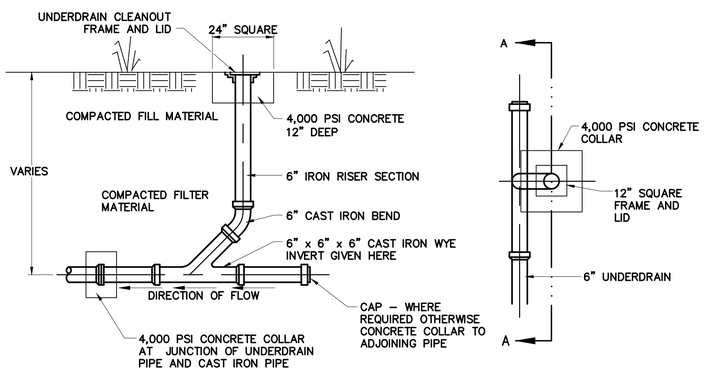


① 6" PERFORATED CPP PIPE
② POROUS BACKFILL
③ FILTER FABRIC (MIN. 12" OVERLAP)

NOTES:
1. ALL LABOR AND MATERIALS REQUIRED FOR CONSTRUCTION OF THE RUNWAY UNDERDRAIN SHALL BE PAID FOR AND INCLUDED IN THE UNIT BID PRICES.
2. ITEMS 2 AND 3 NOT REQUIRED IN TRENCH WORK FOR NON-PERFORATED PIPE, BUT ITEMS 2 AND 3 ARE CONSIDERED INCIDENTAL TO PERFORATED PIPE.

SECTION RUNWAY UNDERDRAIN

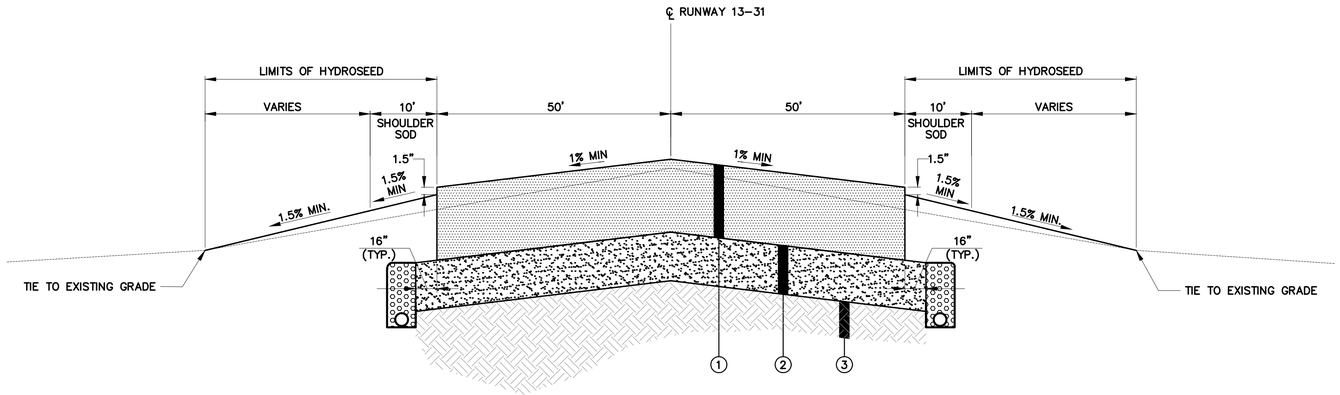
N.T.S.



SECTION A–A PLAN VIEW

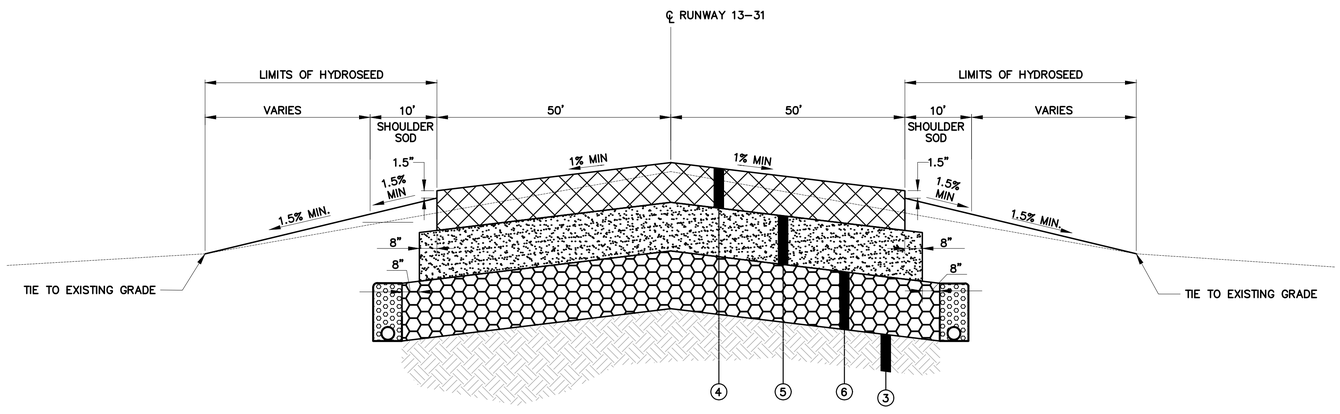
UNDERDRAIN CLEANOUT

N.T.S.



TYPICAL SECTION - RUNWAY 13-31 -
PCC PAVEMENT - BASE BID

N.T.S.



TYPICAL SECTION - RUNWAY 13-31 - ASPHALT
PAVEMENT - ADDITIVE ALTERNATE 1&3

N.T.S.

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932
HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

1. AFTER COMPACTION IS COMPLETED, THE SUBGRADE AREA SHALL BE PROOF ROLLED WITH A HEAVY PNEUMATIC–TIRED ROLLING HAVING FOUR OR MORE TIRES ABREAST, EACH TIRE LOADED TO A MINIMUM OF 30,000 POUNDS AND INFLATED TO A MINIMUM OF 125 PSI IN THE PRESENCE OF THE ENGINEER. APPLY A MINIMUM OF 90% COVERAGE OR AS SPECIFIED BY THE ENGINEER. SOFT AREAS WHICH DEFLECT MORE THAN 1 INCH OR SHOW PERMANENT DEFORMATION GREATER THAN 1 INCH SHALL BE REMOVED AND REPLACED WITH SUITABLE MATERIAL OR REWORKED TO CONFORM WITH THE MOISTURE CONTENT AND COMPACTION REQUIREMENTS.

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

TYPICAL SECTIONS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
N/A	Drawing Number: 11

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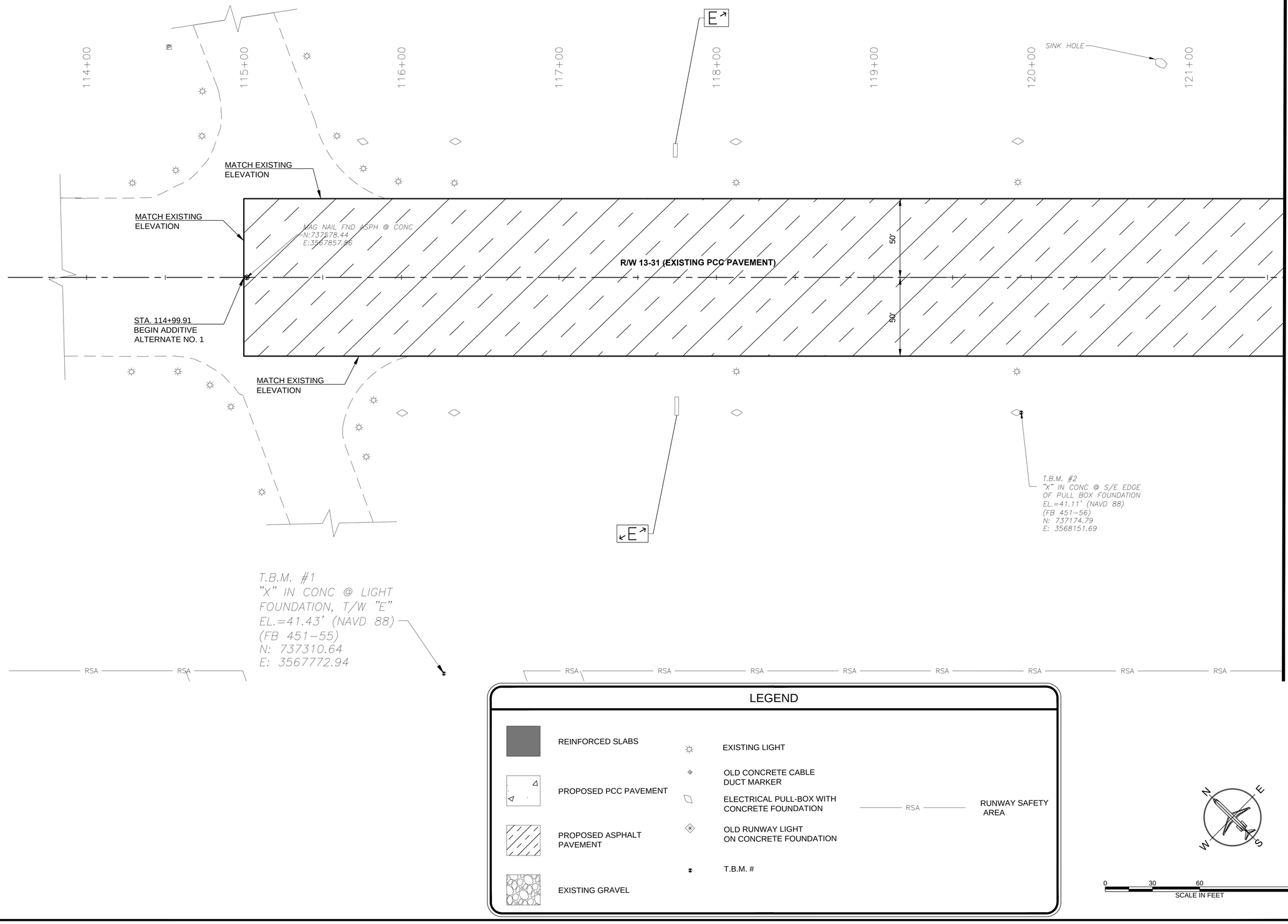

MATCHLINE A (SEE SHEET 13) STA.121+59.56

LEGEND

- REINFORCED SLABS
- PROPOSED PCC PAVEMENT
- PROPOSED ASPHALT PAVEMENT
- EXISTING GRAVEL
- EXISTING LIGHT
- OLD CONCRETE CABLE DUCT MARKER
- ELECTRICAL PULL-BOX WITH CONCRETE FOUNDATION
- OLD RUNWAY LIGHT ON CONCRETE FOUNDATION
- T.B.M. #
- RSA — RUNWAY SAFETY AREA

0 30 60 120
SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932
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REVISIONS			
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Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

LAYOUT PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 12

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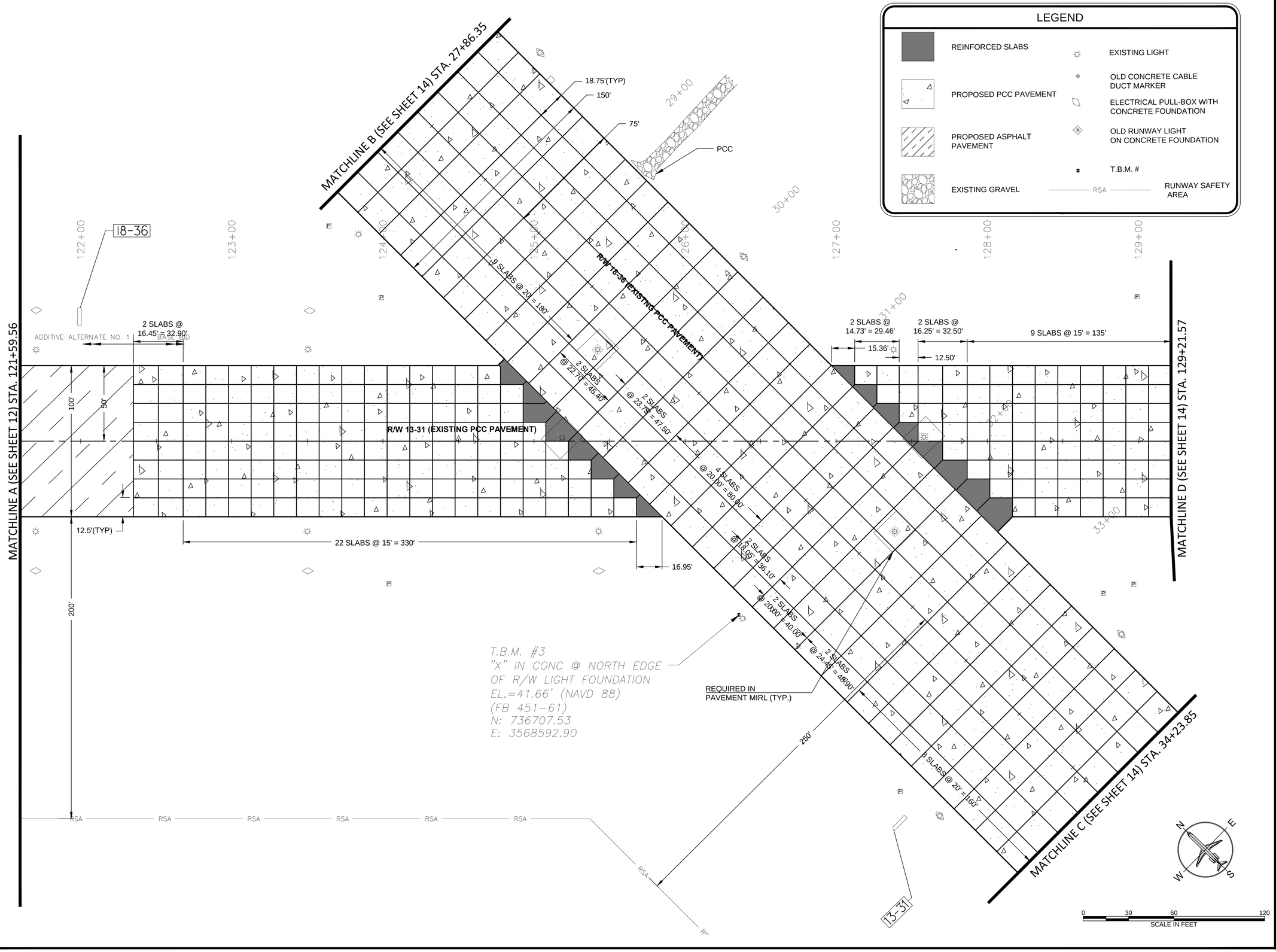

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932

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REVISIONS

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Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

LAYOUT PLAN

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Scale: (22x34)	Sheet Number:
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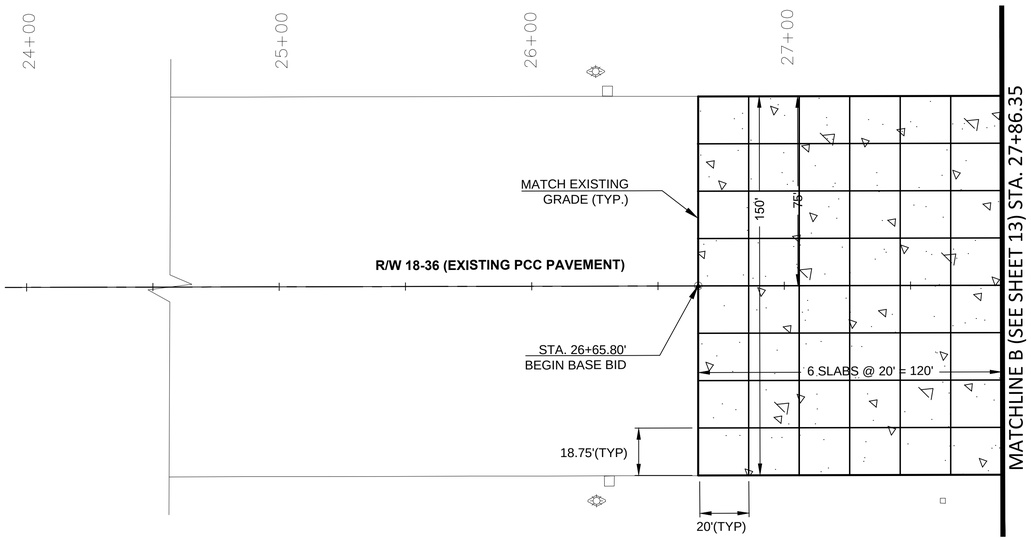

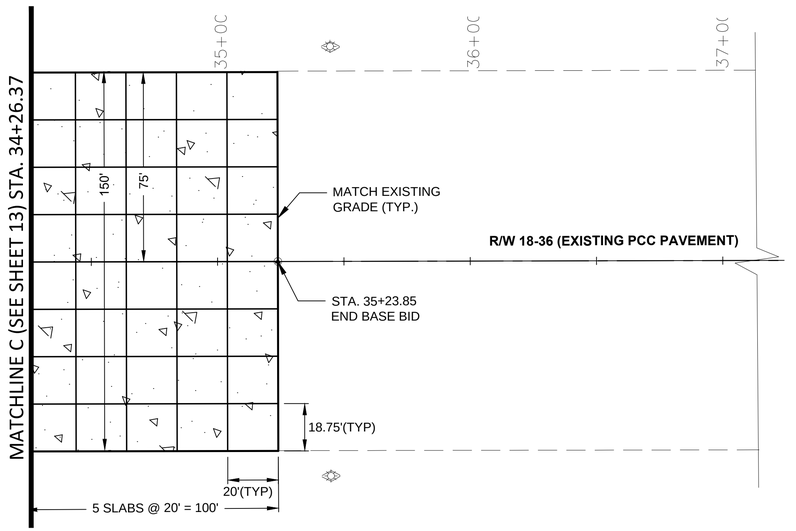

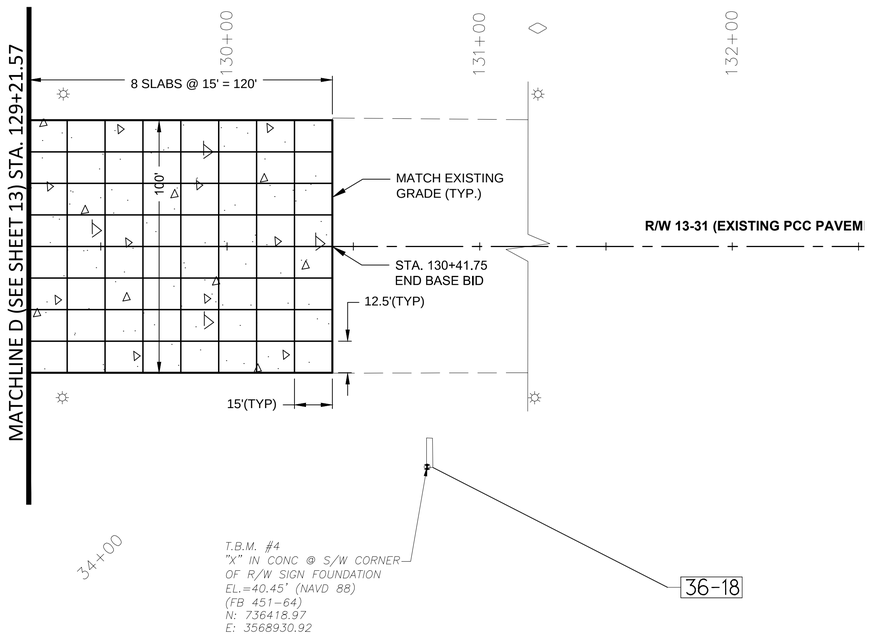

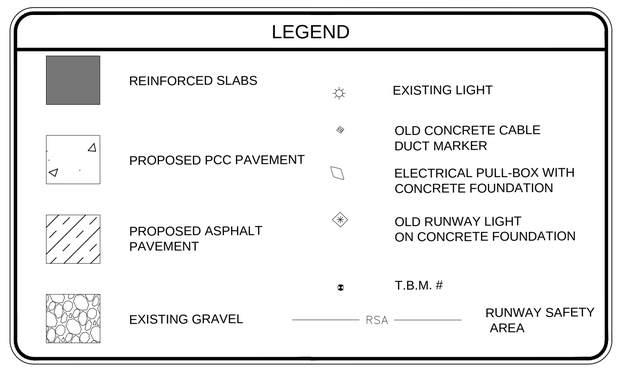

0 30 60 120
SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker
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Technician:	Project Number:
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Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

LAYOUT PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 14

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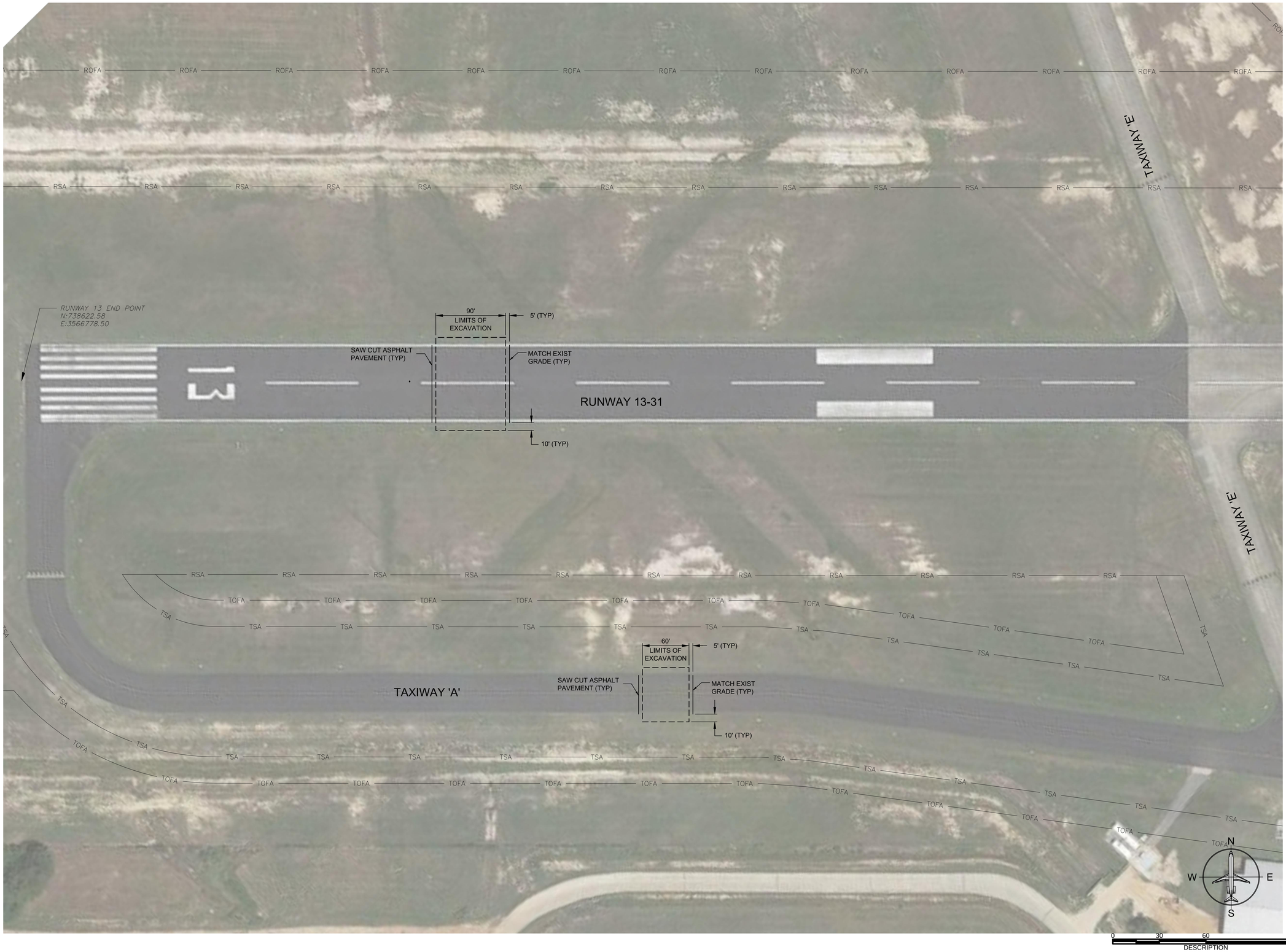


HAMMOND NORTHSHORE REGIONAL AIRPORT
1932
HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

1. LIMITS OF PAVEMENT REPAIR TO BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. DEPTH OF EXCAVATION TO BE DETERMIEND IN FIELD BY THE ENGINEER.
3. CONTRACTOR SHALL PROTECT LIGHTING, SUBSURFACE UTILITIES, AND NAVAIDS DURING EXCAVATION.
4. SEE ASPHALT TYPICAL SECTION FOR PAVEMENT STRUCTURE DETAILS.
5. EXCAVATED SLOPE SHALL NOT EXCEED 2.5 (HORIZONTAL) : 1 (VERTICAL).
6. EXACAVATIONS SHALL BE STEPPED, RISE 0.5 FT (MIN) TO 1.0 FT (MAX).

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

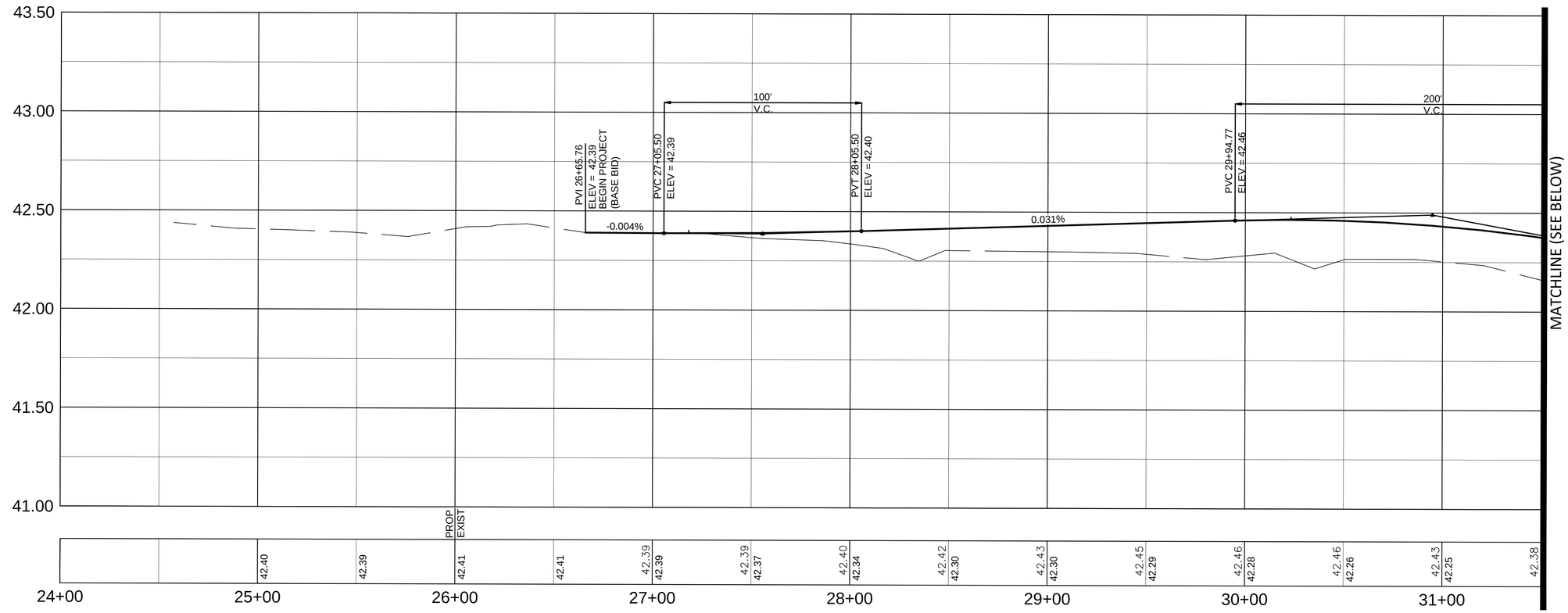
Drawing Name:

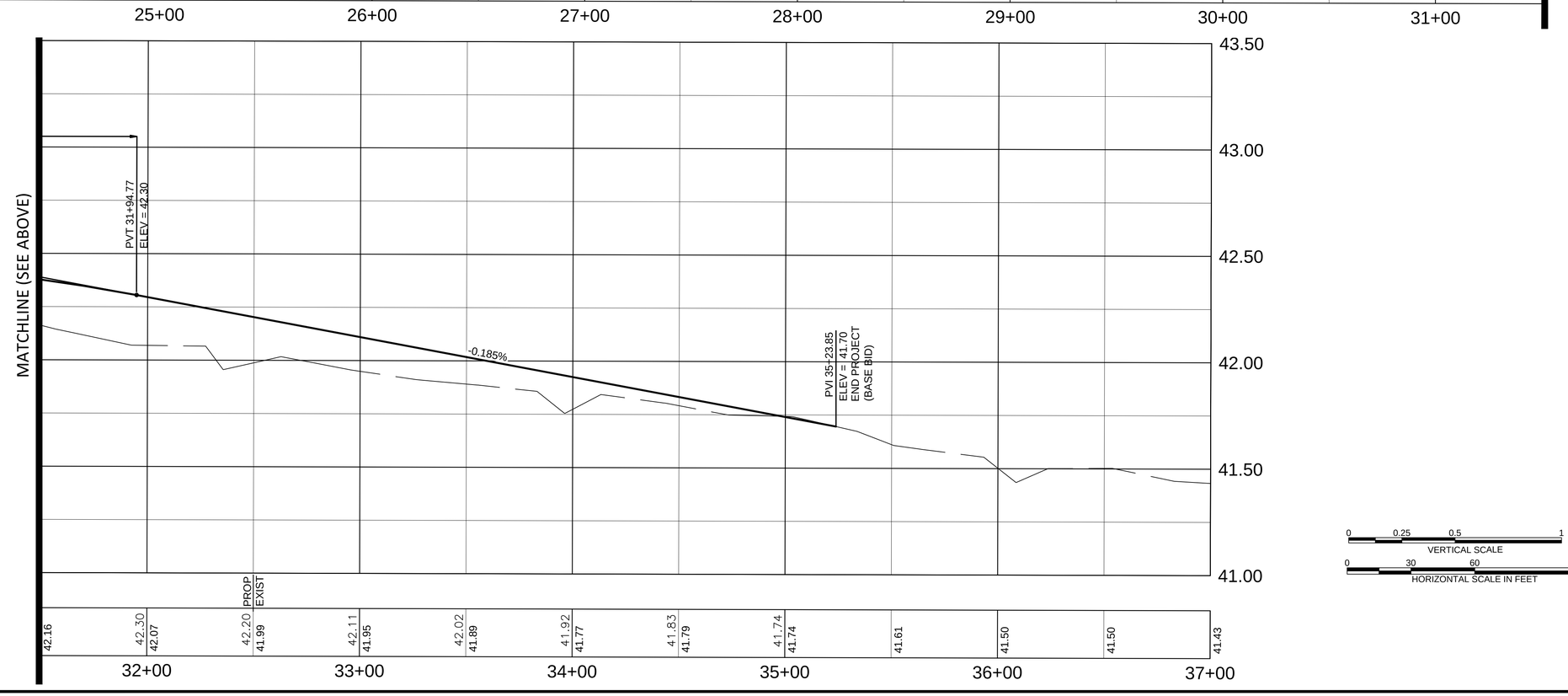
LAYOUT PLAN (ADDITIVE ALTERNATE 3)

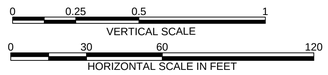
FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 15

Y:\Projects\Active\Hammond\Projects\149090 - rw intersection\2 Design\ DWG\010B - Plan.dwg Modified: Jul 05, 2016 - 9:30am Plotted: Jul 05, 2016 - 4:56pm Robert Rush







Y:\Projects\Active\Hammond\Projects\149090 - rw intersection\2 Design\1 DWG\01 - Runway Profiles.dwg Modified: Jul 01, 2016 - 6:42pm Plotted: Jul 05, 2016 - 4:58pm Robert Rush

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
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REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

REVISIONS

No.	Description	Date	By

Project Name:

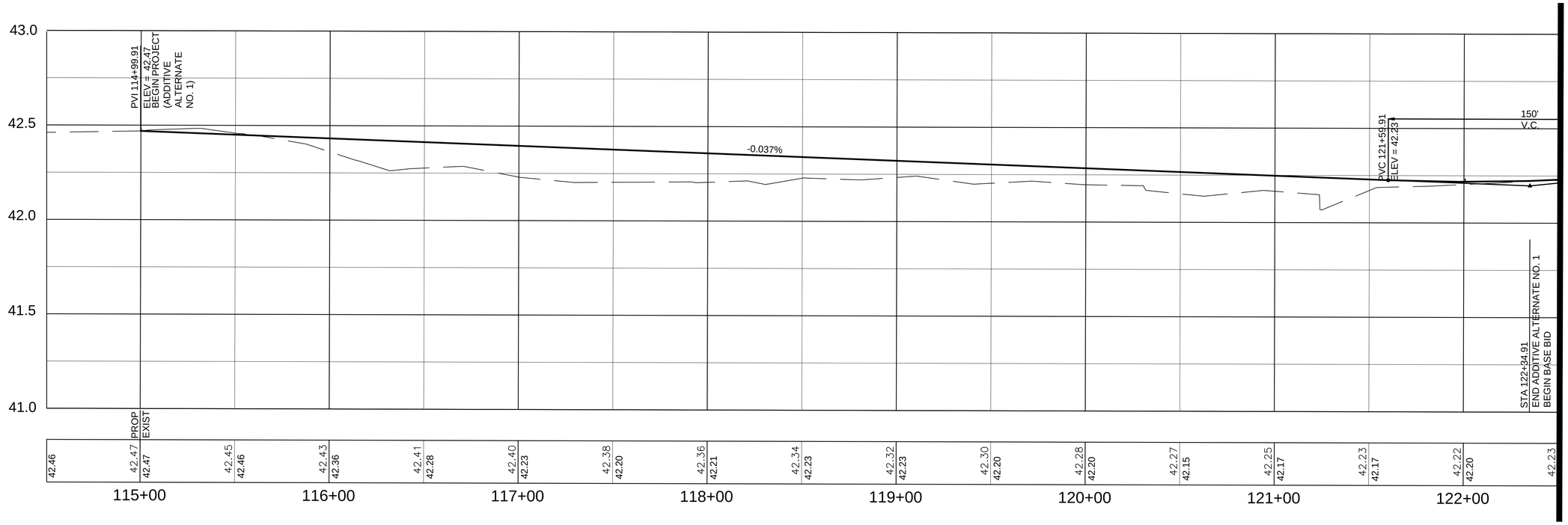
RUNWAY 18-36 / 13-31
RECONSTRUCTION

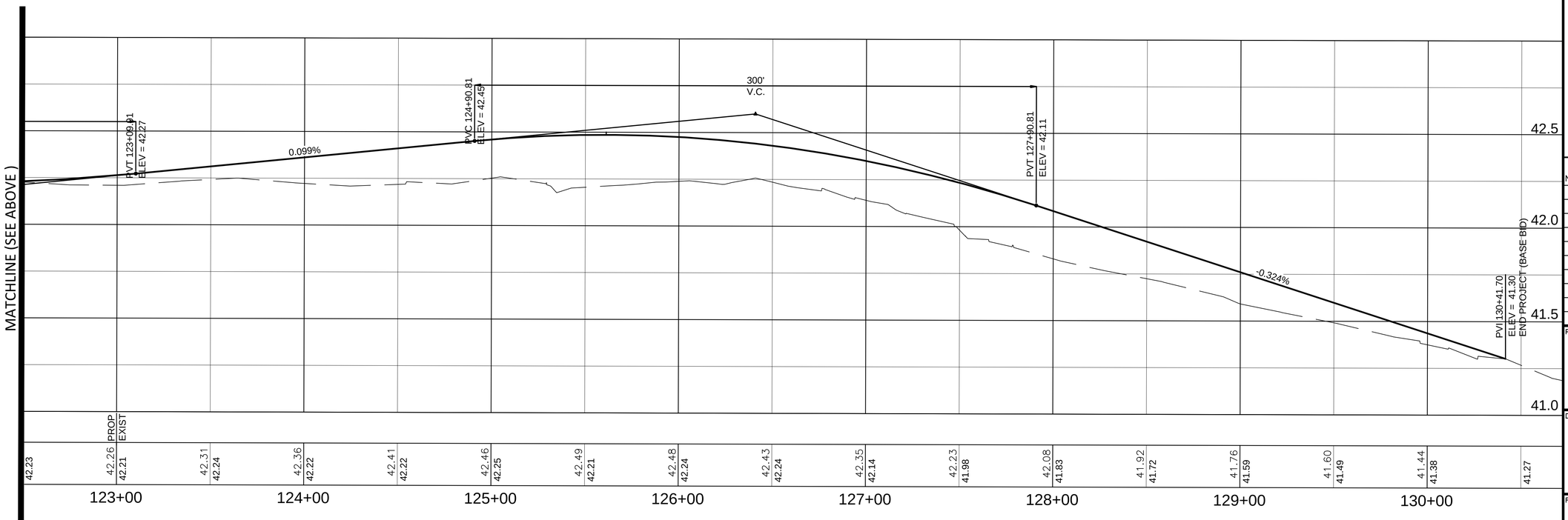
Drawing Name:

RUNWAY 18-36 PROFILE

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 16





HAMMOND NORTHSHORE REGIONAL AIRPORT 1932

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
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CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

RUNWAY 13-31 PROFILE

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 17

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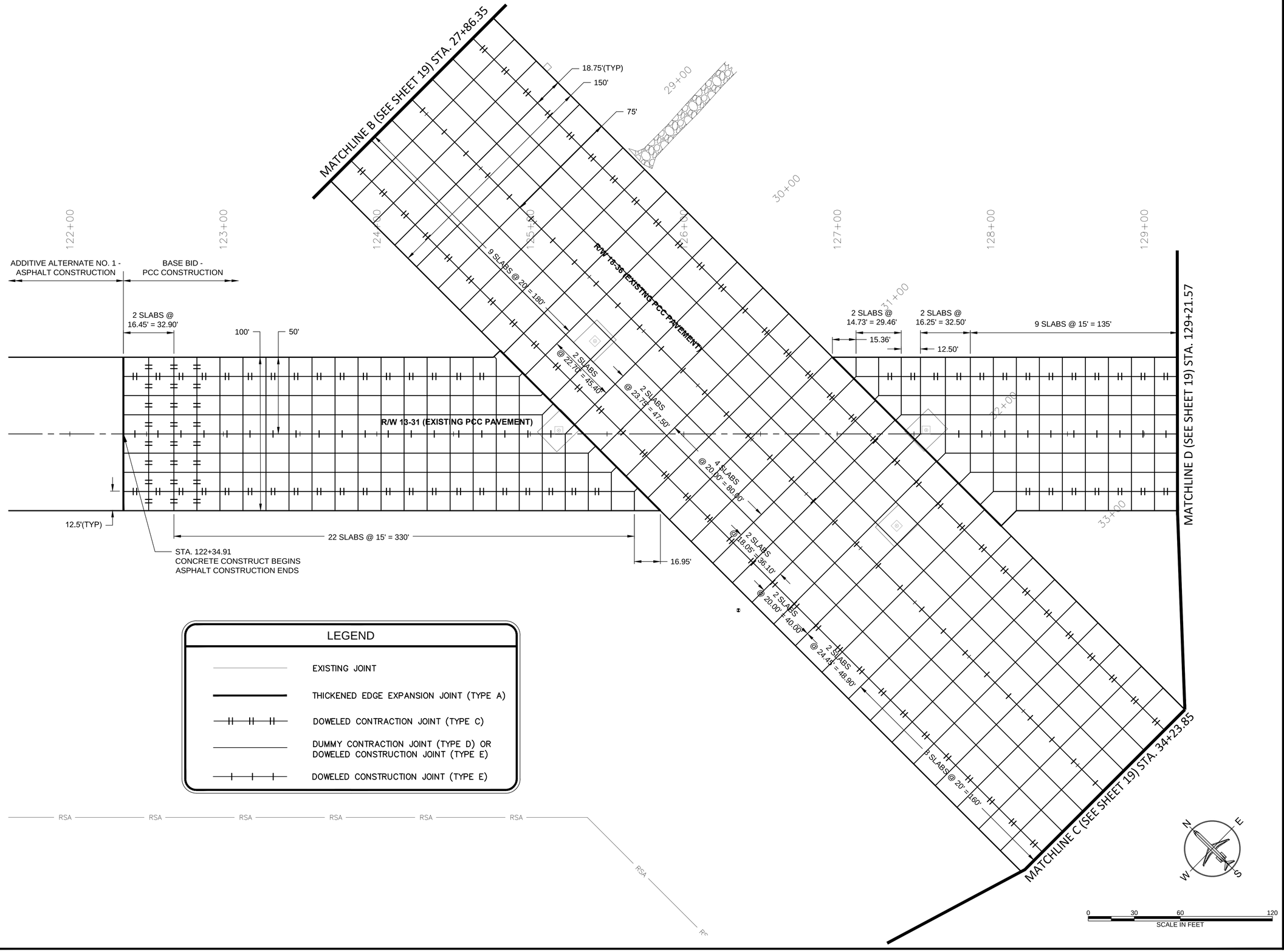

LEGEND

- EXISTING JOINT
- THICKENED EDGE EXPANSION JOINT (TYPE A)
- DOWELED CONTRACTION JOINT (TYPE C)
- DUMMY CONTRACTION JOINT (TYPE D) OR DOWELED CONSTRUCTION JOINT (TYPE E)
- DOWELED CONSTRUCTION JOINT (TYPE E)

HAMMOND NORTHSHORE REGIONAL AIRPORT 1932

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HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

1. SEE JOINT DETAILS SHEETS 22 AND 23

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

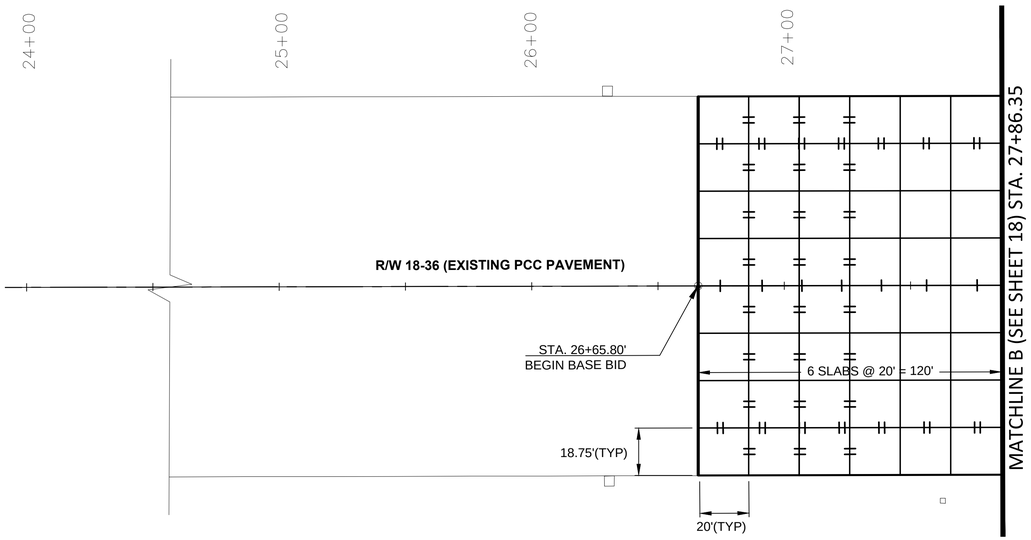
Drawing Name:

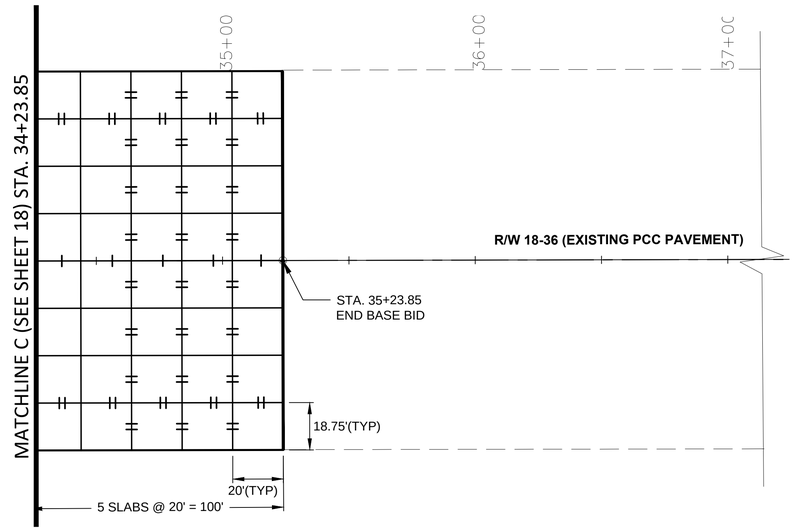
JOINT LAYOUT PLAN

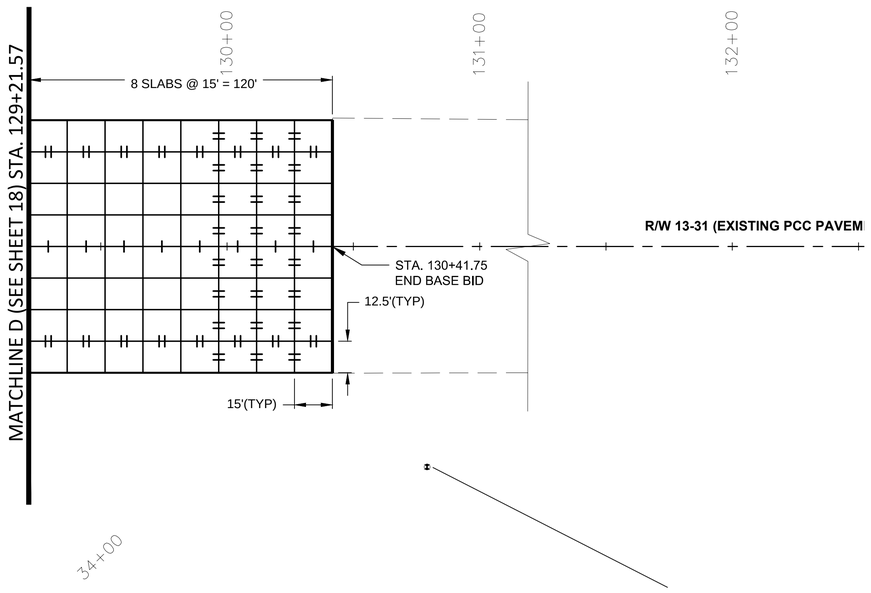
FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	
	Drawing Number: 18

Y:\Projects\Active\Hammond\Projects\149090 - RW Intersection\2 Design\1 DWG\012 - Joint Layout Plan.dwg Modified: Jul 01, 2016 - 9:14am Plotted: Jul 05, 2016 - 5:01pm Robert Rush







LEGEND

- EXISTING JOINT
- THICKENED EDGE EXPANSION JOINT (TYPE A)
- DOWELED CONTRACTION JOINT (TYPE C)
- DUMMY CONTRACTION JOINT (TYPE D) OR DOWELED CONSTRUCTION JOINT (TYPE E)
- DOWELED CONSTRUCTION JOINT (TYPE E)

0 30 60 120
SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT 1932

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

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7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

1. SEE JOINT DETAILS SHEETS 22 AND 23

REVISIONS			
No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

JOINT LAYOUT PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 19

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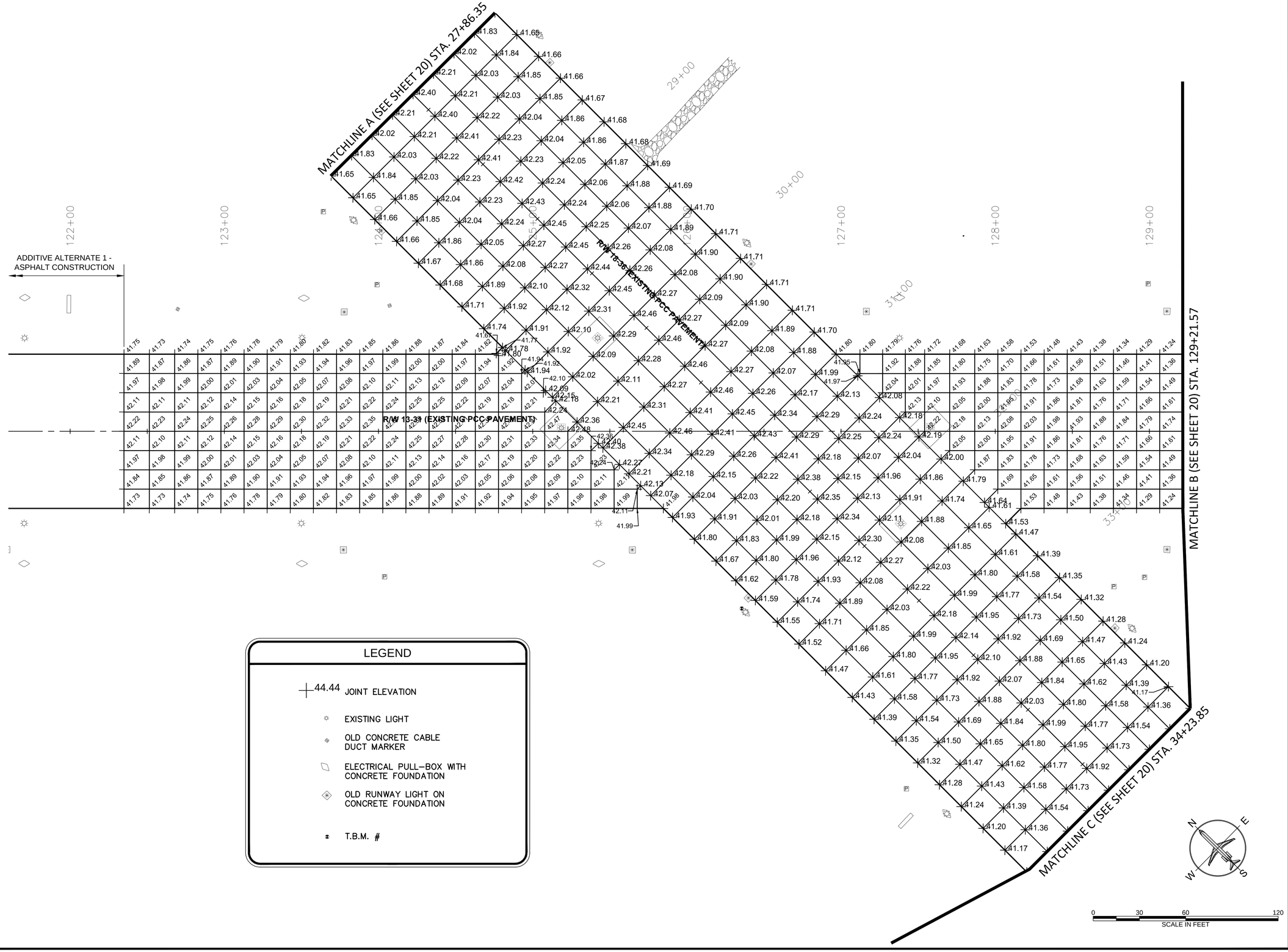

LEGEND

- 44.44 JOINT ELEVATION
- EXISTING LIGHT
- OLD CONCRETE CABLE DUCT MARKER
- ELECTRICAL PULL–BOX WITH CONCRETE FOUNDATION
- OLD RUNWAY LIGHT ON CONCRETE FOUNDATION
- T.B.M. #

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7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

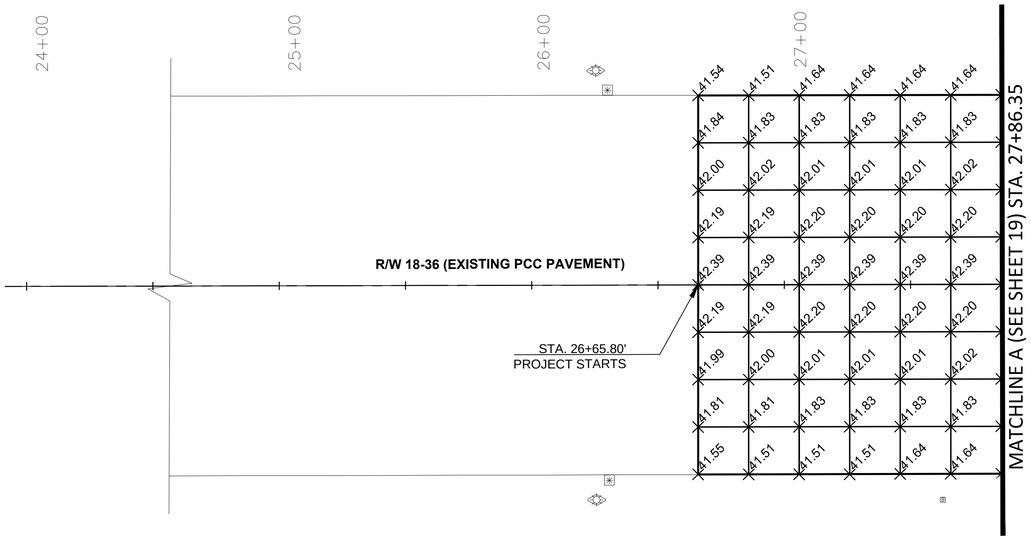
Drawing Name:

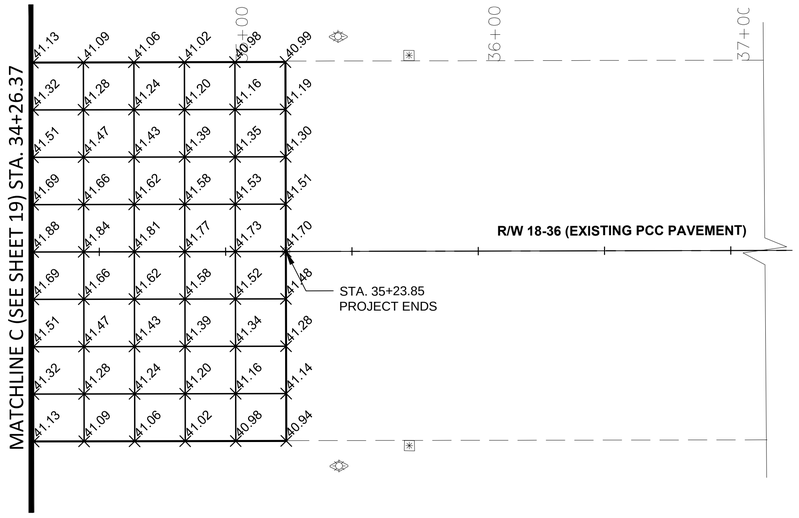
JOINT ELEVATION PLAN

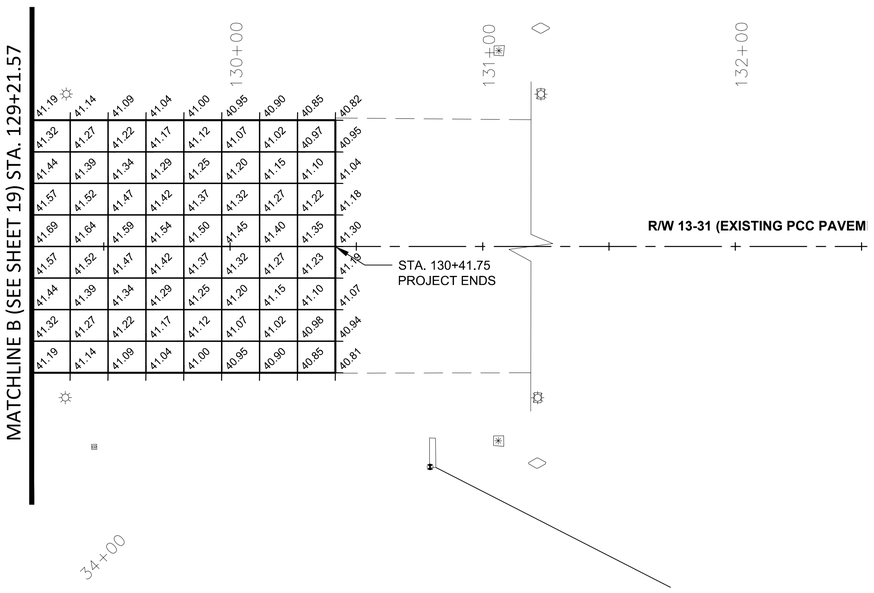
FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
	Drawing Number: 20

V:\Projects\Active\Hammond\Projects\149090 - rw intersection\2 Design\] DWG\013 -Joint Elevation Plan.dwg Modified: Jul 05, 2016 - 4:00pm Plotted: Jul 05, 2016 - 5:04pm Robert.Rush







LEGEND

- 44.44 JOINT ELEVATION
- EXISTING LIGHT
- OLD CONCRETE CABLE DUCT MARKER
- ELECTRICAL PULL–BOX WITH CONCRETE FOUNDATION
- OLD RUNWAY LIGHT ON CONCRETE FOUNDATION
- T.B.M. #

0 30 60 120
SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

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7/5/2016

Designer:	Checked by:
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Technician:	Project Number:
SGK	149090

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

JOINT ELEVATION PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
	Drawing Number: 21

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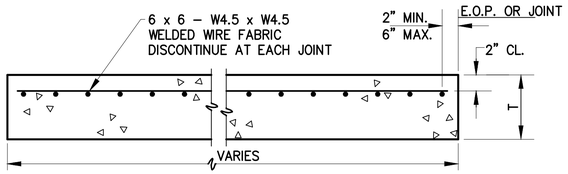
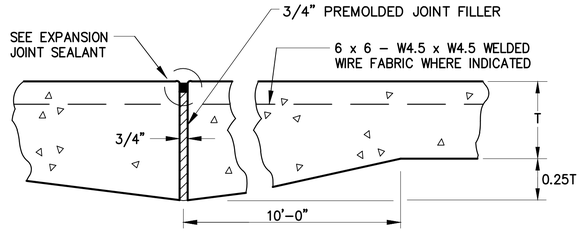


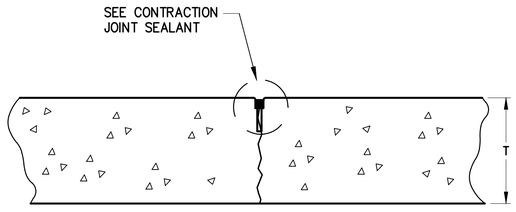
TYPICAL REINFORCED CONCRETE PAVEMENT SLAB

N.T.S.



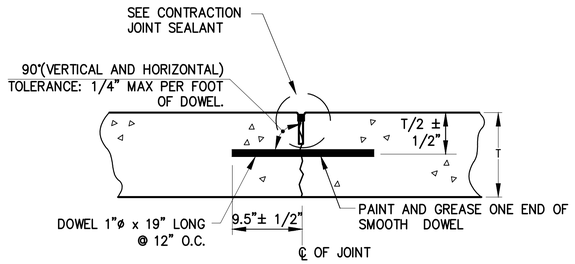
THICKENED EDGE EXPANSION JOINT (TYPE A)

N.T.S.



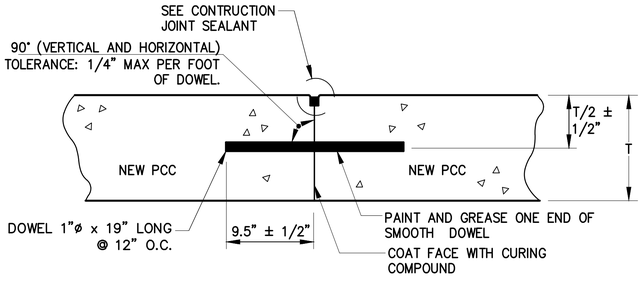
DUMMY CONTRACTION JOINT (TYPE D)

N.T.S.



DOWELED CONTRACTION JOINT (TYPE C)

N.T.S.



DOWELED CONSTRUCTION JOINT AT JUNCTION OF NEW / NEW PCC PAVEMENT (TYPE E)

N.T.S.

Y:\Projects\Active\Hammond\Projects\149090 - rw intersection\2 Design\1 DWG\014 - Joint Details.dwg Modified: Jun 30, 2016 - 10:13am Plotted: Jul 05, 2016 - 5:06pm Robert.Rush

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1932
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HAMMOND, LOUISIANA

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REG. No. 32484
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CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

REVISIONS

No.	Description	Date	By

Project Name:

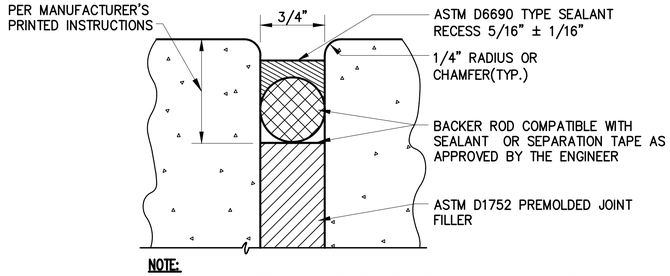
RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

JOINT DETAILS

FAA A.I.P. Project Number:
3-22-0018-019-2016

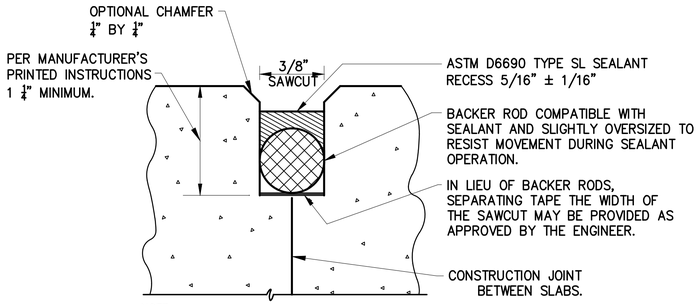
Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
N/A	Drawing Number: 22



NOTE:
ALL SEALANT MATERIALS MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS AS APPROVED BY ENGINEER.

EXPANSION JOINT SEALANT

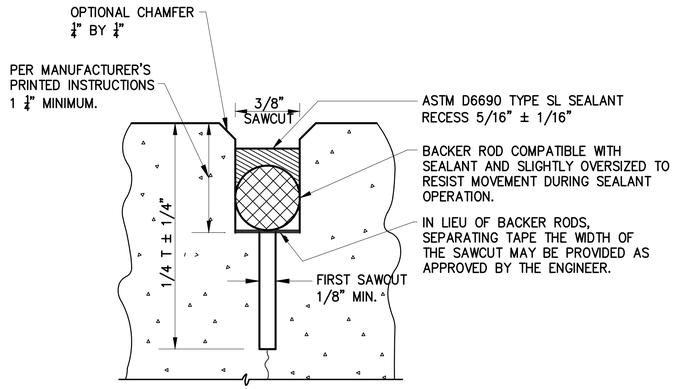
N.T.S.



NOTE:
ALL SEALANT MATERIALS MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS AS APPROVED BY ENGINEER.

CONSTRUCTION JOINT SEALANT

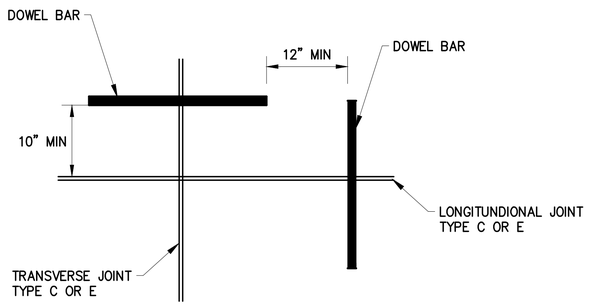
N.T.S.



NOTE:
ALL SEALANT MATERIALS MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS AS APPROVED BY ENGINEER.

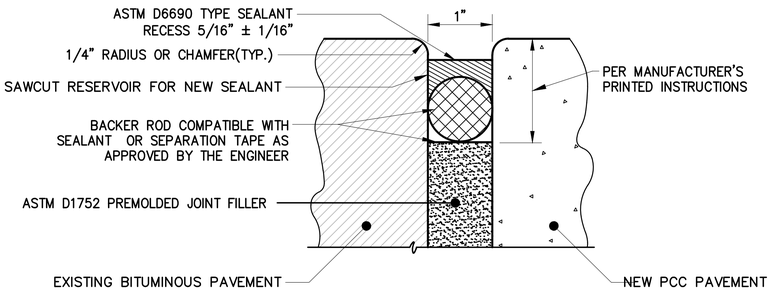
CONTRACTION JOINT SEALANT

N.T.S.



POSITION OF DOWELS AT EDGE OF JOINT TYPE C, E

N.T.S.



BITUMINOUS/PCC PAVEMENT JUNCTURE (1")

N.T.S.

HAMMOND NORTHSHORE REGIONAL AIRPORT
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7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

REVISIONS

No.	Description	Date	By

Project Name:
RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:
JOINT DETAILS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
N/A	Drawing Number: 23

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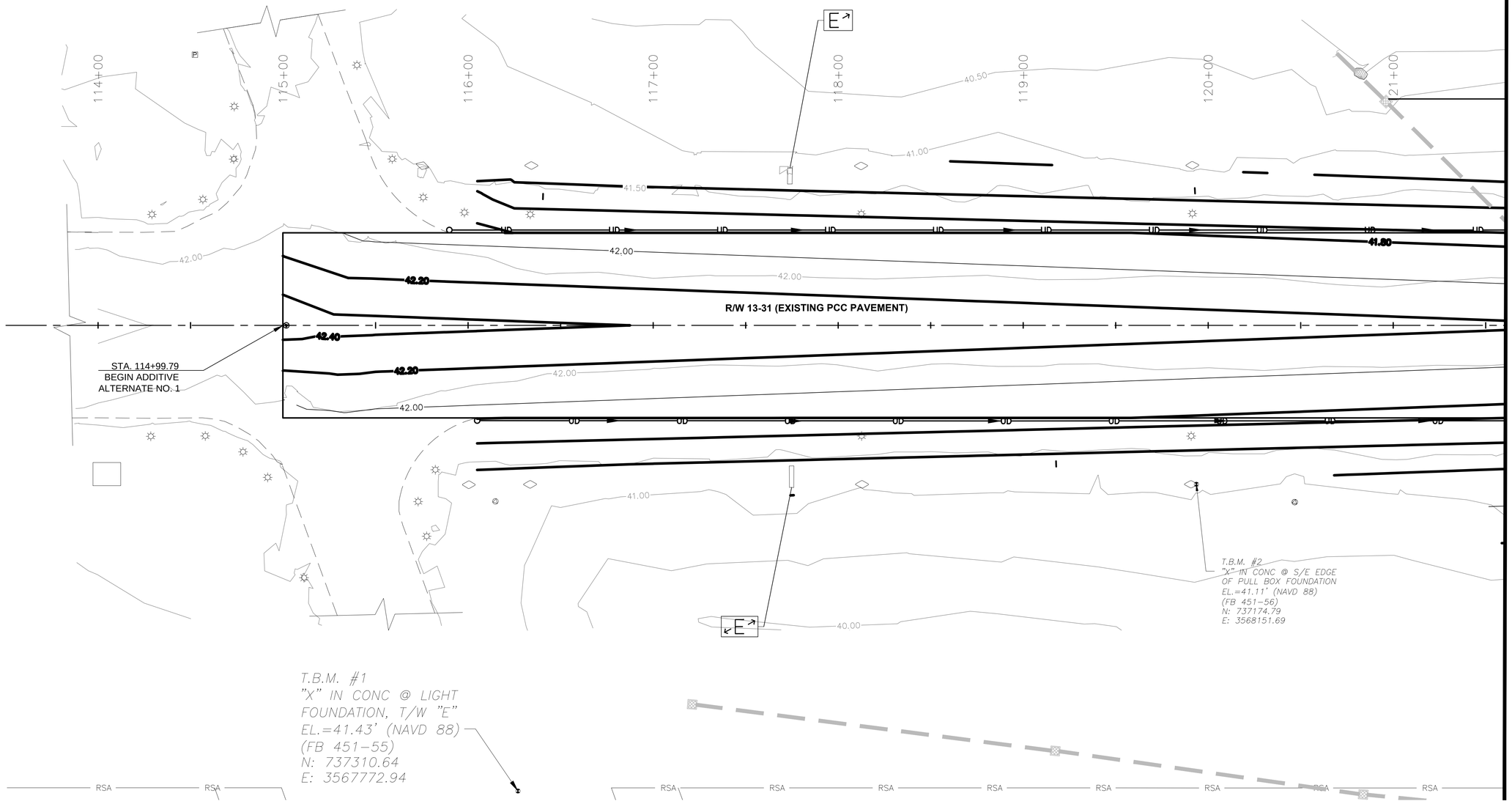

MATCHLINE A (SEE SHEET 25) STA. 121+59.56

LEGEND

UD → PROPOSED UNDERGROUND DRAIN 6" CPP (PERFORATED)	66 PROPOSED CONTOURS (1.0' INTERVALS)
PROPOSED 6" CPP (NON-PERFORATED)	66 PROPOSED CONTOURS (0.2' INTERVALS)
PROPOSED CLEANOUT	66 EXISTING CONTOURS (0.5' INTERVALS)
SAWCUT PAVEMENT	EXISTING STORM PIPE
	EXISTING DRAINAGE STRUCTURE

N E S W

0 30 60 120
SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

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7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

1. CONTRACTOR SHALL PROTECT EXISTING RUNWAY AND TAXIWAY LIGHTING SYSTEMS AND APPROACH LIGHTING SYSTEMS AND SHALL REPAIR ANY DAMAGED SYSTEMS AT NO COST TO THE OWNER.
2. ANY BENCHMARKS OR CONTROL POINTS SHALL BE PROTECTED OR REPLACED TO NEW GRADE AT NO COST TO THE OWNER. THIS ITEM SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

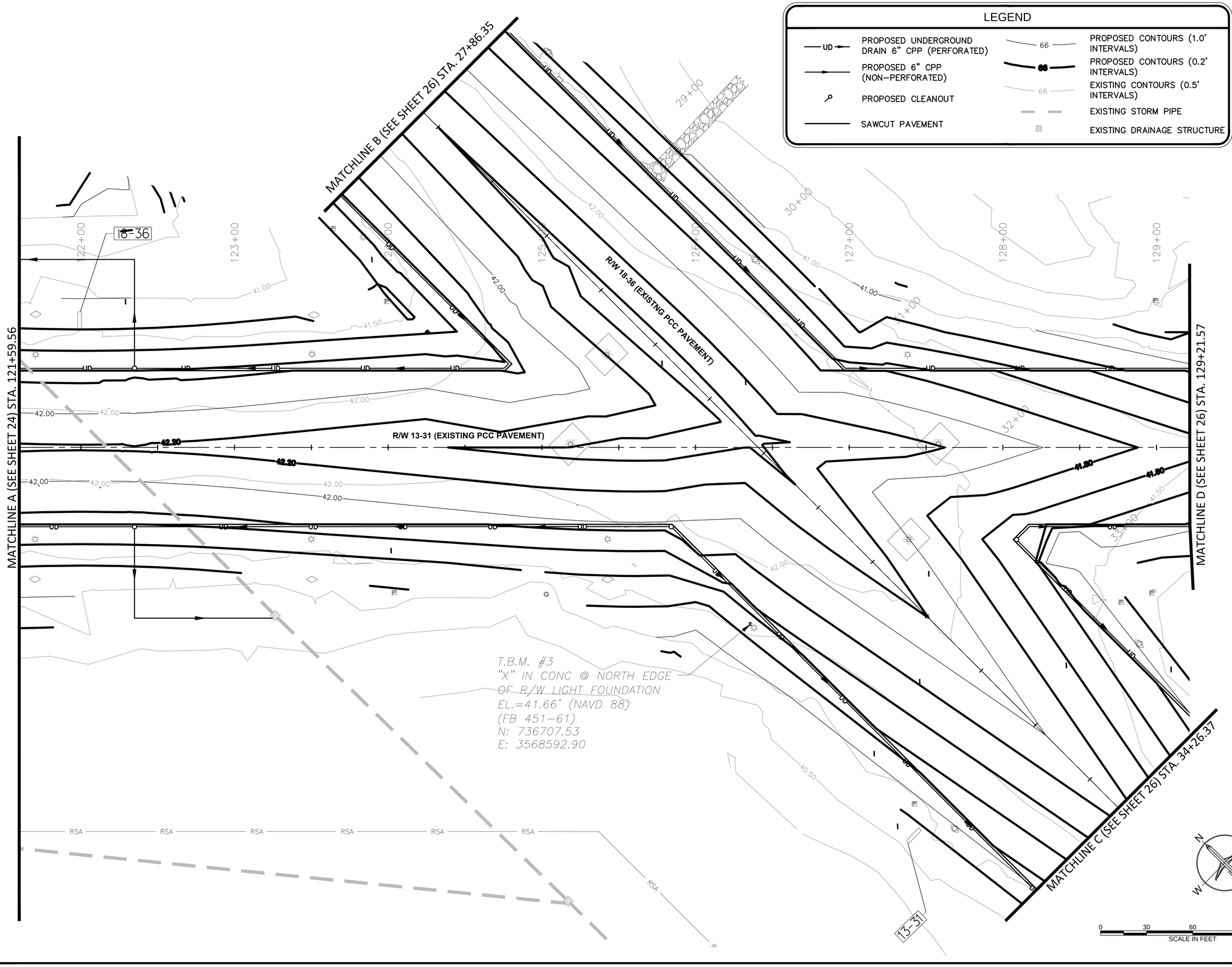
Drawing Name:

GRADING PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 24

Y:\Projects\Active\Hammond\Projects\149090 - rw intersection\2 Design\1 DWG\015-Grading and Drainage Plan.dwg Modified: Jul 05, 2016 - 4:07pm Plotted: Jul 05, 2016 - 5:09pm Robert Rush



V:\Projects\Active\Hammond\Projects\149090 - rw intersection\2 Design\ DWG\015-Grading and Drainage Plan.dwg Modified: Jul 05, 2016 - 4:07pm Plotted: Jul 05, 2016 - 5:09pm Robert Rush

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7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

1. CONTRACTOR SHALL PROTECT EXISTING RUNWAY AND TAXIWAY LIGHTING SYSTEMS AND APPROACH LIGHTING SYSTEMS AND SHALL REPAIR ANY DAMAGED SYSTEMS AT NO COST TO THE OWNER.
2. ANY BENCHMARKS OR CONTROL POINTS SHALL BE PROTECTED OR REPLACED TO NEW GRADE AT NO COST TO THE OWNER. THIS ITEM SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT.

REVISIONS

No.	Description	Date	By

Project Name:

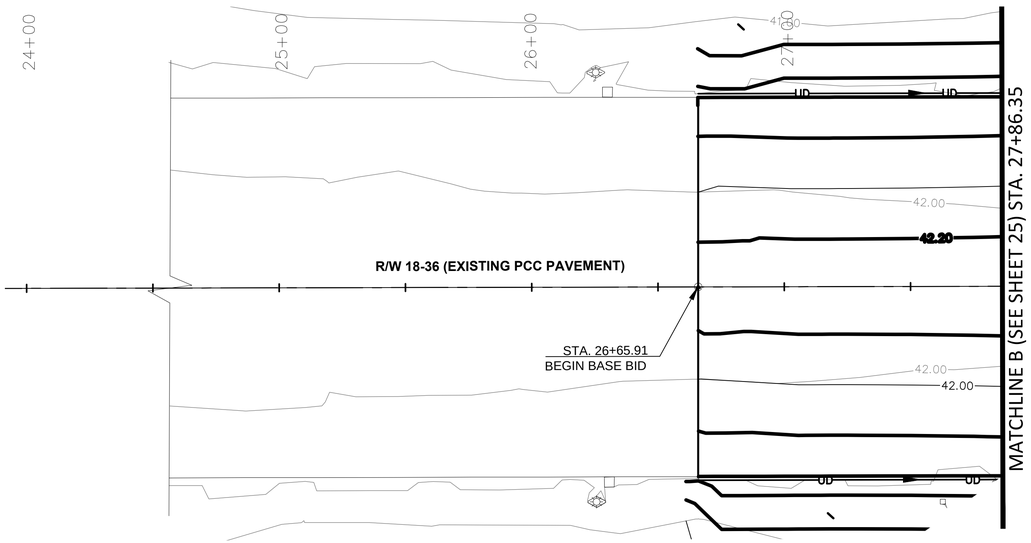
RUNWAY 18-36 / 13-31
RECONSTRUCTION

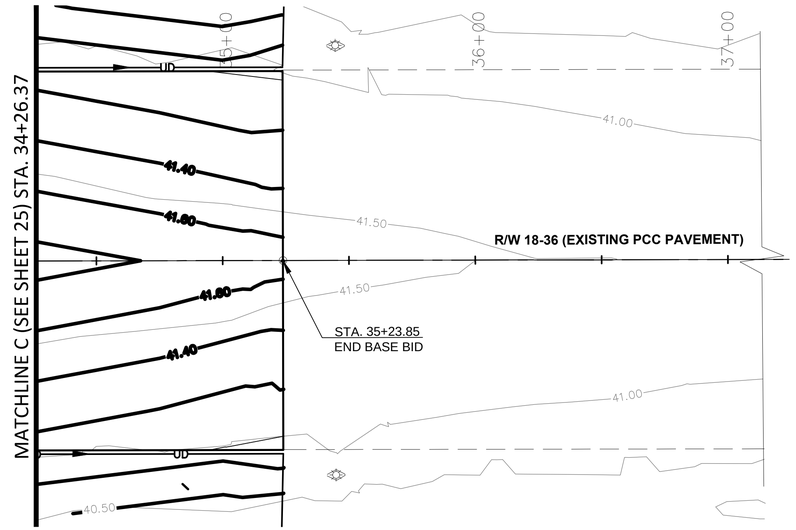
Drawing Name:

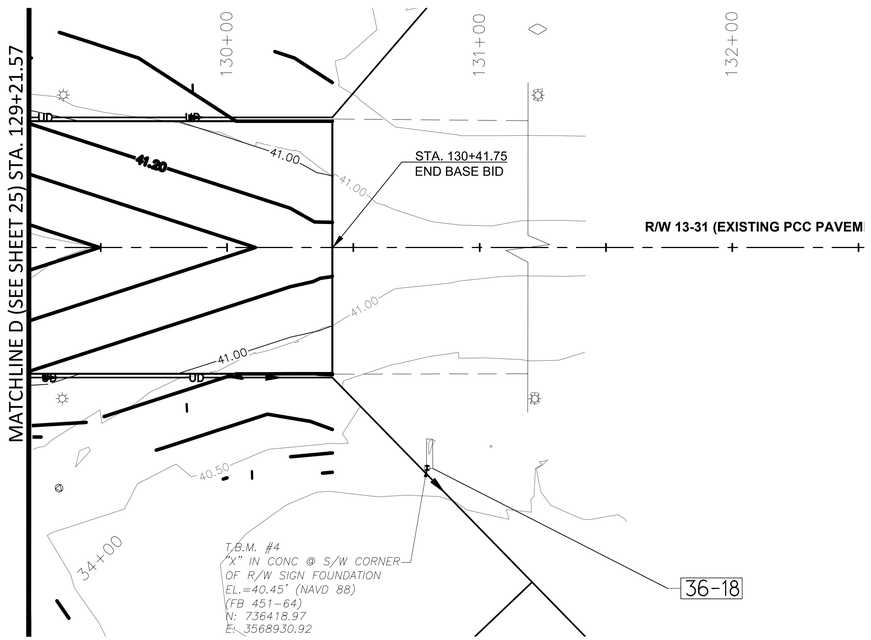
GRADING PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 25

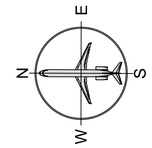






LEGEND

- PROPOSED UNDERGROUND DRAIN 6" CPP (PERFORATED)
- PROPOSED 6" CPP (NON-PERFORATED)
- PROPOSED CLEANOUT
- SAWCUT PAVEMENT
- PROPOSED CONTOURS (1.0' INTERVALS)
- PROPOSED CONTOURS (0.2' INTERVALS)
- EXISTING CONTOURS (0.5' INTERVALS)
- EXISTING STORM PIPE
- EXISTING DRAINAGE STRUCTURE



0 30 60 120
SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

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REVISIONS

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Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

GRADING PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

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Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 26

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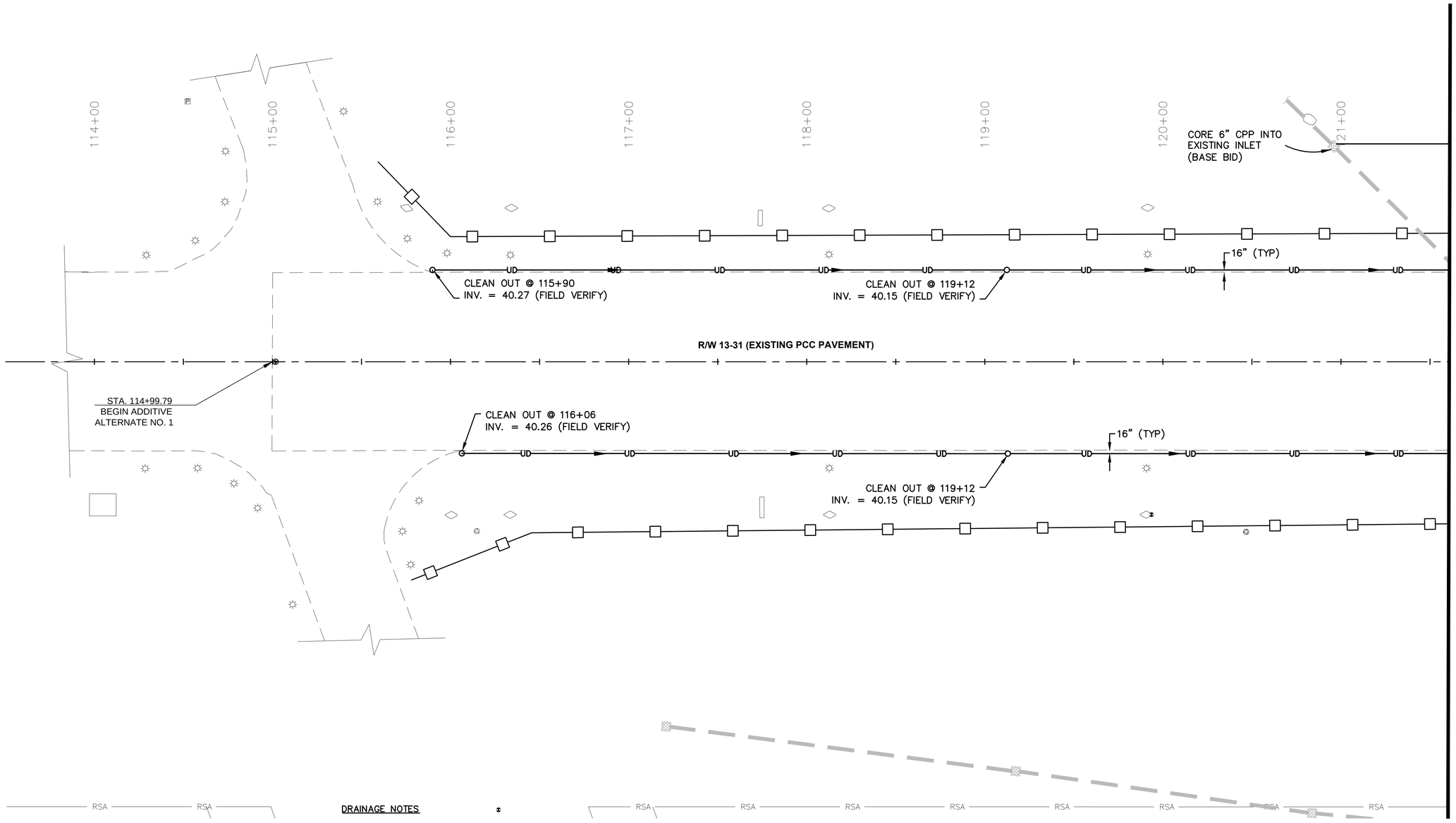

DRAINAGE NOTES

1. QUANTITY AND LOCATIONS OF UNDERDRAINS SHOWN ON THE PLAN ARE APPROXIMATE ONLY. SITE CONDITIONS WILL BE EVALUATED BY ENGINEER DURING CONSTRUCTION. QUANTITY AND LOCATION OF UNDERDRAINS MAY BE MODIFIED AS NECESSARY.
2. ALL UNDERDRAINS ALONG PAVEMENT EDGE ARE PERFORATED UNLESS OTHERWISE NOTED.
3. THE CONTRACTOR IS CAUTIONED TO EXERCISE EXTREME CARE PARTICULARLY IN AREAS IMMEDIATELY ADJACENT TO TAXIWAY AND RUNWAY EDGES WHERE LIGHTING CONDUIT RUNS CONTINUOUSLY AND UNDER WHICH THE PIPING MUST PASS. THE CONTRACTOR IS FURTHER CAUTIONED TO EXERCISE CARE IN THE VICINITY OF FAA COMMUNICATION, POWER, AND CONTROL CIRCUITS AND ACTIVE AIRFIELD LIGHTING, POWER, AND CONTROL CIRCUITS.

LEGEND

- PROPOSED SILT FENCE
- UD — PROPOSED UNDERGROUND DRAIN 6" CPP (PERFORATED)
- PROPOSED 6" CPP (NON-PERFORATED)
- PROPOSED CLEANOUT
- EXISTING STORM PIPE
- EXISTING DRAINAGE STRUCTURE

N E S W

0 30 60 120
SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
STATE OF LOUISIANA
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

1. SILT FENCE TO BE PLACED 20 FEET OFF THE EXISTING EDGE OF PAVEMENT.
2. SILT FENCE SHALL BE REMOVED OR PLACED OUTSIDE THE SAFETY AREA PRIOR TO OPENING ANY RUNWAY OR TAXIWAY.
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4. INLET PROTECTION SHALL BE PLACED AT THE DIRECTION OF THE ENGINEER AND WILL BE CONSIDERED INCIDENTAL TO THE PROJECT.

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

EROSION CONTROL AND DRAINAGE PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 27

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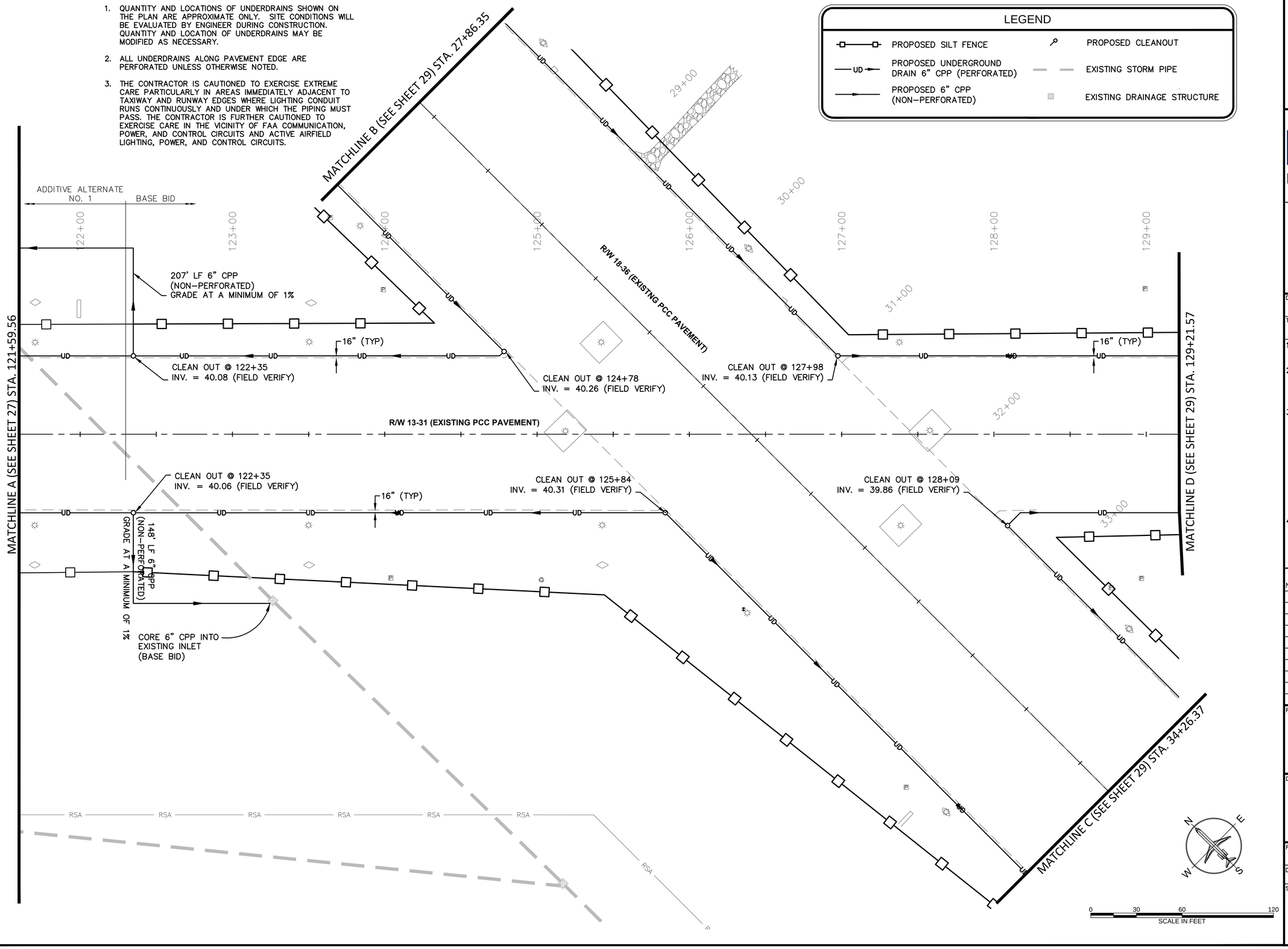
LEGEND

- PROPOSED SILT FENCE
- PROPOSED UNDERGROUND DRAIN 6" CPP (PERFORATED)
- PROPOSED 6" CPP (NON-PERFORATED)
- PROPOSED CLEANOUT
- EXISTING STORM PIPE
- EXISTING DRAINAGE STRUCTURE



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HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
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REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
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Project Name:

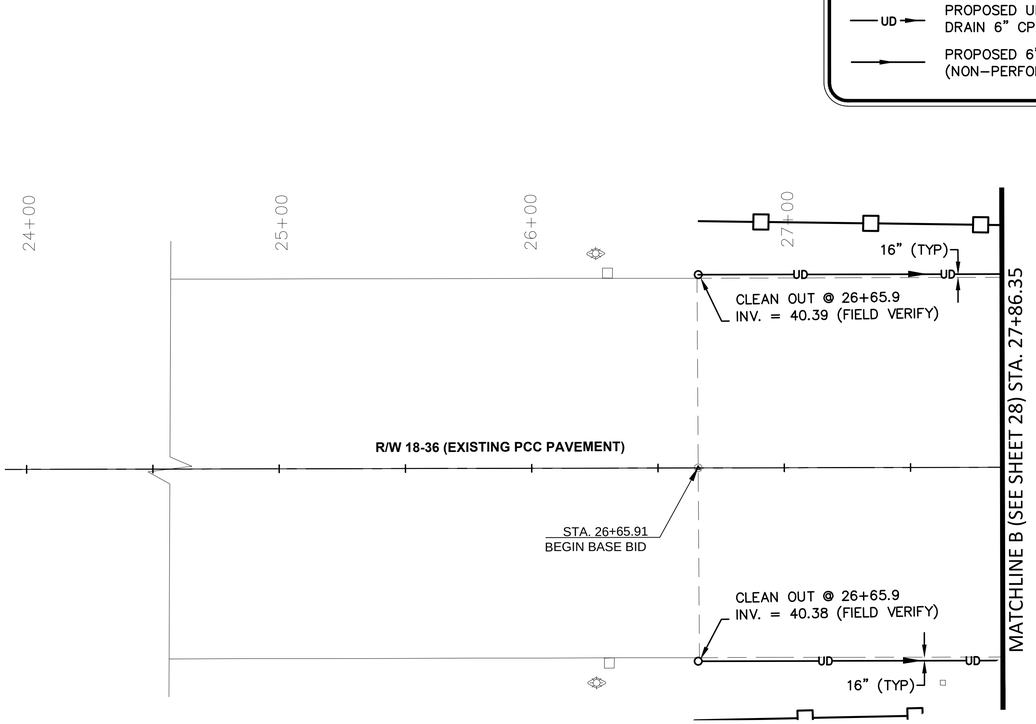
RUNWAY 18-36 / 13-31
RECONSTRUCTION

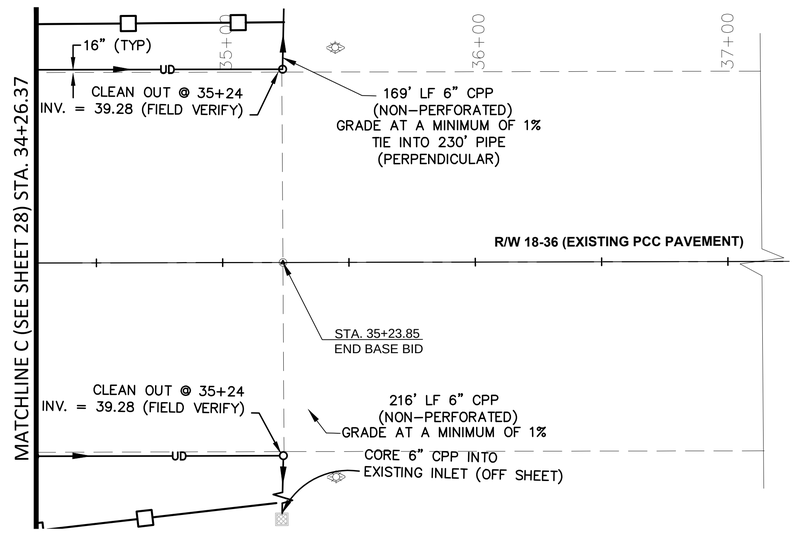
Drawing Name:

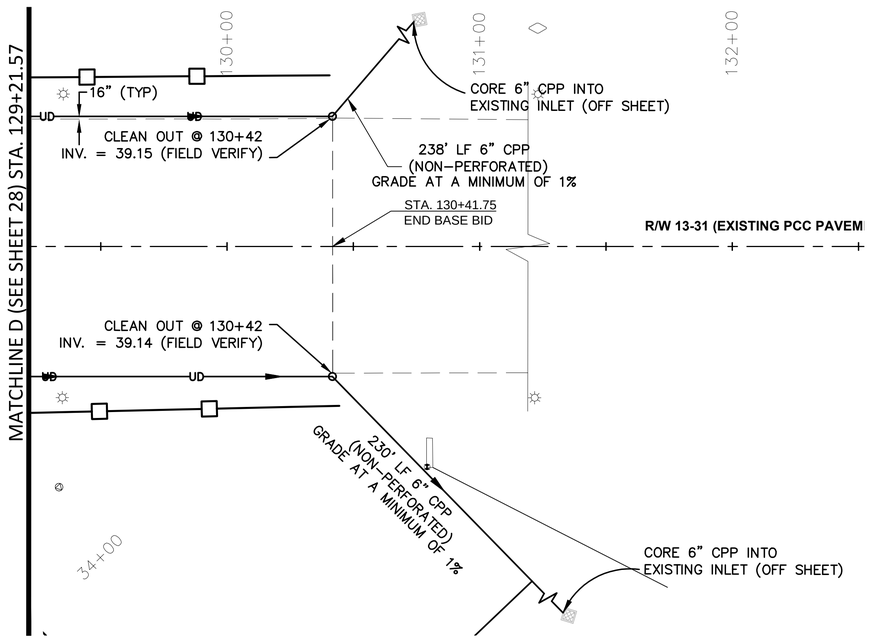
EROSION CONTROL AND DRAINAGE PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 28

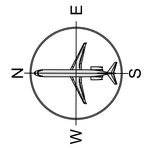






LEGEND

PROPOSED SILT FENCE	PROPOSED CLEANOUT
UD PROPOSED UNDERGROUND DRAIN 6" CPP (PERFORATED)	EXISTING STORM PIPE
PROPOSED 6" CPP (NON-PERFORATED)	EXISTING DRAINAGE STRUCTURE



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0 30 60 120
SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932
HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

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Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

EROSION CONTROL AND DRAINAGE PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

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EROSION CONTROL CONSTRUCTION SEQUENCE NOTES:

GENERAL

THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER AND OWNER A DETAILED CONSTRUCTION PROGRESS SCHEDULE. THESE PLANS AND SPECIFICATIONS PROVIDE GENERAL CONSTRUCTION SEQUENCE AND SAFETY PARAMETERS WHICH MUST BE INCORPORATED INTO THE APPROVED SCHEDULE. THE CONTRACTOR'S APPROVED EROSION CONTROL PLAN SHALL BE INCORPORATED INTO THE CONSTRUCTION SEQUENCE PLAN.

THE CONSTRUCTION OF THE PROJECT MUST BE COMPLETED IN SEQUENTIAL ORDER AS LISTED BELOW:

- MOBILIZATION
- EROSION CONTROL
- CONSTRUCT WORK ELEMENTS
- SEEDING

PLANNED TEMPORARY EROSION CONTROL FEATURES

1. TEMPORARY SILT FENCE
2. SEEDING

OBTAIN EROSION CONTROL PLAN APPROVAL AND OTHER APPLICABLE PERMITS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES. ALL PERMITTING COST SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

ALL DISTURBED AREAS ARE TO BE SEEDED IN ACCORDANCE WITH ITEMS T-901 OF THE SPECIFICATIONS.

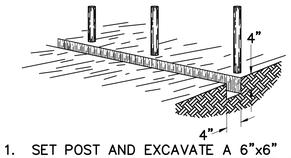
ANY FINES, PENALTIES, OR OTHER COSTS ASSESSED BY STATE, LOCAL OR THE GOVERNMENTAL AGENCIES FOR NON-PERFORMANCE OF THE EROSION CONTROL REQUIREMENTS OF THIS PROJECT AGAINST THE AIRPORT AUTHORITY SHALL BECOME THE RESPONSIBILITY OF THE CONTRACTOR, AND ANY SUCH ASSESSMENTS, IF NOT PAID BY THE CONTRACTOR, WILL BE DEDUCTED FROM MONIES DUE AT THE COMPLETION OF THIS PROJECT.

PHASING

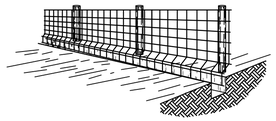
1. ATTEND PRECONSTRUCTION CONFERENCE.
2. INSTALL EROSION CONTROL MEASURES.
3. PERFORM CONSTRUCTION OPERATIONS
4. SEED ANY DISTURBED AREAS.
5. ONCE PERMANENT SEEDING HAS BEEN ESTABLISHED, REMOVE ALL TEMPORARY EROSION CONTROL FEATURES. SEED THE AREAS AFFECTED BY THE REMOVAL.

MAINTENANCE PLAN

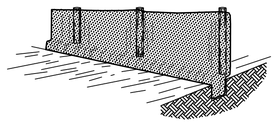
1. ALL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF-PRODUCING RAINFALL BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
2. SEDIMENT WILL BE REMOVED FROM BEHIND THE SILT FENCE OR INLET PROTECTION WHEN IT BECOMES ABOUT 0.5 FT. DEEP. THE SILT FENCING WILL BE REPAIRED AS NECESSARY TO MAINTAIN ITS ORIGINAL CONDITION AND FUNCTION.
3. THE ENGINEER MAY DIRECT THAT ADDITIONAL SILT FENCING OR INLET PROTECTION BE INSTALLED AT ANY TIME PRIOR TO FINAL ACCEPTANCE.



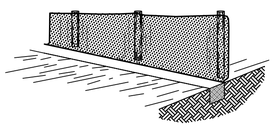
1. SET POST AND EXCAVATE A 6"x6" TRENCH UPSLOPE ALONG THE LINE OF POST.



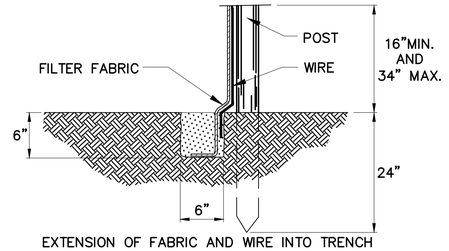
2. STAPLE WIRE FENCING TO THE POST.



3. ATTACH THE FILTER FABRIC TO THE WIRE FENCE AND EXTEND IT INTO THE TRENCH.



4. BACKFILL AND COMPACT THE EXCAVATED SOIL.



EXTENSION OF FABRIC AND WIRE INTO TRENCH

NOTE: SILT FENCING SHALL BE PLACED IN LIKE MANNER AROUND DRAINAGE INLETS IF NECESSARY AS DIRECTED BY THE PROJECT ENGINEER.

TEMPORARY SILT FENCE

N.T.S.

SEEDING SCHEDULE NOTES:

SEEDING:

TEMPORARY AND PERMANENT SEEDING SHALL BE PERFORMED IN COMPLIANCE WITH THE SEEDING TABLE.

DURING CONSTRUCTION, TEMPORARY SEEDING SHALL BE PLACED AS DIRECTED. TEMPORARY SEEDING MAY BE ANY OF THE TYPES GIVEN IN THE SEEDING TABLE. ANNUAL RYE GRASS IS THE ONLY ACCEPTABLE GRASS FOR WINTER COVER.

ANNUAL RYE GRASS SHALL NOT BE PLANTED BEFORE SEPTEMBER 20. ANNUAL RYE GRASS MAY BE PLANTED AS LATE AS JANUARY 15 IF CLIMATIC CONDITIONS AND SOIL TEMPERATURES WILL ALLOW GERMINATION.

SEEDING TABLE

A	HULLED BERMUDA	30	MARCH-SEPT.
B	HULLED BERMUDA CRIMSON CLOVER	20 25	SEPT.-FEB.
C	KENTUCKY 31 FESCUE UNHULLED BERMUDA	25 20	SEPT.-FEB.
D	UNHULLED BERMUDA CRIMSON CLOVER	20 40	SEPT.-FEB.
E	PENSACOLA BAHIA	25	MARCH-SEPT.
F	BALL CLOVER UNHULLED BERMUDA	25 20	FEB.-MARCH
G	VETCH (COMMON) UNHULLED BERMUDA	40 20	SEPT.-OCT.
H	BROWNTOP MILLET HULLED BERMUDA PENSACOLA BAHIA	6 20 15	MARCH-JULY
I	ANNUAL RYE	30	SEPT.-JAN.

SEE TECHNICAL SPECIFICATIONS T-901 SEEDING FOR FURTHER GUIDANCE.

SOIL AMENDMENTS:

FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 4,000 LB/ACRE OF AGRICULTURAL LIME AND APPLY FERTILIZER AT THE RATE SHOWN IN THE FERTILIZER APPLICATION RATE TABLE.

MAINTENANCE:

REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

FERTILIZER APPLICATION RATES

TYPE FERTILIZER	POUNDS PER ACRE
8-8-8	1,000
12-12-12	667
13-13-13	615
16-16-16	500

HAMMOND NORTHSHORE REGIONAL AIRPORT 1932

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

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Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

EROSION CONTROL DETAILS AND NOTES

FAA A.I.P. Project Number:
3-22-0018-019-2016

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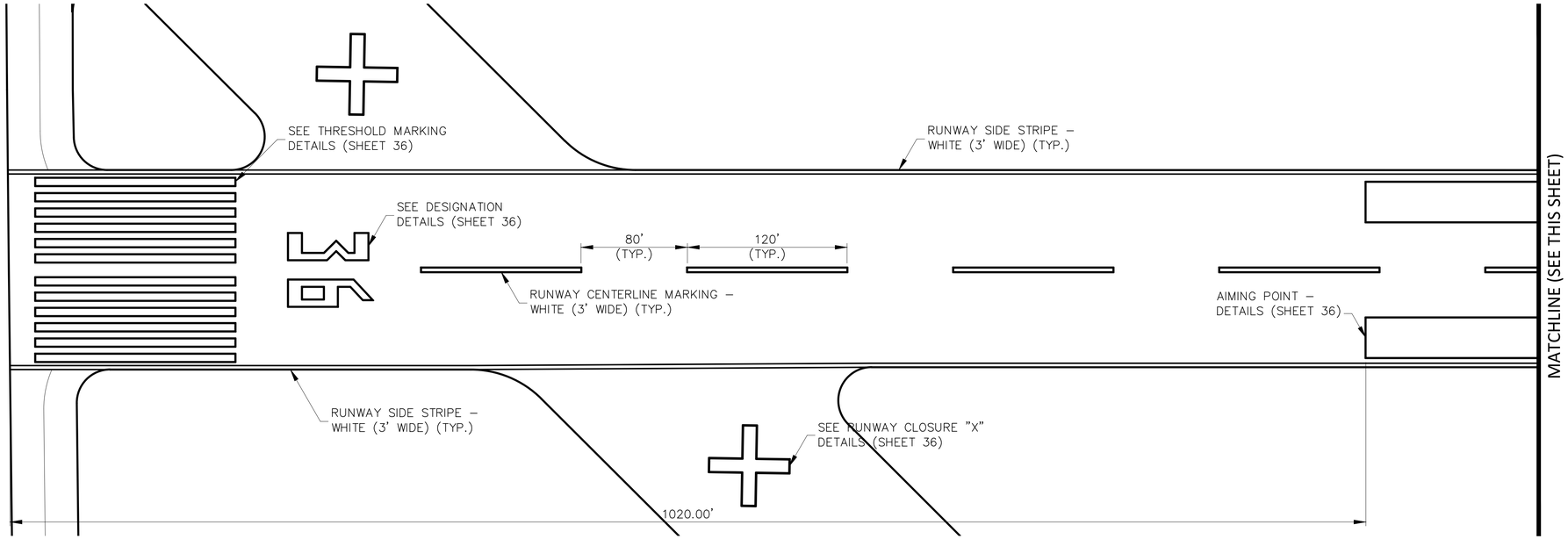
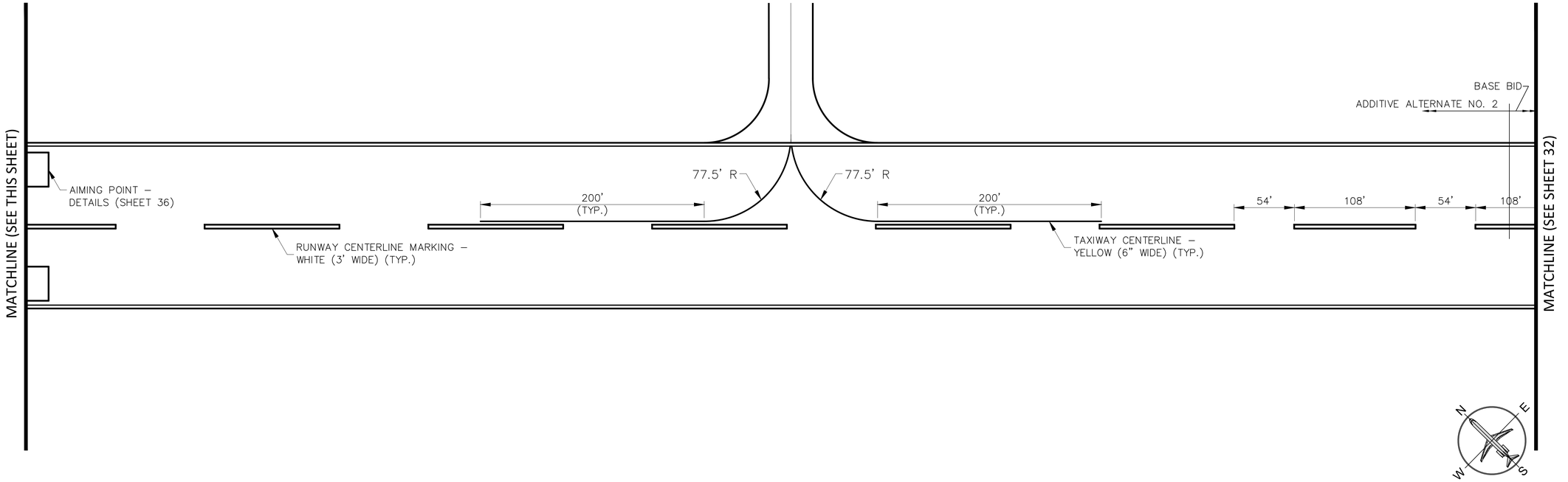
NOTES:

UNLESS OTHERWISE NOTED, PAVEMENT MARKINGS ARE INCLUDED IN ADDITIVE ALTERNATE No. 2

CONTRACTOR SHALL ALLOW ASPHALT TO CURE A MINIMUM OF 30 DAYS AND CONCRETE TO CURE A MINIMUM OF 60 DAYS PRIOR TO APPLYING FINAL PAVEMENT MARKINGS.

ALL CURING MATERIAL SHALL BE REMOVED FROM THE SURFACE PRIOR TO FINAL PAVEMENT MARKING APPLICATION.





HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

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Technician: SGK	Project Number: 149090

1. ALL DIMENSIONS ARE IN FEET UNLESS OTHERWISE SPECIFIED.
2. ALL LIGHT FIXTURES IN AREAS TO BE MARKED MUST BE MASKED WHILE APPLYING PAINT.
3. ALL NEW STRIPING SHALL BE WHITE UNLESS OTHERWISE NOTED.
4. ALL YELLOW AND WHITE MARKINGS SHALL BE REFLECTORIZED.
5. RUNWAY MARKINGS (WHITE) ALWAYS TAKE PRECEDENCE OVER TAXIWAY MARKINGS (YELLOW).
6. ALL MARKINGS EXCEPT RUNWAY EDGE STRIPES AND MARKINGS ON NEW ASPHALT SHALL RECEIVE A 6" BLACK OUTLINE. BLACK MARKINGS DO NOT REQUIRE GLASS BEADS.

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

MARKING PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date: JULY 2016	Division:
Scale: (22x34) NOTED	Sheet Number:
	Drawing Number: 31

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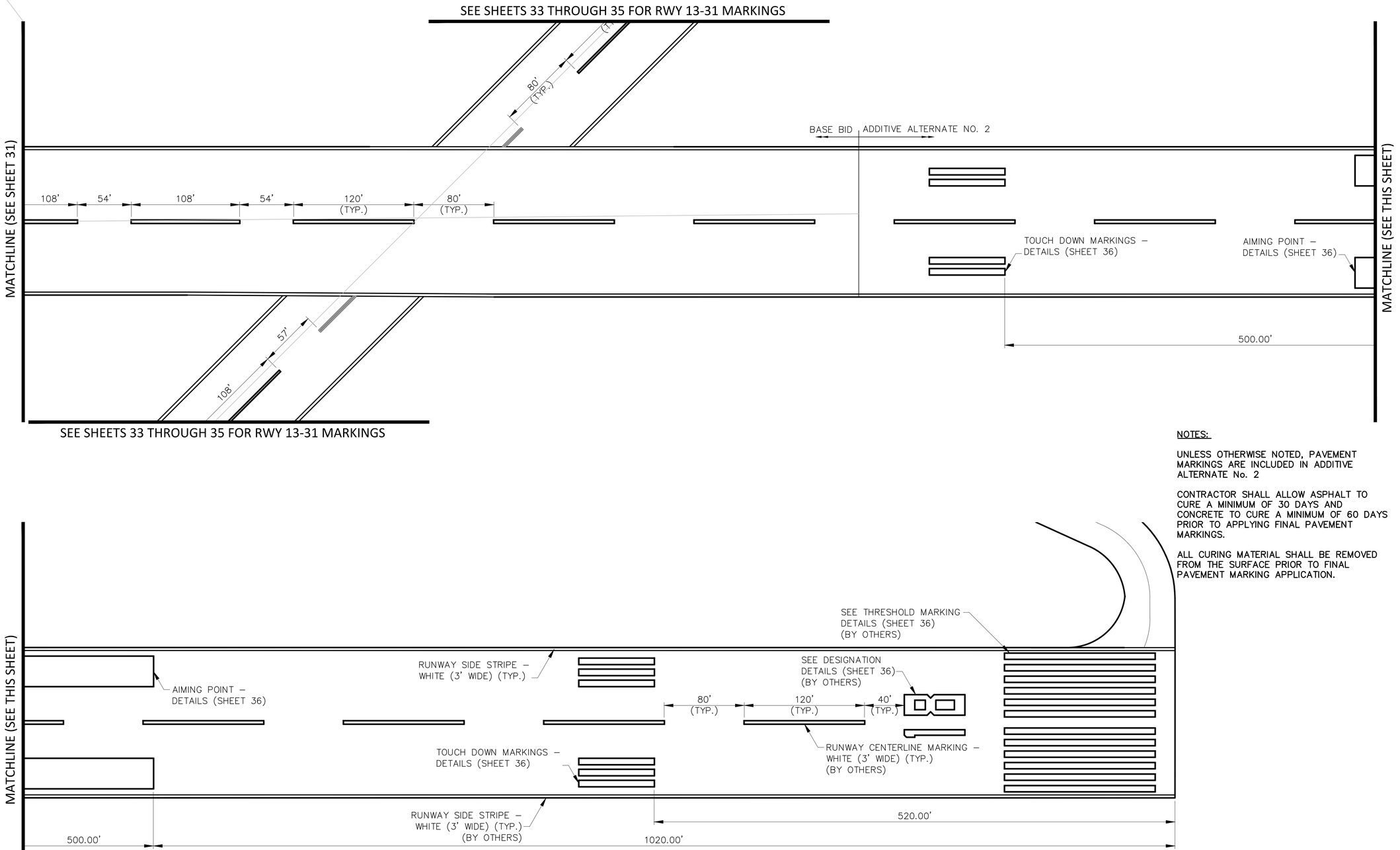

NOTES:

UNLESS OTHERWISE NOTED, PAVEMENT MARKINGS ARE INCLUDED IN ADDITIVE ALTERNATE No. 2

CONTRACTOR SHALL ALLOW ASPHALT TO CURE A MINIMUM OF 30 DAYS AND CONCRETE TO CURE A MINIMUM OF 60 DAYS PRIOR TO APPLYING FINAL PAVEMENT MARKINGS.

ALL CURING MATERIAL SHALL BE REMOVED FROM THE SURFACE PRIOR TO FINAL PAVEMENT MARKING APPLICATION.

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932
HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

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Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

MARKING PLAN

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
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Scale: (22x34)	Sheet Number:
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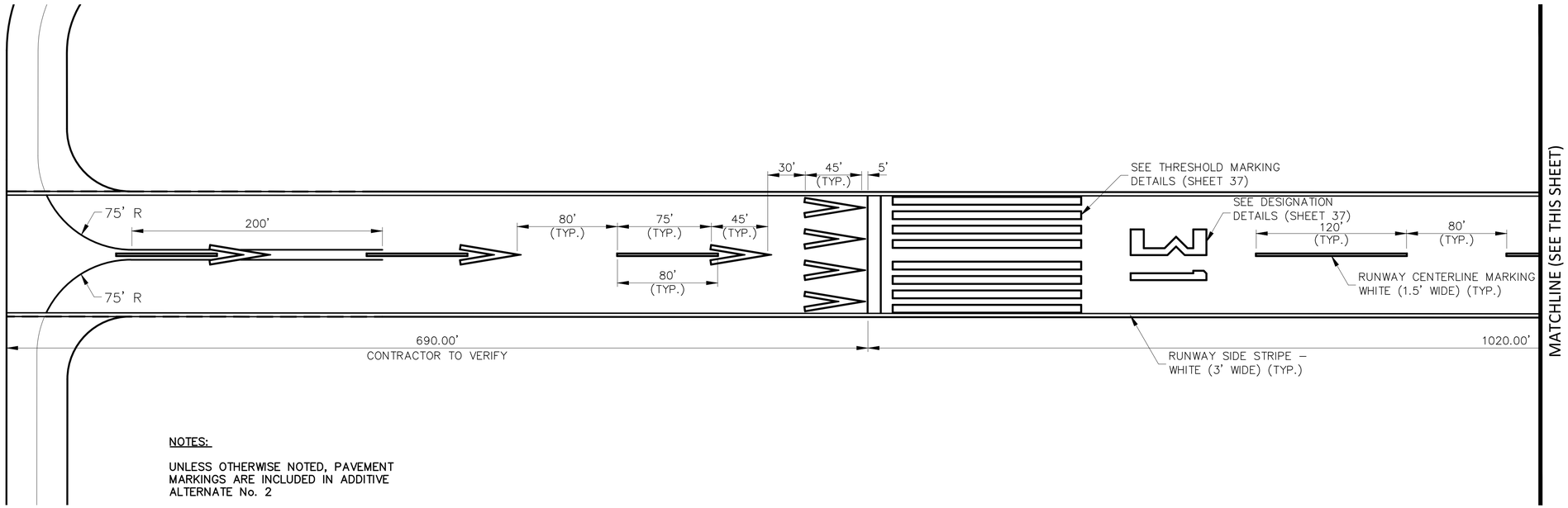

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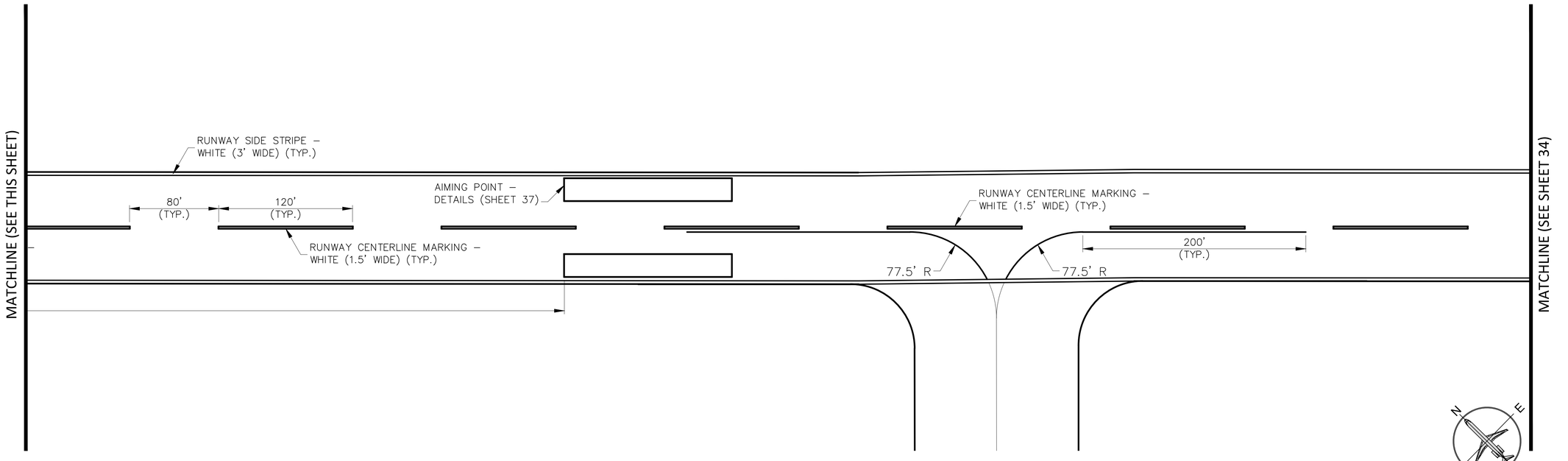

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7/5/2016

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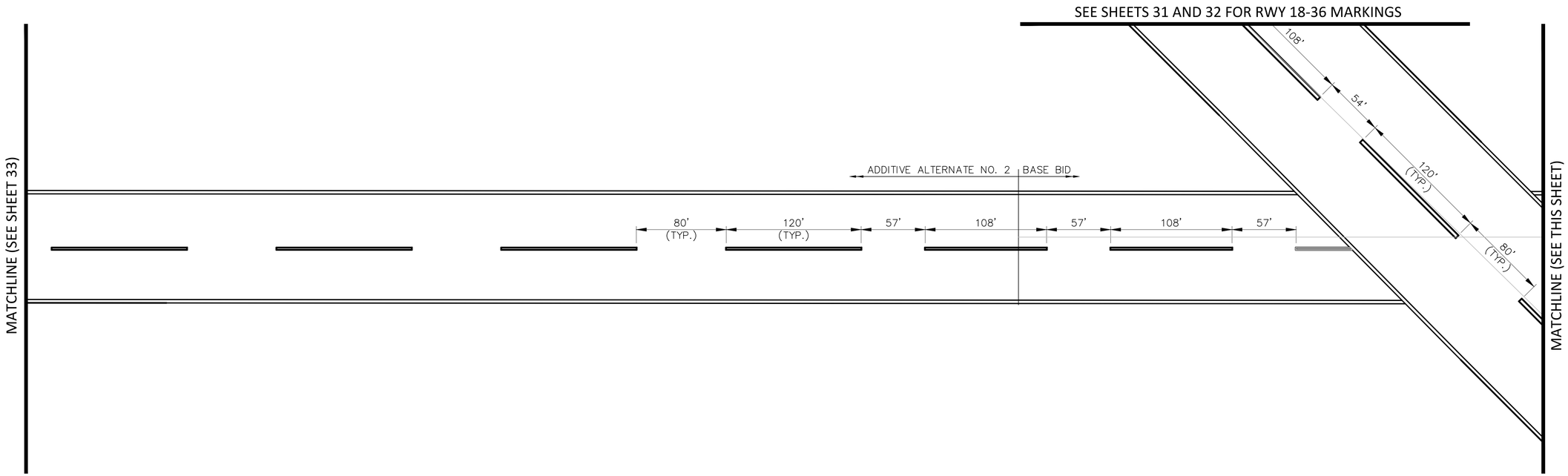

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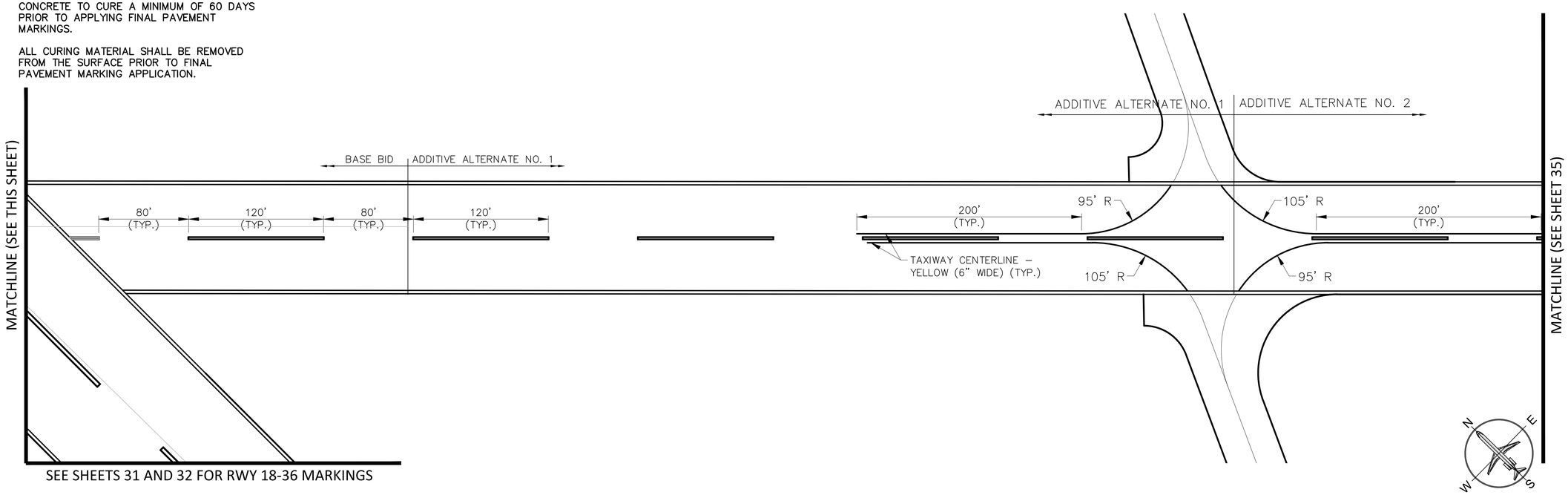

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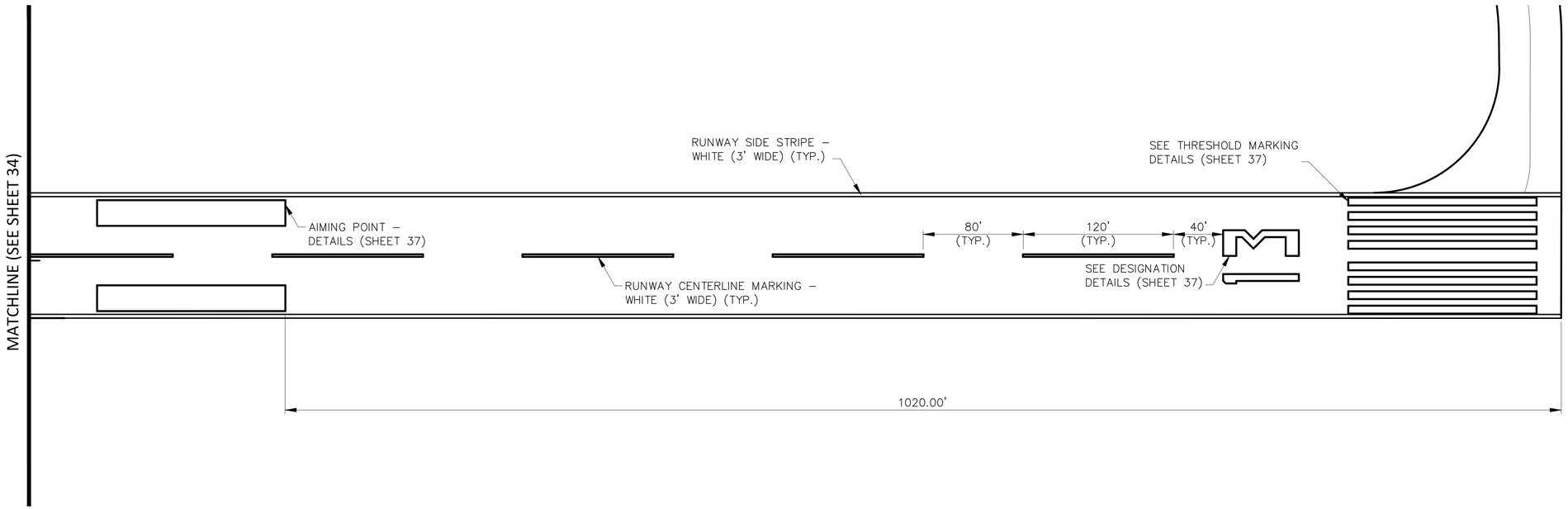

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0 30 60 120
SCALE IN FEET

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Drawing Name:

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Scale: (22x34) NOTED	Sheet Number:
	Drawing Number: 35

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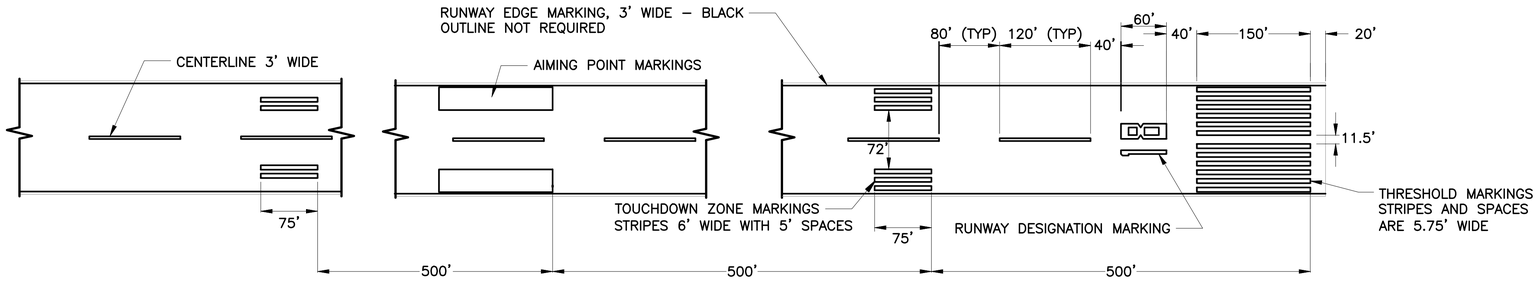
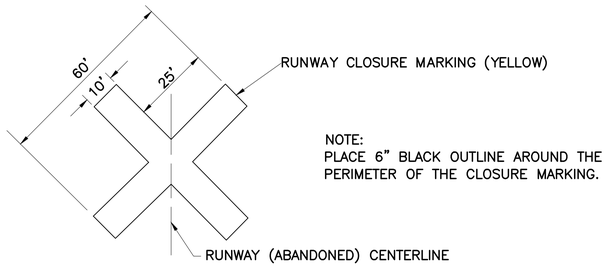


DETAIL - RUNWAY 18-36 MARKINGS

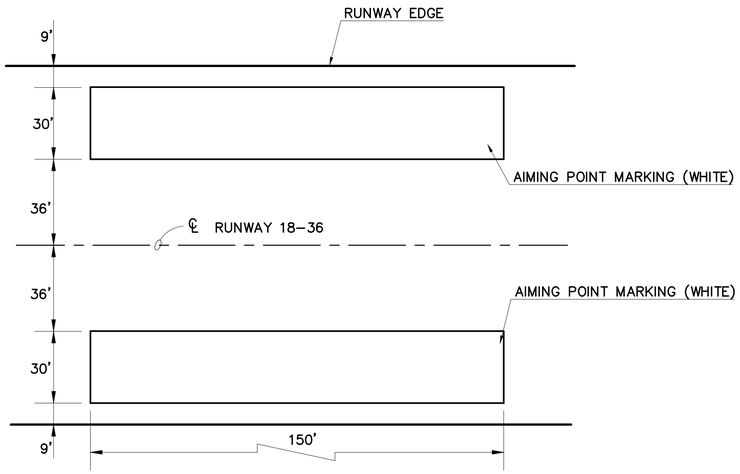
N.T.S.



NOTE:
PLACE 6" BLACK OUTLINE AROUND THE PERIMETER OF THE CLOSURE MARKING.

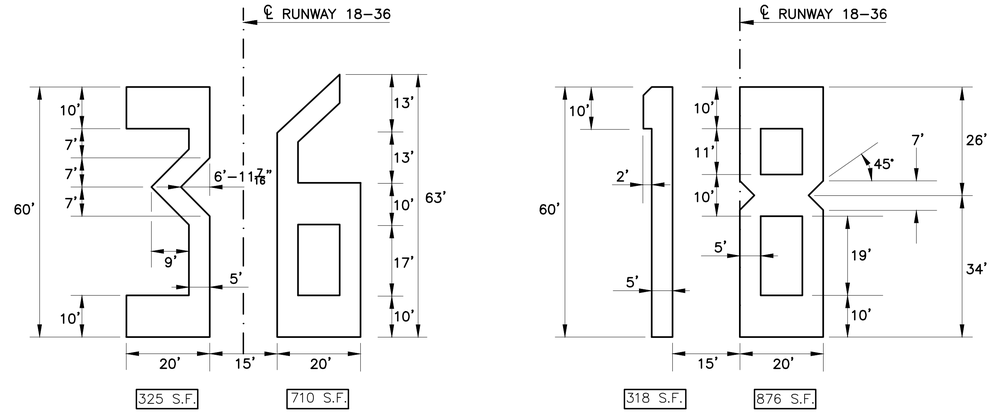
SURFACE PAINTED RUNWAY CLOSURE MARKER DETAIL

N.T.S.



DETAIL - RUNWAY 18-36 AIMING POINT MARKING

N.T.S.



DESIGNATION NUMERAL NOTES:

1. BOXED NUMBERS BELOW NUMERALS INDICATE THE SQUARE FOOTAGE OF PAINTED SURFACE.
2. DIMENSIONS ARE TO THE PAINTED AREAS.
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DETAIL - RUNWAY DESIGNATION NUMERALS

N.T.S.

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Designer:	Checked by:
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REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

MARKING DETAILS

FAA A.I.P. Project Number:
3-22-0018-019-2016

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JULY 2016	
Scale: (22x34)	Sheet Number:
N/A	Drawing Number: 36

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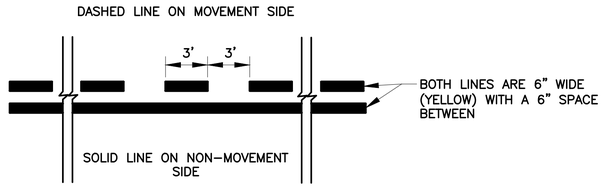

DETAIL - NON MOVEMENT AREA BOUNDARY

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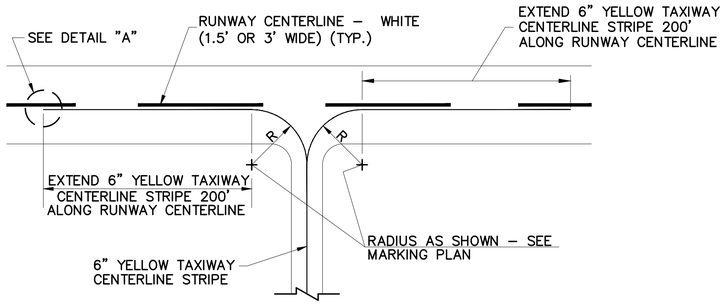
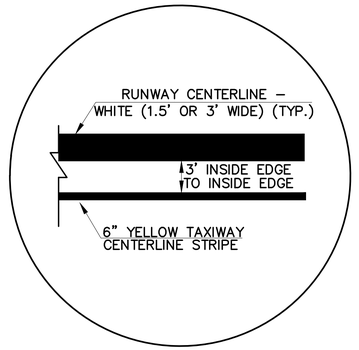


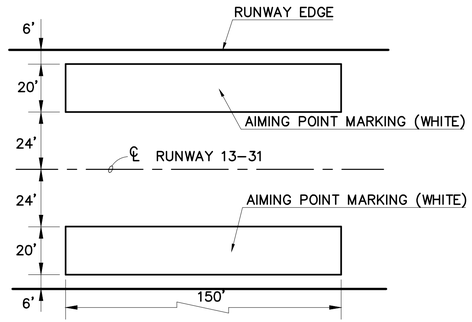
DETAIL - TYPICAL TAXIWAY TURNOUT

N.T.S.



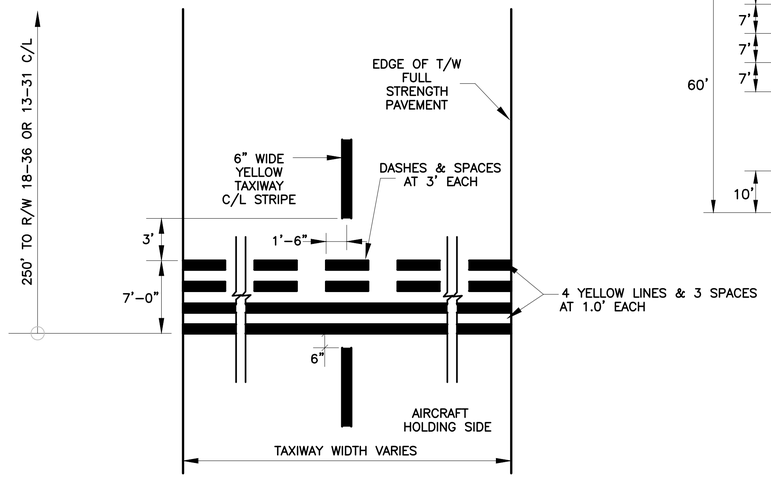
DETAIL "A"

N.T.S.



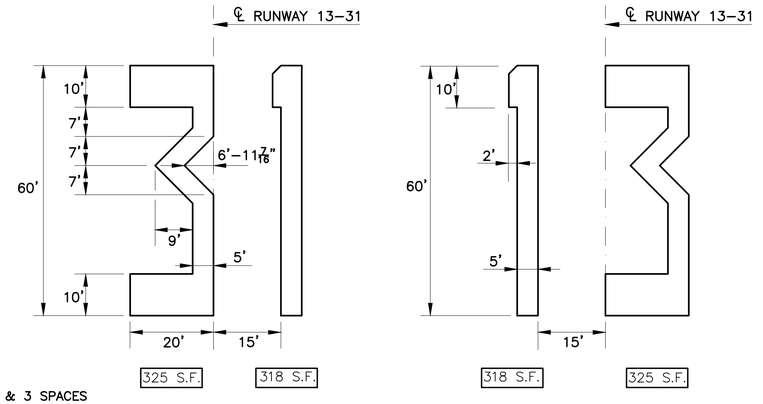
DETAIL - RUNWAY 13-31 AIMING POINT MARKING

N.T.S.



DETAIL - RUNWAY HOLDING POSITION LINE

N.T.S.



DESIGNATION NUMERAL NOTES:

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DETAIL - RUNWAY DESIGNATION NUMERALS

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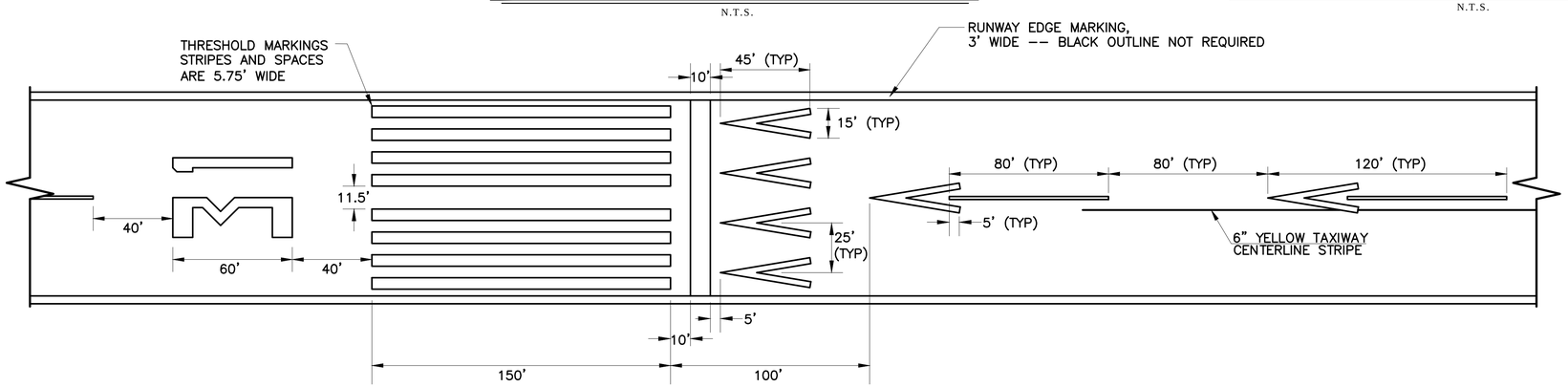

DETAIL - RUNWAY 13-31 AND DISPLACED THRESHOLD MARKINGS

N.T.S.

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REVISIONS

No.	Description	Date	By

Project Name:
RUNWAY 18-36 / 13-31 RECONSTRUCTION

Drawing Name:
MARKING DETAILS

FAA A.I.P. Project Number:
3-22-0018-019-2016

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GROUNDING NOTES

1. GROUND ALL NON-CURRENT-CARRYING METAL PARTS OF ELECTRICAL EQUIPMENT BY USING NO. 6 AWG BARE COPPER WIRE TO BE RUN INSIDE CABINETS AND IN CONDUITS TOGETHER WITH OTHER WIRES. WHERE THIS IS NOT FEASIBLE, RUN THE EXPOSED GROUNDING WIRE PARALLEL OR AT RIGHT ANGLES TO THE BUILDING LINES AND SECURE IT AT LEAST EVERY 24 INCHES AND WITHIN 6 INCHES FROM BEND OR JUNCTION. THE EXPOSED WIRE SHALL BE NO. 6 AWG.
2. ALL GROUND CONNECTIONS TO BUSSES, PANELS, ETC. SHALL BE MADE WITH PRESSURE TYPE SOLDERLESS LUGS AND GROUND CLAMPS. SOLDERED OR BOLT AND WASHER TYPE CONNECTIONS ARE NOT ACCEPTABLE UNLESS NOTED OTHERWISE. CLEAN ALL METAL SURFACES BEFORE MAKING GROUND CONNECTIONS.
3. TOPS OF GROUND RODS SHALL BE 6 INCHES BELOW GRADE.
4. ALL CONNECTIONS FOR THE COUNTERPOISE SYSTEM AND TO EQUIPMENT SAFETY GROUND RODS SHALL BE MADE USING EXOTHERMIC WELDS.
5. THE RESISTANCE TO GROUND OF THE NEW COUNTERPOISE SYSTEM SHALL NOT EXCEED 25 OHMS.
6. IF ROCK IS ENCOUNTERED DURING THE GROUND ROD INSTALLATION, THE CONTRACTOR SHALL ATTEMPT TO INSTALL THE GROUND ROD ADJACENT TO THE AREA. IF ROCK IS AGAIN ENCOUNTERED, THE CONTRACTOR SHALL INSTALL THE GROUND ROD AS PER NEC ARTICLE 250, SECTION 250.53 (G) ROD AND PIPE ELECTRODES. NO ADDITIONAL PAYMENT WILL BE MADE DUE TO ROCK ENCOUNTERS.

FIELD LIGHTING NOTES

1. UNLESS OTHERWISE NOTED, ALL UNDERGROUND FIELD POWER MULTIPLE AND SERIES CIRCUIT CONDUCTORS WHETHER DEB OR IN DUCT/CONDUIT SHALL BE FAA APPROVED L-824 TYPE. INSULATION VOLTAGE AND SIZE SHALL BE AS SPECIFIED.
2. NO COMPONENTS OF PRIMARY CIRCUIT SUCH AS CABLE, CONNECTORS AND ISOLATION TRANSFORMERS SHALL BE ROUTED ABOVE GROUND AT LIGHTS, BASES, PULL BOXES, HANDHOLES , ETC.
3. THERE SHALL BE NO EXPOSED POWER, CONTROL CABLES BETWEEN THE POINT WHERE THEY LEAVE THE UNDERGROUND LIGHT BASES AND WHERE THEY ENTER THE EQUIPMENT ENCLOSURES. THESE CABLES SHALL BE ENCLOSED IN RIGID CONDUIT OR IN FLEXIBLE, WATER-TIGHT CONDUIT WITH BREAKABLE COUPLING(S) AT THE GRADE OR THE HOUSING COVER, AS SHOWN ON APPLICABLE DETAILS.
4. THE CABLE ENTRANCES INTO THE FIELD-ATTACHED L-823 CONNECTORS SHALL BE ENCLOSED BY KITS CONSISTING OF WATERTIGHT MOLDED PULL OVER SLEEVES (SUPER KIT).
5. THE ID OF THE PRIMARY L-823 FIELD ATTACHED CONNECTORS SHALL MATCH THE CABLE ID TO PROVIDE A WATER-TIGHT CABLE ENTRANCE.
6. L-823 TYPE II, TWO-CONDUCTOR SECONDARY CONNECTORS SHALL BE CLASS "A" (FACTORY MOLDED) OR CLASS B (FIELD ASSEMBLY KIT) WHERE NOTED ON THE DRAWINGS.
7. THERE SHALL BE NO SPLICES IN THE SECONDARY CABLE(S) WITHIN THE LIGHT BASE.
8. ELECTRICAL INSULATING GREASE SHALL BE APPLIED WITHIN THE L-823, SECONDARY, TWO CONDUCTOR CONNECTORS TO PREVENT WATER ENTRANCE. THESE CONNECTORS SHALL NOT BE TAPED.
9. SEE SPECIFICATION L-108 FOR REQUIREMENTS OF MINIMUM SLACK TO BE PROVIDED IN THE PRIMARY CABLE AT EACH HANDHOLE AND CONNECTOR TERMINATION.
10. THE ELEVATION OF THE BREAKABLE COUPLING GROOVE SHALL NOT EXCEED 1/2" ABOVE THE EDGE OF THE COVER OF BASE MOUNTED COUPLINGS.
11. PLASTIC LIGHTING FIXTURE COMPONENTS, SUCH AS LAMP HEADS AND BASE COVERS, WILL NOT BE ACCEPTABLE.
12. THE TOLERANCE FOR THE HEIGHT OF TAXIWAY OR RUNWAY EDGE LIGHTS SHALL BE ± ONE (1) INCH. IN CASE OF STAKE MOUNTED LIGHTS, THE SPECIFIED LIGHTING FIXTURE HEIGHT SHALL BE MEASURED BETWEEN THE TOP OF THE STAKE AND THE TOP OF THE LENS. IN CASE OF BASE MOUNTED LIGHTS, THE SPECIFIED LIGHTING FIXTURE HEIGHT SHALL BE MEASURED BETWEEN THE TOP OF THE BASE FLANGE AND THE TOP OF THE LENS, THUS INCLUDING THE BASE COVER, THE FRANGIBLE COUPLING, THE STEM, THE LAMP HOUSING AND THE LENS.
13. LIGHT I.D. NUMBERING SHALL BE AS DIRECTED BY THE OWNER. COORDINATE IN DETAIL WITH THE OWNER'S AUTHORIZED REPRESENTATIVE.
14. CABLE/SPLICE/DUCT MARKERS SHALL BE PRECAST CONCRETE OF THE SIZE SHOWN. LETTERS/NUMBERS/ARROWS FOR THE LEGEND TO BE IMPRESSED INTO THE TOPS OF THE MARKERS SHALL BE PRE-ASSEMBLED AND SECURED IN THE MOLD BEFORE THE CONCRETE IS POURED. LEGEND INSCRIBED BY HAND IN WET CONCRETE WILL NOT BE ACCEPTABLE.
15. ALL UNDERGROUND CABLE RUNS SHALL BE IDENTIFIED BY CABLE MARKERS AT 200 FEET MAXIMUM SPACING, WITH AN ADDITIONAL MARKER AT EACH CHANGE OF DIRECTION OF THE CABLE RUN. CABLE MARKERS SHALL BE INSTALLED IMMEDIATELY ABOVE THE CABLE.
16. THE CABLE AND SPLICE MARKERS SHALL IDENTIFY THE CIRCUITS WHICH THE CABLES BELONG TO SUCH AS "RW".
17. LOCATIONS OF ENDS OF ALL UNDERGROUND DUCTS SHALL BE IDENTIFIED BY DUCT MARKERS WHERE DUCTS DO NOT TERMINATE IN HANDHOLES.
18. ALL POWER AND CONTROL CABLES IN MANHOLE/HANDHOLES SHALL BE TAGGED. USE ENGRAVED STAINLESS STEEL TAGS TO BE ATTACHED AT BOTH ENDS TO THE CABLE BY THE USE OF PLASTIC STRAPS. MINIMUM OF TWO TAGS SHALL BE PROVIDED ON EACH CABLE IN A HANDHOLE - ONE AT THE CABLE ENTRANCE AND ONE AT THE CABLE EXIT.
19. APPLY AN OXIDE INHIBITING, ANTI-SEIZING COMPOUND TO ALL SCREWS, NUTS AND BREAKAGE COUPLING THREADS.
20. THERE SHALL BE NO SPLICES BETWEEN THE ISOLATION TRANSFORMERS. L-823 CONNECTORS ARE ALLOWED AT TRANSFORMER CONNECTIONS ONLY, UNLESS OTHERWISE SHOWN.
21. CONCRETE USED FOR BACKFILL AROUND L-867 TRANSFORMER HOUSINGS, MARKERS, ETC. SHALL BE P-610 3000 PSI, MINIMUM, AIR-ENTRAINED, UNLESS NOTED OTHERWISE.

GENERAL NOTES

G1. CONTRACTOR SHALL BE HELD RESPONSIBLE FOR HAVING VISITED THE SITE AND HAVING FAMILIARIZED HIMSELF WITH THE EXISTING CONDITIONS PRIOR TO SUBMITTING HIS BID.

G2. SHOULD ANY EXISTING ACTIVE WIRING OR OTHER UTILITIES BE CUT BY NEW TRENCHING, SUCH SHALL BE REPAIRED (IN MANNER APPROVED BY THE ENGINEER AND OWNER) AND LEFT IN OPERATING CONDITION AT NO ADDITIONAL COST TO THE OWNER.

G3. WHERE CONDUCTORS ARE SHOWN ON PLANS IN THE SAME GENERAL AREA, THEY SHALL ALL BE RUN IN A COMMON TRENCH.

G4. PROVIDE ONLY ONE (1) #6 BARE COPPER COUNTER POISE CONDUCTOR IN TRENCH THAT MAY CONTAIN MULTIPLE SERIES CIRCUIT CONDUCTORS. SEE NOTE #G3.

G5. THE ELECTRICAL INSTALLATION, AS A MINIMUM, SHALL MEET THE NATIONAL ELECTRICAL CODE, LOCAL CODES AND FEDERAL AVIATION ADMINISTRATION STANDARDS.

G6. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, INSPECTIONS AND APPROVALS. THE COST OF OBTAINING ALL PERMITS SHALL BE INCLUDED IN THE CONTRACTORS BID PROPOSAL.

G7. THE CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR TO INSTALL THE ELECTRICAL SYSTEMS AS INDICATED ON THE DRAWINGS. ITEMS NOT SHOWN BUT OBVIOUSLY NECESSARY FOR COMPLETION OF THE WORK SHALL BE INCLUDED.

G8. ALL EQUIPMENT FURNISHED AND INSTALLED BY THE CONTRACTOR OTHER THAN LED LIGHT FIXTURES, SHALL BE GUARANTEED AGAINST DEFECTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE. LED LIGHT FIXTURES SHALL BE GUARANTEED FOR FOUR(4) YEARS FROM DATE OF FINAL ACCEPTANCE.

G9. CONTRACTOR SHALL BE RESPONSIBLE FOR CONTACTING UTILITY COMPANIES AND FAA TO IDENTIFY AND LOCATE ANY UNDERGROUND UTILITIES AND/OR CABLE WITHIN THE PROJECT LIMITS. THE CONTRACTOR SHALL ASSIST UTILITY COMPANY AND AIRPORT OPERATIONS PERSONNEL IN EFFORTS TO FIELD VERIFY UNDERGROUND UTILITIES.

G10. THE CONTRACTOR SHALL ASCERTAIN THAT ALL LIGHTING SYSTEM COMPONENTS FURNISHED BY HIM (INCLUDING FAA APPROVED EQUIPMENT) ARE COMPATIBLE IN ALL RESPECTS WITH EACH OTHER AND THE REMAINDER OF THE NEW/EXISTING SYSTEM. ANY NON COMPATIBLE COMPONENTS FURNISHED BY THIS CONTRACTOR SHALL BE REPLACED BY HIM AT NO ADDITIONAL COST TO THE OWNER WITH A SIMILAR UNIT, APPROVED BY THE ENGINEER (DIFFERENT MODEL OR DIFFERENT MANUFACTURER) THAT IS COMPATIBLE WITH THE REMAINDER OF THE AIRPORT LIGHTING SYSTEM.

G11. IN CASE THE CONTRACTOR SELECTS TO FURNISH AND INSTALL AIRPORT LIGHTING EQUIPMENT REQUIRING ADDITIONAL WIRING, TRANSFORMERS, ADAPTERS, MOUNTINGS, ETC., TO THOSE SHOWN ON THE DRAWINGS AND/OR LISTED IN THE SPECIFICATIONS, ANY COST FOR THESE ITEMS SHALL BE INCIDENTAL TO THE EQUIPMENT COST.

G12. THE CONTRACTOR INSTALLED EQUIPMENT (INCLUDING FAA APPROVED) SHALL NOT GENERATE ANY ELECTRO- MAGNETIC INTERFERENCE IN THE EXISTING AND/OR NEW COMMUNICATIONS, WEATHER, AIR NAVIGATION, AND AIR TRAFFIC CONTROL EQUIPMENT. ANY EQUIPMENT GENERATING SUCH INTERFERENCE SHALL BE REPLACED BY THE CONTRACTOR AT NO ADDITIONAL COST WITH EQUIPMENT MEETING THE APPLICABLE SPECIFICATIONS AND NOT GENERATING ANY INTERFERENCE.

G13. WHEN A SPECIFIC TYPE, STYLE, CLASS, ETC. OF FAA APPROVED EQUIPMENT IS SPECIFIED ONLY THAT TYPE, STYLE, CLASS, ETC. WILL BE ACCEPTABLE, EVEN THOUGH EQUIPMENT OF OTHER TYPES, STYLES, CLASSES, ETC. MAY BE FAA APPROVED.

G14. A MINIMUM OF THREE (3) COPIES OF INSTRUCTION BOOKS SHALL BE SUPPLIED WITH EACH DIFFERENT TYPE OF EQUIPMENT. THE BOOKS DESCRIBING A MORE SOPHISTICATED TYPE OF EQUIPMENT, SUCH AS REGULATORS, CONTROL PANEL, ETC. AS A MINIMUM SHALL CONTAIN THE FOLLOWING:
   - (A) A DETAILED DESCRIPTION OF THE OVERALL EQUIPMENT AND ITS INDIVIDUAL COMPONENTS.
   - (B) THEORY OF OPERATION INCLUDING THE FUNCTION OF EACH COMPONENT.
   - (C) INSTALLATION INSTRUCTIONS.
   - (D) START-UP INSTRUCTIONS.
   - (E) PREVENTATIVE MAINTENANCE REQUIREMENTS.
   - (F) CHART FOR TROUBLESHOOTING.
   - (G) COMPLETE POWER AND CONTROL DETAILED WIRING DIAGRAM(S), SHOWING EACH CONDUCTOR/CONNECTION/COMPONENT."BLACK" BOXES ARE NOT ACCEPTABLE. THE DIAGRAM OR THE NARRATIVE SHALL SHOW VOLTAGES/CURRENTS/WAVE SHAPES AT STRATEGIC LOCATIONS TO BE USED WHEN CHECKING AND/OR TROUBLESHOOTING THE EQUIPMENT. WHEN THE EQUIPMENT HAS SEVERAL MODES OF OPERATION, SUCH AS SEVERAL BRIGHTNESS STEPS, THESE PARAMETERS SHALL BE INDICATED FOR ALL THE DIFFERENT MODES.
   - (H) PARTS LIST WHICH WILL INCLUDE ALL MAJOR AND MINOR COMPONENTS, SUCH AS RESISTORS, DIODES, ETC. IT SHALL INCLUDE A COMPLETE NOMENCLATURE OF EACH COMPONENT AND, IF APPLICABLE, THE NAME OF ITS MANUFACTURER AND THE CATALOG NUMBER.
   - (I) SAFETY INSTRUCTIONS.

G15. ALL EXCAVATION WITHIN 3 FT. OF FAA, NWS, AIRFIELD LIGHTING, TELEPHONE COMPANY AND POWER COMPANY CABLES SHALL BE BY HAND DIGGING.

G16. CONTRACTOR SHALL SEED ALL AREAS DISTURBED BY CONSTRUCTION WITH SEED FOR SAME GRASS AS ADJACENT AREAS.

HAMMOND NORTHSHORE REGIONAL AIRPORT 1932

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

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Designer:	Checked by:
RES	GHL
Technician:	Project Number:
MTW	149090

NOTE:

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

LIGHTING GENERAL NOTES

FAA A.I.P. Project Number:
3-22-00XX-0XX-2016

Date:	Division:
JULY 2016	AIRPORTS
Scale: (22x34)	Sheet Number:
AS SHOWN	1
	Drawing Number: E-100

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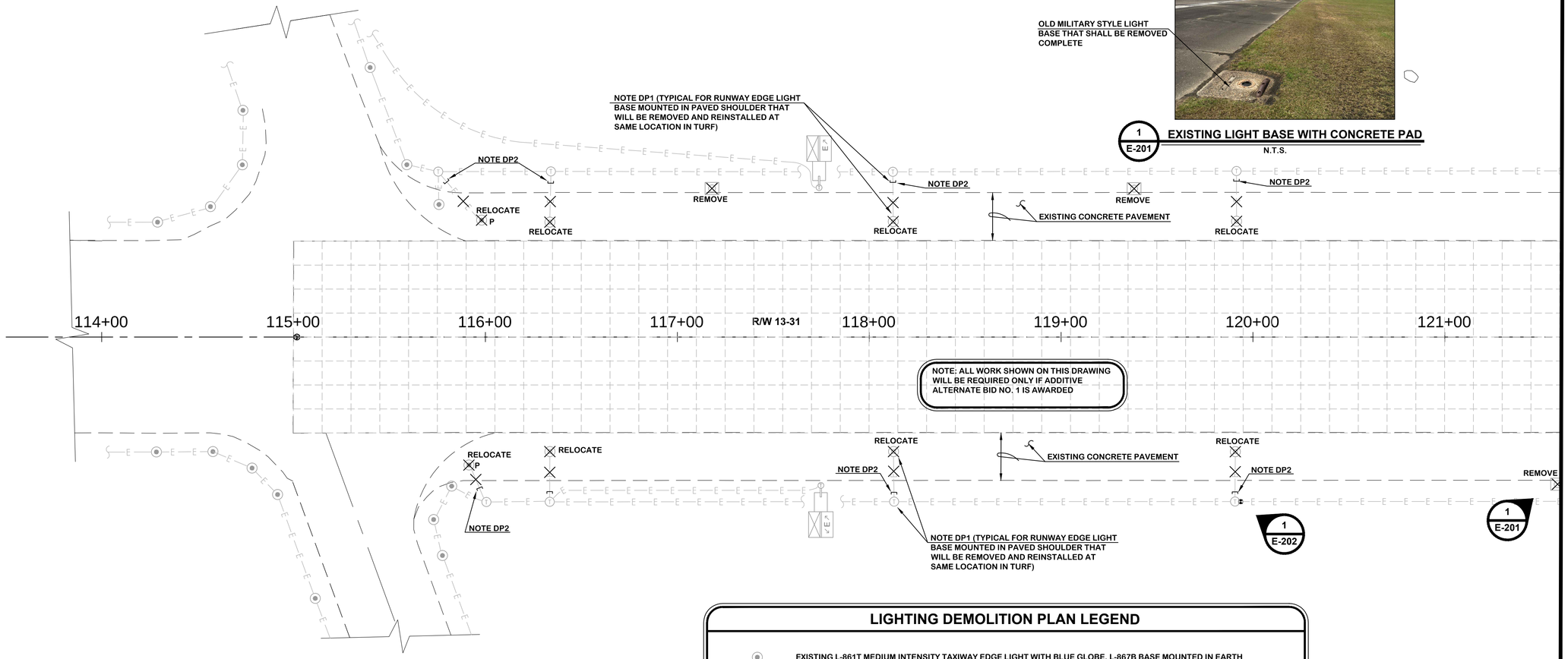

OLD MILITARY STYLE LIGHT BASE THAT SHALL BE REMOVED COMPLETE

1 E-201 **EXISTING LIGHT BASE WITH CONCRETE PAD**

N.T.S.

DEMOLITION PLAN NOTES

DP1 THE CONTRACTOR SHALL DISCONNECT THE FIELD CIRCUIT CABLES FROM THE BASE MOUNTED LIGHT ISOLATION TRANSFORMER AND PULL BACK THROUGH THE CONDUIT AT THE REMOTE MOUNTED HANDHOLE TO ALLOW RE-PULLING CABLES THROUGH NEW CONDUIT INTO THE NEW LIGHT BASE. REMOVE THE L-823 CONNECTOR KITS, TAPE CABLE ENDS WATERTIGHT AND COIL AT HANDHOLE. PROTECT CABLES FOR RE-USE.

DP2 CUT CONDUIT 2'-0" BEYOND EDGE OF HANDHOLE PAD TO ALLOW RECONNECTION OF NEW CONDUIT AND CABLE.

LIGHTING DEMOLITION PLAN LEGEND

	EXISTING L-861T MEDIUM INTENSITY TAXIWAY EDGE LIGHT WITH BLUE GLOBE, L-867B BASE MOUNTED IN EARTH SHOULDER THAT SHALL REMAIN.
P RELOCATE	EXISTING L-861T MEDIUM INTENSITY TAXIWAY EDGE LIGHT WITH BLUE GLOBE, L-867B BASE MOUNTED IN PAVED SHOULDER THAT SHALL BE REMOVED AND STORED FOR REINSTALLATION ON NEW LIGHT BASE. ABANDON LIGHT BASE FOR REMOVAL WITH PAVEMENT.
	EXIST L-861 MEDIUM INTENSITY RUNWAY EDGE LIGHT, L-867B BASE MOUNTED IN EARTH SHOULDER THAT SHALL REMAIN.
RELOCATE	EXIST L-861 MEDIUM INTENSITY RUNWAY EDGE LIGHT, L-867B BASE MOUNTED IN PCC PAVED SHOULDER THAT SHALL BE REMOVED AND STORED FOR REINSTALLATION ON NEW LIGHT BASE. EACH LIGHT AND LOCATION SHALL BE CATALOGED SUCH THAT LIGHT COLOR AND COLOR ORIENTATION IS REINSTALLED AT THE SAME LOCATION.
REMOVE	EXISTING IN-PAVEMENT RUNWAY EDGE LIGHT, L-868 BASE MOUNTED IN PCC RUNWAY PAVEMENT THAT SHALL BE REMOVED COMPLETE. ABANDON LIGHT BASE FOR REMOVAL WITH PAVEMENT.
REMOVE	EXISTING LIGHT BASE (NO LIGHT) WITH CONCRETE PAD THAT SHALL BE REMOVED COMPLETE. L-125 PAY ITEM "REMOVE CONCRETE ENCASED LIGHT BASE".
13-31	EXISTING L-858 TAXIWAY GUIDANCE SIGN MOUNTED ON CONCRETE PAD THAT SHALL REMAIN.
T	EXISTING L-867 LIGHT BASE WITH BLANK COVER PLATE IN CONCRETE PAD LOCATED IN TURF AREA USED AS HANDHOLE THAT SHALL REMAIN.
H	EXISTING HANDHOLE WITH CONCRETE APRON THAT SHALL REMAIN.
E E	EXISTING 2 " SCHEDULE 40 PVC CONDUIT(S) RUN UNDERGROUND WITH 1/C - #8 5KV, L-824C AIRFIELD CIRCUIT CABLES INSTALLED THAT SHALL REMAIN. FIELD VERIFY EXACT LOCATION.
E REMOVE E	EXISTING 2 " SCHEDULE 40 PVC CONDUIT RUN UNDERGROUND WITH 1/C - #8 5KV, L-824C AIRFIELD CIRCUIT CABLES INSTALLED. REMOVE CABLES AS INDICATED. REMOVE SECTION OF CONDUIT TO ALLOW NEW CONDUIT EXTENSION WHERE SHOWN.
	EXISTING CONCRETE ENCASED DUCT BANK THAT SHALL BE REMOVED. FIELD VERIFY SIZE, QUANTITY AND EXACT LOCATION.

0 30 60 120

SCALE IN FEET

MATCHLINE A (SEE SHEET E-202) STA.121+59.56

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932
HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

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Technician:	Project Number:
MTW	149090

NOTE:

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

DEMOLITION PLAN NO. 1

FAA A.I.P. Project Number:
3-22-00XX-0XX-2016

Date: **JULY 2016**

Division:

Scale: (22x34) **AS SHOWN**

Sheet Number:

Drawing Number:
E-201

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MATCHLINE A (SEE SHEET E-201) STA. 121+59.56

MATCHLINE B (SEE SHEET E-203) STA. 27+86.35

MATCHLINE C (SEE SHEET E-203) STA. 34+26.37

MATCHLINE D (SEE SHEET E-203) STA. 129+21.57

ADDITIVE ALTERNATE NO. 1 BID

BASE BID

NOTE DP1 (TYPICAL FOR RUNWAY EDGE LIGHT BASE MOUNTED IN PAVED SHOULDER THAT WILL BE REMOVED AND REINSTALLED AT SAME LOCATION IN TURF)

NOTE DP2

RELOCATE

REMOVE

EXISTING CONCRETE PAVEMENT

18-36

R/W 18-36

R/W 13-31

13-31

122+00

123+00

124+00

125+00

126+00

127+00

128+00

129+00

27+00

28+00

29+00

30+00

31+00

32+00

33+00

34+00

RSA

EXISTING HANDHOLE WITH RUNWAY CROSSING DUCT BANK CONNECTION THAT SHALL REMAIN

2 / E-202 EXISTING HANDHOLE WITH CONCRETE APRON

N.T.S.

EXISTING L-867 LIGHT BASE WITH BLANK COVER PLATE THAT SHALL REMAIN. HANDHOLE CONTAINS INTERLEAVED RUNWAY EDGE LIGHTING CIRCUITS.

1 / E-202 EXISTING L-867 LIGHT BASE USED AS HANDHOLE WITH BLANK COVER PLATE

N.T.S.

0 30 60 120

SCALE IN FEET

HAMMOND NORTHSHORE REGIONAL AIRPORT

HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

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Technician:	Project Number:
MTW	149090

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Project Name:

RUNWAY 18-36 / 13-31 RECONSTRUCTION

Drawing Name:

DEMOLITION PLAN NO. 2

FAA A.I.P. Project Number:

3-22-00XX-0XX-2016

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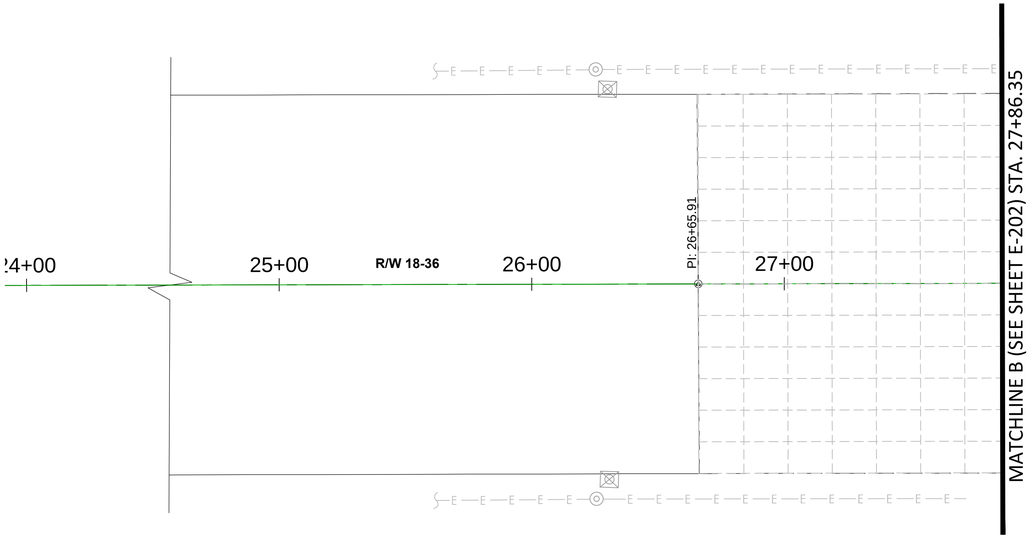

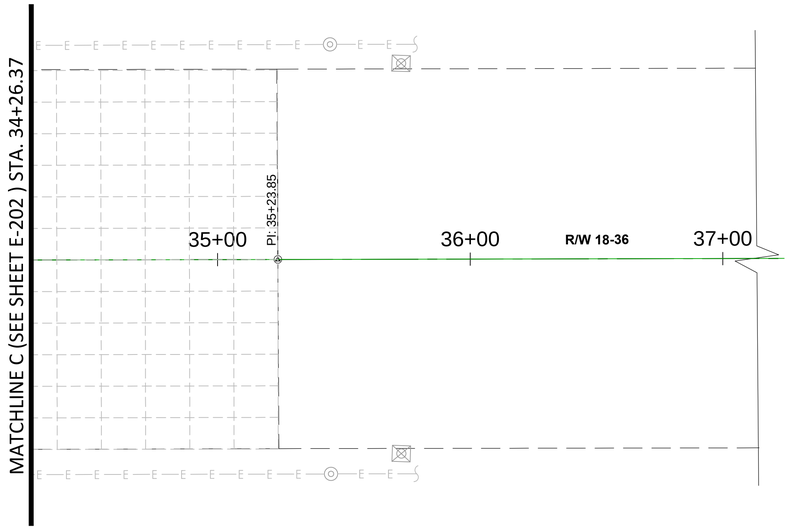

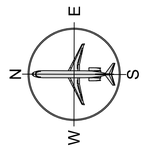

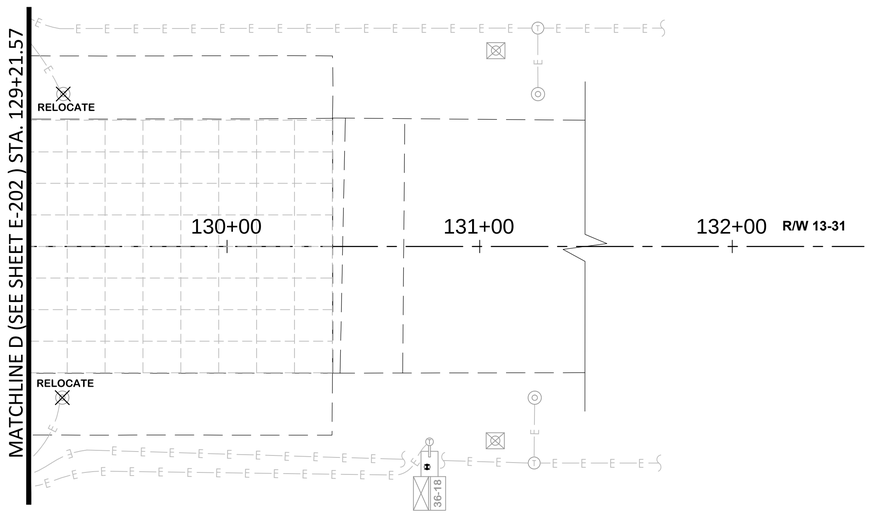

0 30 60 120
SCALE IN FEET

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HAMMOND, LOUISIANA

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ELECTRICAL ENGINEERING

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RES	GHL
Technicion:	Project Number:
MTW	149090

NOTE:

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

DEMOLITION PLAN NO. 3

FAA A.I.P. Project Number:
3-22-00XX-0XX-2016

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JULY 2016	
Scale: (22x34)	Sheet Number:
AS SHOWN	Drawing Number: E-203

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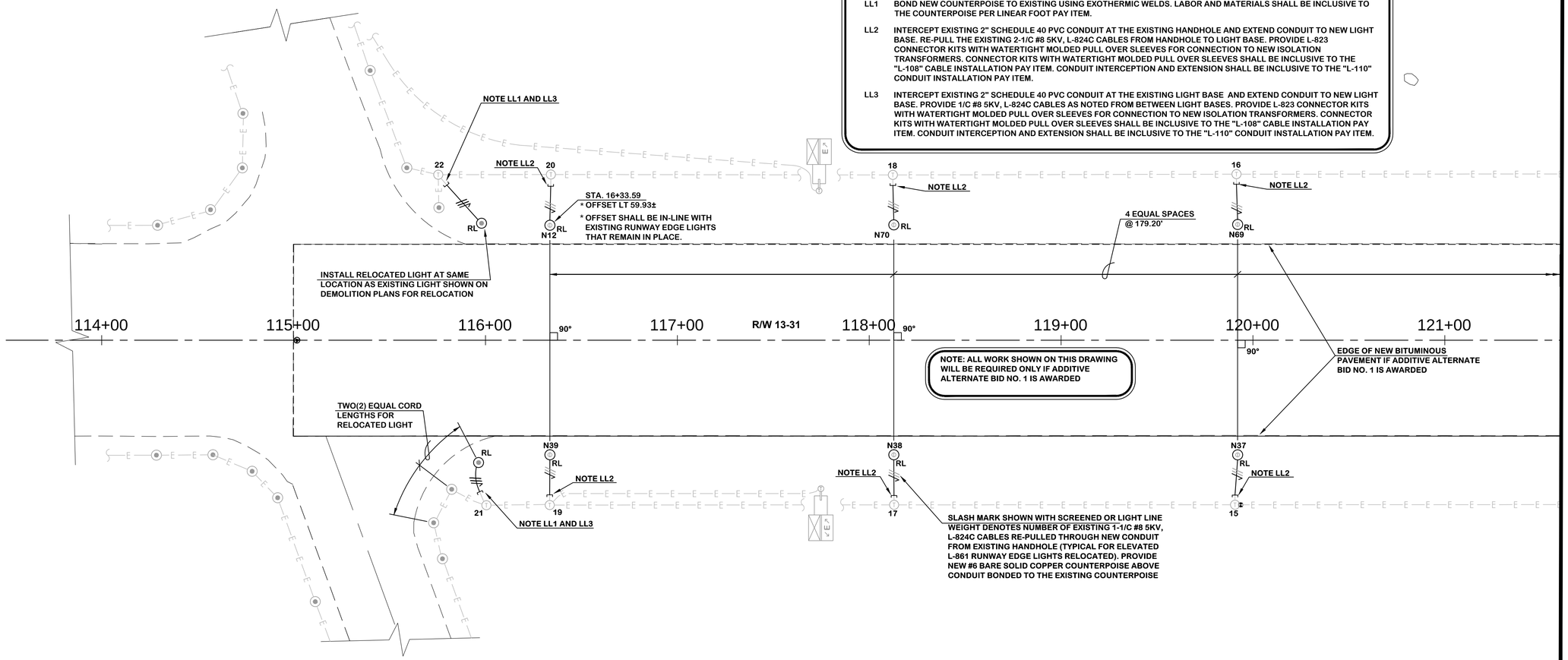
LIGHTING LAYOUT PLAN KEY NOTES

LL1 BOND NEW COUNTERPOISE TO EXISTING USING EXOTHERMIC WELDS. LABOR AND MATERIALS SHALL BE INCLUSIVE TO THE COUNTERPOISE PER LINEAR FOOT PAY ITEM.

LL2 INTERCEPT EXISTING 2" SCHEDULE 40 PVC CONDUIT AT THE EXISTING HANDHOLE AND EXTEND CONDUIT TO NEW LIGHT BASE. RE-PULL THE EXISTING 2-1/C #8 5KV, L-824C CABLES FROM HANDHOLE TO LIGHT BASE. PROVIDE L-823 CONNECTOR KITS WITH WATERTIGHT MOLDED PULL OVER SLEEVES FOR CONNECTION TO NEW ISOLATION TRANSFORMERS. CONNECTOR KITS WITH WATERTIGHT MOLDED PULL OVER SLEEVES SHALL BE INCLUSIVE TO THE "L-108" CABLE INSTALLATION PAY ITEM. CONDUIT INTERCEPTION AND EXTENSION SHALL BE INCLUSIVE TO THE "L-110" CONDUIT INSTALLATION PAY ITEM.

LL3 INTERCEPT EXISTING 2" SCHEDULE 40 PVC CONDUIT AT THE EXISTING LIGHT BASE AND EXTEND CONDUIT TO NEW LIGHT BASE. PROVIDE 1/C #8 5KV, L-824C CABLES AS NOTED FROM BETWEEN LIGHT BASES. PROVIDE L-823 CONNECTOR KITS WITH WATERTIGHT MOLDED PULL OVER SLEEVES FOR CONNECTION TO NEW ISOLATION TRANSFORMERS. CONNECTOR KITS WITH WATERTIGHT MOLDED PULL OVER SLEEVES SHALL BE INCLUSIVE TO THE "L-108" CABLE INSTALLATION PAY ITEM. CONDUIT INTERCEPTION AND EXTENSION SHALL BE INCLUSIVE TO THE "L-110" CONDUIT INSTALLATION PAY ITEM.



LIGHTING LAYOUT PLAN LEGEND

- EXISTING L-861T MEDIUM INTENSITY TAXIWAY EDGE LIGHT WITH BLUE GLOBE, L-867B BASE MOUNTED IN EARTH SHOULDER THAT SHALL REMAIN.
- RL — RELOCATED L-861T MEDIUM INTENSITY TAXIWAY EDGE LIGHT WITH BLUE GLOBE, NEW L-867B BASE, MOUNTED IN EARTH SHOULDER WITH NEW CONCRETE PAD. PROVIDE NEW ISOLATION TRANSFORMER AND NEW COVER PLATE. PROVIDE #6 BARE SOLID COPPER JUMPER BONDED TO BASE. CONNECT JUMPER TO GROUND ROD USING EXOTHERMIC WELD. GROUND ROD, #6 JUMPER AND CONNECTION SHALL BE INCLUSIVE TO THE LIGHT RELOCATION PAY ITEM.
- RL — RELOCATED L-861 MEDIUM INTENSITY RUNWAY EDGE LIGHT, NEW L-867B BASE MOUNTED IN EARTH SHOULDER WITH NEW CONCRETE PAD. PROVIDE NEW ISOLATION TRANSFORMER AND NEW COVER PLATE. PROVIDE #6 BARE SOLID COPPER JUMPER BONDED TO BASE. CONNECT JUMPER TO GROUND ROD USING EXOTHERMIC WELD. GROUND ROD, #6 JUMPER AND CONNECTION SHALL BE INCLUSIVE TO THE LIGHT RELOCATION PAY ITEM. WHITE/WHITE OR YELLOW/WHITE COLOR WITH ORIENTATION TO MATCH ORIGINAL LOCATION.
- Y/C — L-852D IN-PAVEMENT MEDIUM INTENSITY TAXIWAY EDGE LIGHT USED AS MEDIUM INTENSITY RUNWAY EDGE, L-868B BASE MOUNTED, WITH FILTER MODIFICATION FOR CLEAR/YELLOW LIGHT. LIGHT MOUNTED IN NEW PCC RUNWAY PAVEMENT. PROVIDE #6 BARE SOLID COPPER JUMPER BONDED TO BASE. CONNECT JUMPER TO GROUND ROD USING EXOTHERMIC WELD. GROUND ROD, #6 JUMPER AND CONNECTION SHALL BE INCLUSIVE TO THE LIGHT INSTALLATION.
- C/C — L-852D IN-PAVEMENT MEDIUM INTENSITY TAXIWAY EDGE LIGHT USED AS MEDIUM INTENSITY RUNWAY EDGE, L-868B BASE MOUNTED, WITH FILTER MODIFICATION FOR CLEAR/CLEAR LIGHT. LIGHT MOUNTED IN NEW PCC RUNWAY PAVEMENT. PROVIDE #6 BARE SOLID COPPER JUMPER BONDED TO BASE. CONNECT JUMPER TO GROUND ROD USING EXOTHERMIC WELD. GROUND ROD, #6 JUMPER AND CONNECTION SHALL BE INCLUSIVE TO THE LIGHT INSTALLATION.
- 18-36 — EXISTING L-858 GUIDANCE SIGN MOUNTED ON EXISTING CONCRETE PAD THAT SHALL REMAIN.
- T — EXISTING L-867 LIGHT BASE WITH BLANK COVER PLATE AND WITH CONCRETE PAD LOCATED IN TURF AREA USED AS HANDHOLE THAT SHALL REMAIN.
- H — EXISTING HANDHOLE WITH CONCRETE APRON THAT SHALL REMAIN.
- 1/C #8 5KV, L-824C CABLE IN A 2" SCHEDULE 40 PVC CONDUIT RUN UNDERGROUND. SEE DETAIL. SLASH MARKS DENOTES THE NUMBER OF CABLES WHERE MORE THAN ONE IS REQUIRED. SYMBOL "—/—" WHERE SHOWN, DENOTES 1 - 1/C #6 SOLID COPPER COUNTERPOISE INSTALLED 6" ABOVE CONDUIT WHERE CONDUIT IS NOT RUN PARALLEL TO TAXIWAY OR RUNWAY PAVEMENT EDGE.
- 1/C #8 5KV, L-824C CABLE IN A CONCRETE ENCASED 2" SCHEDULE 40 PVC CONDUIT RUN UNDER NEW PCC RUNWAY PAVEMENT. SEE DETAIL. SLASH MARKS DENOTES THE NUMBER OF CABLES WHERE MORE THAN ONE IS REQUIRED. SYMBOL "– ·/—" WHERE SHOWN, DENOTES 1 - 1/C #6 SOLID COPPER COUNTERPOISE INSTALLED 6" ABOVE CONDUIT WHERE CONDUIT IS NOT RUN PARALLEL TO TAXIWAY OR RUNWAY PAVEMENT EDGE.
- E — E — EXISTING 2 " SCHEDULE 40 PVC CONDUIT RUN UNDERGROUND WITH 1/C - #8 5KV, L-824C AIRFIELD CIRCUIT CABLES INSTALLED. FIELD VERIFY EXACT LOCATION.
- EXISTING DUCT BANK. FIELD VERIFY SIZE, QUANTITY AND EXACT LOCATION.
- 1 - # — 1 - NUMBER INDICATES THE CIRCUIT. # - NUMBER INDICATES THE LIGHT ID TAG. EXACT LABELING SHALL BE AS DIRECTED BY THE OWNER.

RSA RSA

0 30 60 120
SCALE IN FEET

MATCHLINE A (SEE SHEET E-302) STA.121+59.56

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932
HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
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PROFESSIONAL ENGINEER
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Designer:	Checked by:
RES	GHL
Technician:	Project Number:
MTW	149090

NOTE:

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

LAYOUT PLAN NO. 1

FAA A.I.P. Project Number:
3-22-00XX-0XX-2016

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JULY 2016	
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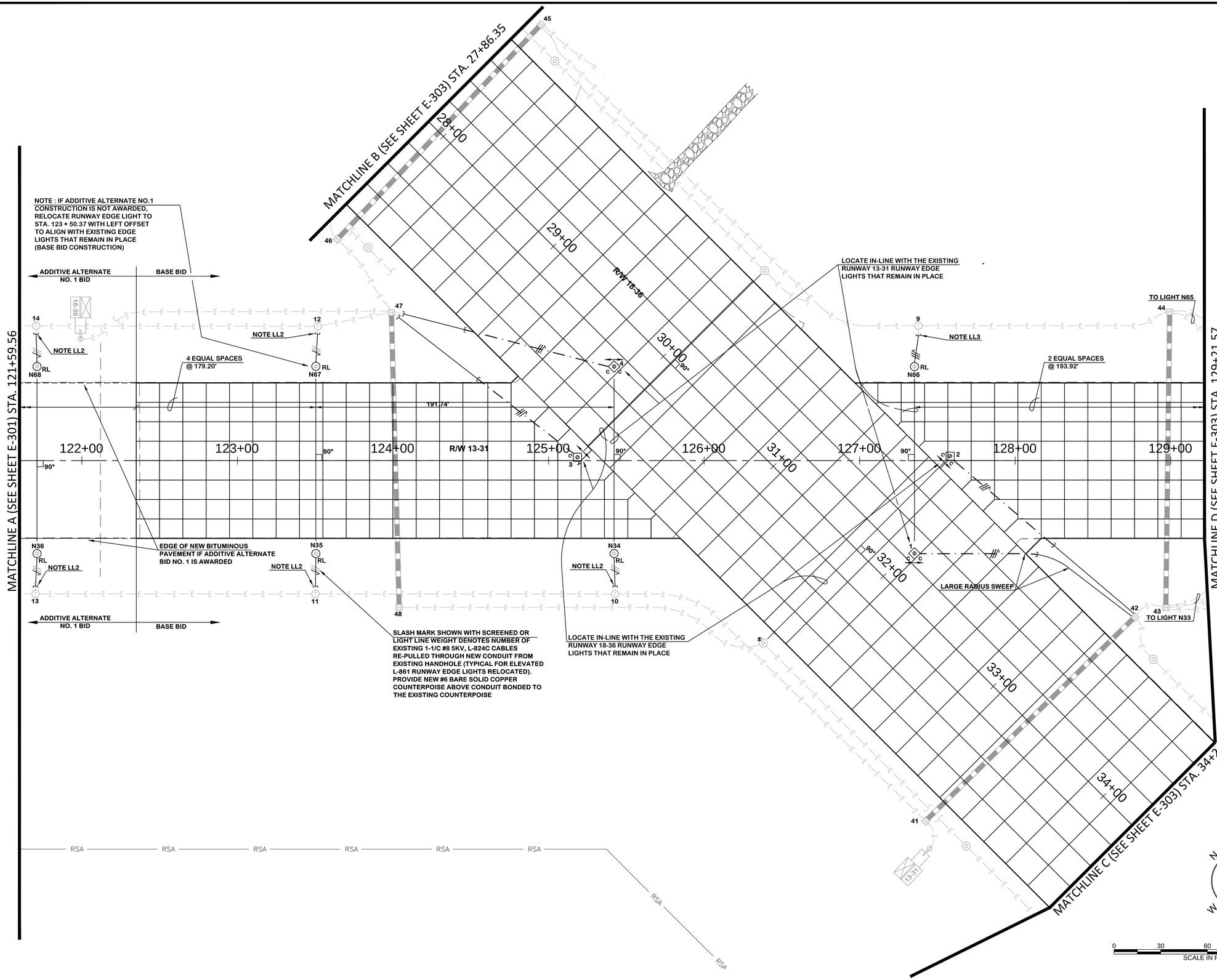

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PROFESSIONAL ENGINEER
ELECTRICAL ENGINEERING

Designer:	Checked by:
RES	GHL
Technician:	Project Number:
MTW	149090

NOTE:

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

LAYOUT PLAN NO. 2

FAA A.I.P. Project Number:
3-22-00XX-0XX-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
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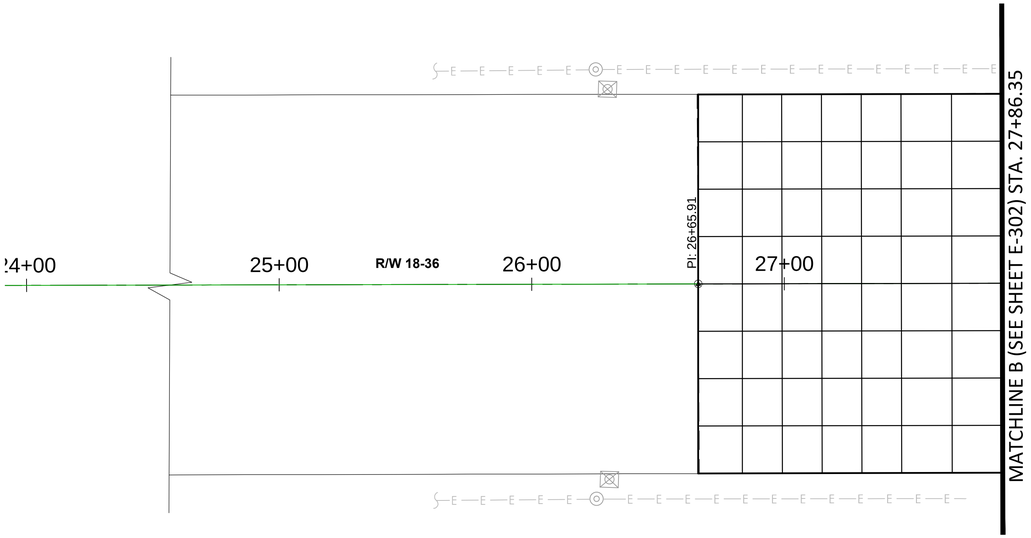
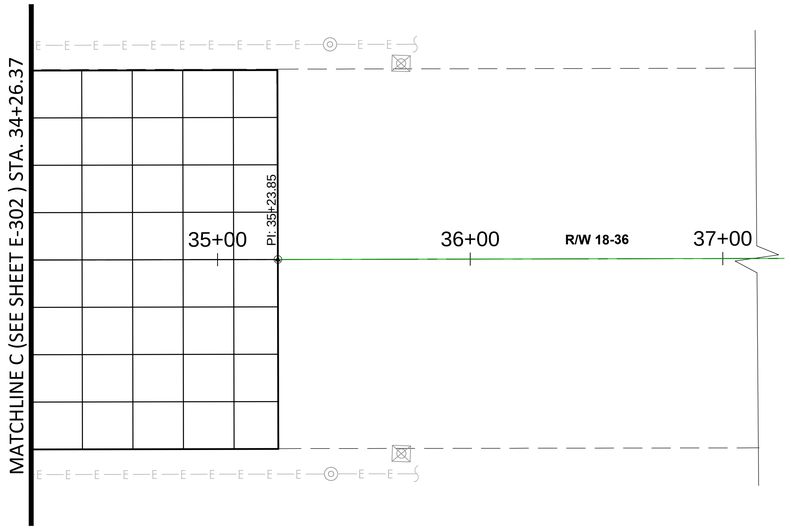
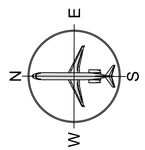
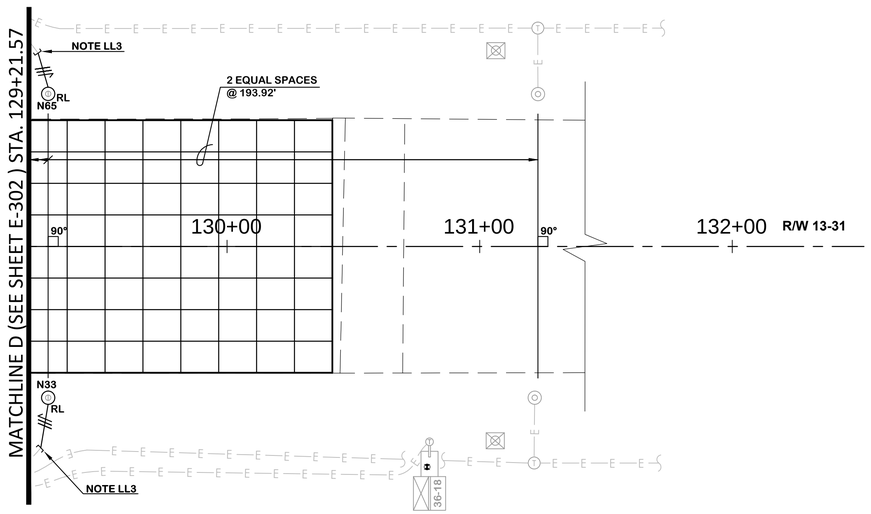
	Drawing Number: E-302









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ELECTRICAL ENGINEERING

Designer:	Checked by:
RES	GHL
Technicion:	Project Number:
MTW	149090

NOTE:

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

LAYOUT PLAN NO. 3

FAA A.I.P. Project Number:
3-22-00XX-0XX-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
AS SHOWN	Drawing Number: E-303

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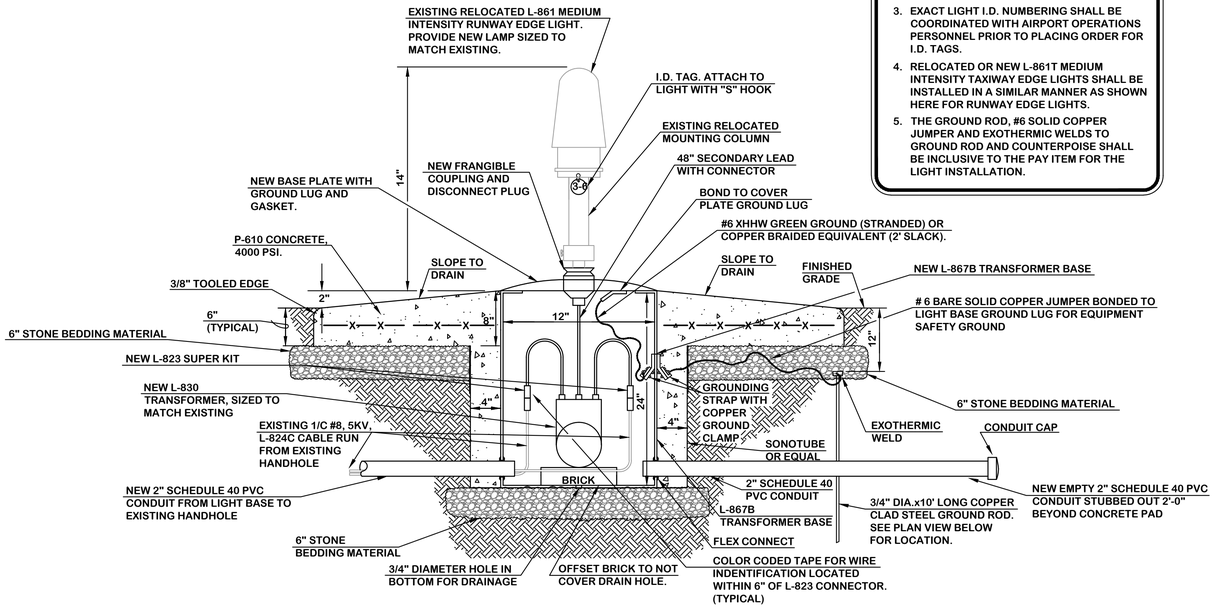
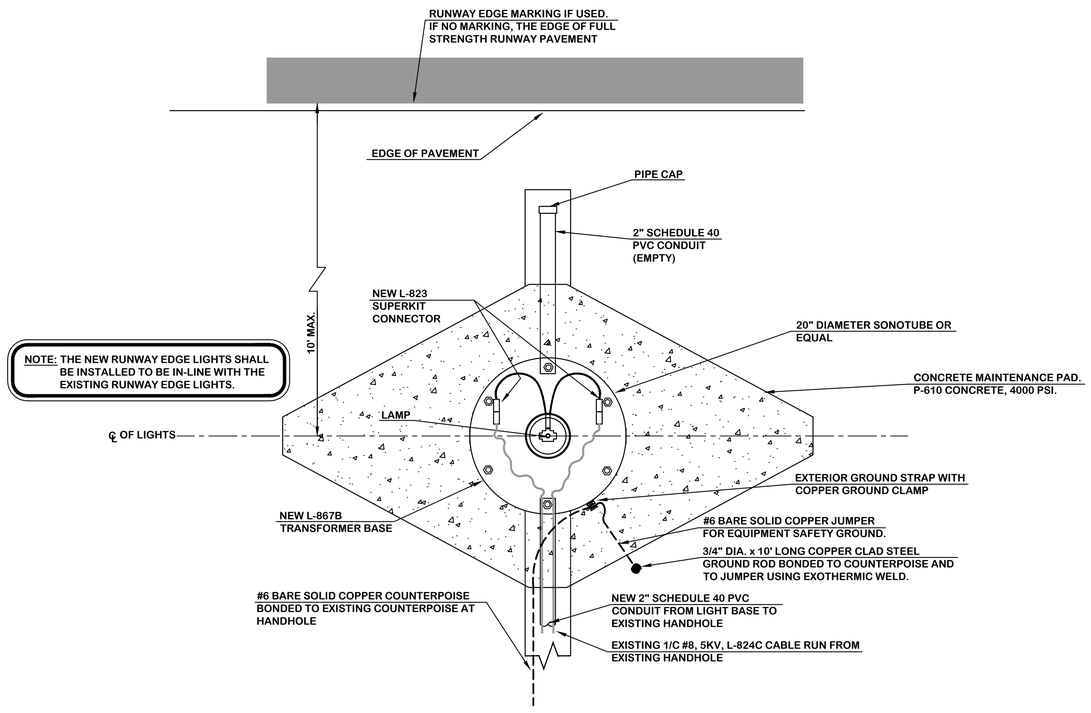
NOTES:

1. ALL BOLTS SHALL BE STAINLESS STEEL.
2. APPLY ANTI-SEIZE TO ALL MALE THREADS.
3. EXACT LIGHT I.D. NUMBERING SHALL BE COORDINATED WITH AIRPORT OPERATIONS PERSONNEL PRIOR TO PLACING ORDER FOR I.D. TAGS.
4. RELOCATED OR NEW L-861T MEDIUM INTENSITY TAXIWAY EDGE LIGHTS SHALL BE INSTALLED IN A SIMILAR MANNER AS SHOWN HERE FOR RUNWAY EDGE LIGHTS.
5. THE GROUND ROD, #6 SOLID COPPER JUMPER AND EXOTHERMIC WELDS TO GROUND ROD AND COUNTERPOISE SHALL BE INCLUSIVE TO THE PAY ITEM FOR THE LIGHT INSTALLATION.



BASE MOUNTED RUNWAY LIGHT DETAIL IN EARTH SHOULDER - RELOCATED

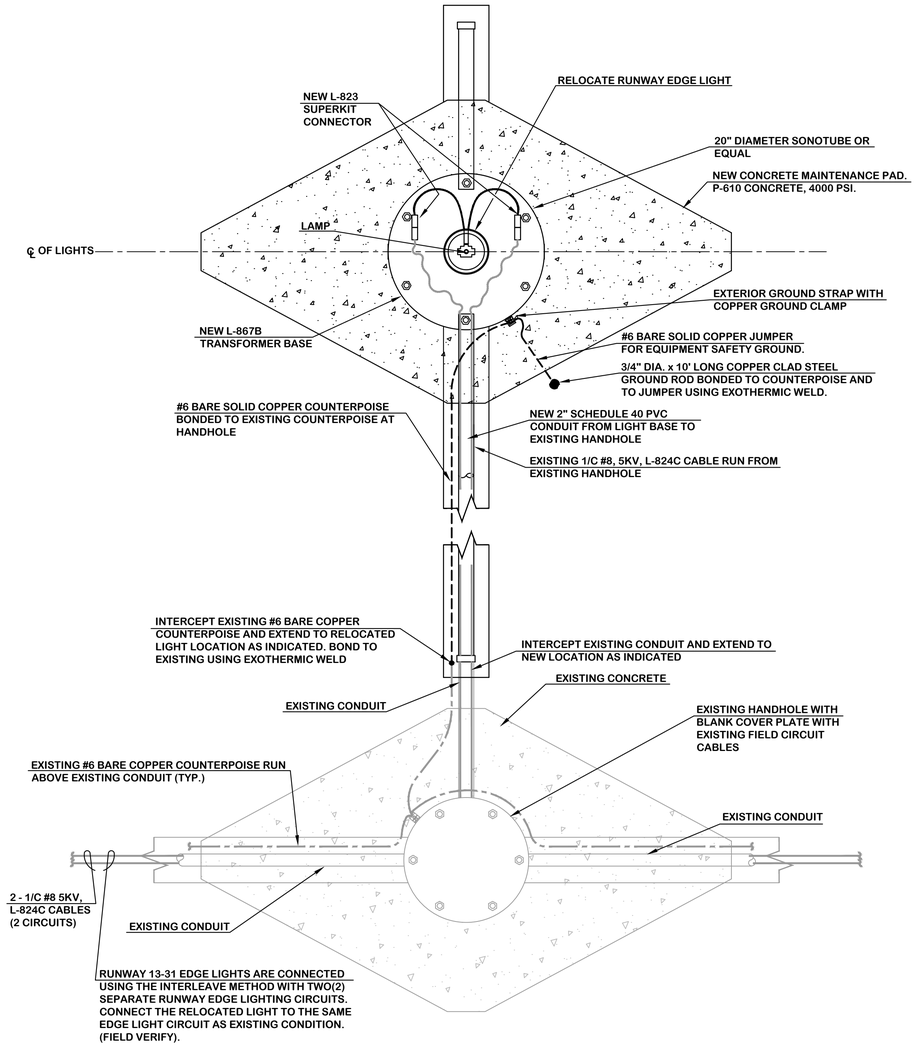
N.T.S.



NOTE: THE NEW RUNWAY EDGE LIGHTS SHALL BE INSTALLED TO BE IN-LINE WITH THE EXISTING RUNWAY EDGE LIGHTS.

BASE MOUNTED RUNWAY LIGHT DETAIL IN EARTH SHOULDER - RELOCATED

N.T.S.



EXISTING RUNWAY EDGE LIGHT HANDHOLE AND RELOCATED EDGE LIGHT

N.T.S.

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STATE OF LOUISIANA
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RES	GHL
Technician:	Project Number:
MTW	149090

NOTE:

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

ELECTRICAL DETAILS PLAN NO. 1

FAA A.I.P. Project Number:
3-22-00XX-0XX-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
AS SHOWN	
	Drawing Number: E-401

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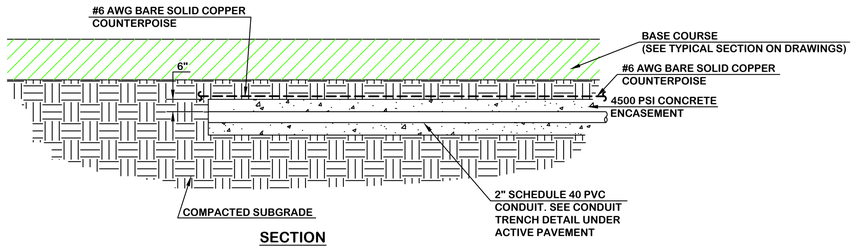


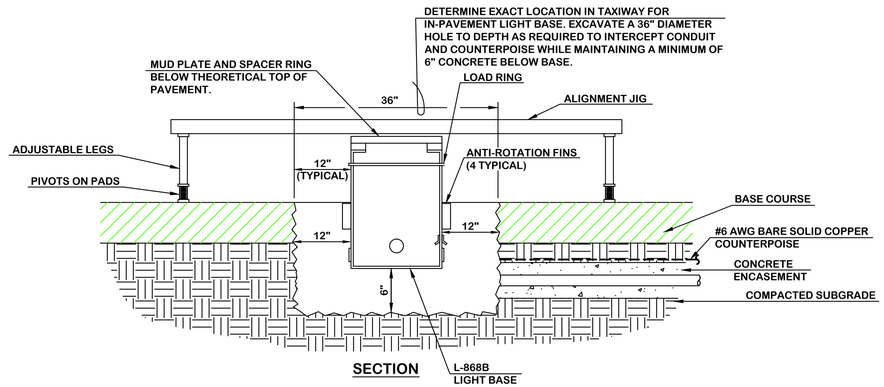
SECTION

STEP 1 - INSTALL CONCRETE ENCASED 2" CONDUIT AND COUNTERPOISE

TYPICAL L-868 LIGHT BASE INSTALLATION FOR INPAVEMENT LIGHT IN NEW PCC PAVEMENT

N.T.S.

GENERAL NOTES:
1. ALL BOLTS SHALL BE STAINLESS STEEL.
2. APPLY "NO-LOX", OR APPROVED EQUAL, TO ALL MALE THREADS.



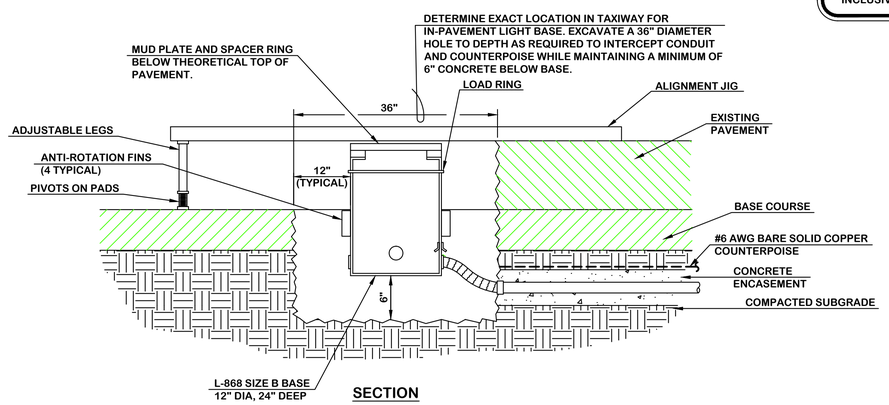
SECTION

STEP 2 - PREPARATION ALIGNMENT JIG WITHOUT REFERENCE EDGE - PREPARE BASE FOR CONCRETE ANCHOR

TYPICAL L-868 LIGHT BASE INSTALLATION FOR INPAVEMENT LIGHT IN NEW PCC PAVEMENT

N.T.S.

* EQUIPMENT SAFETY GROUND SYSTEM SHALL BE INCLUSIVE TO THE LIGHT INSTALLATION PAY ITEM.

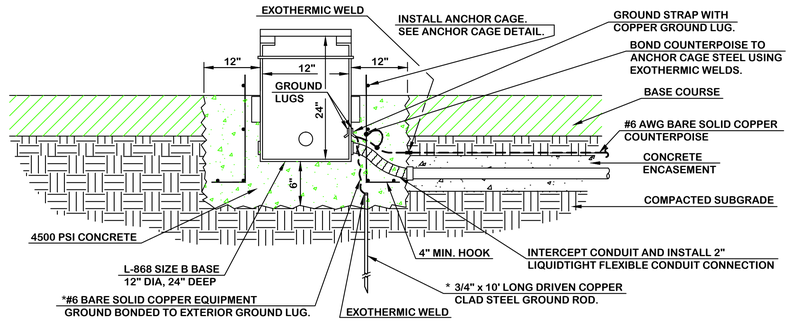


SECTION

STEP 2 - PREPARATION ALIGNMENT JIG WITH REFERENCE EDGE - PREPARE BASE FOR CONCRETE ANCHOR

TYPICAL L-868 LIGHT BASE INSTALLATION FOR INPAVEMENT LIGHT IN NEW PCC PAVEMENT

N.T.S.

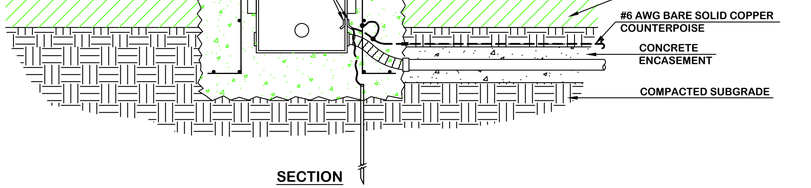


SECTION

STEP 3 - INSTALL ANCHOR CAGE, CONDUIT CONNECTION, GROUND SYSTEM AND CONCRETE ANCHOR BACKFILL

TYPICAL L-868 LIGHT BASE INSTALLATION FOR INPAVEMENT LIGHT IN NEW PCC PAVEMENT

N.T.S.

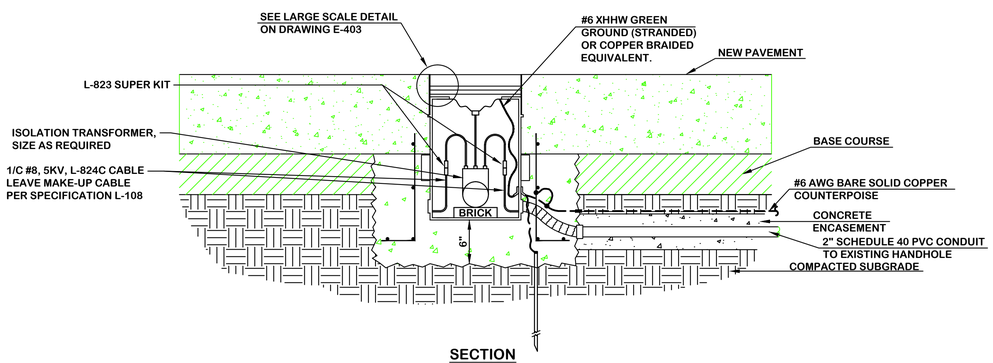


SECTION

STEP 4 - REMOVE CONCRETE ABOVE LIGHT BASE AFTER FINAL PAVING OPERATION - PREPARE FOR LIGHT INSTALLATION

TYPICAL L-868 LIGHT BASE INSTALLATION FOR INPAVEMENT LIGHT IN NEW PCC PAVEMENT

N.T.S.



SECTION

STEP 5 - INSTALL FLANGE RING, SPACERS, ISOLATION TRANSFORMER, LIGHT FIXTURE AND MAKE CONNECTIONS

TYPICAL L-868 LIGHT BASE INSTALLATION FOR INPAVEMENT LIGHT IN NEW PCC PAVEMENT

N.T.S.

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HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
GARY H. LOTT
7-5-16
License No. 30098
PROFESSIONAL ENGINEER
ELECTRICAL ENGINEERING

Designer:	Checked by:
RES	GHL
Technicion:	Project Number:
MTW	149090

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REVISIONS

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RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

ELECTRICAL DETAILS PLAN NO. 2

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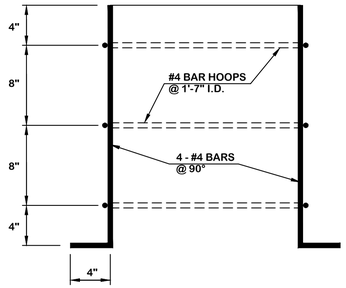
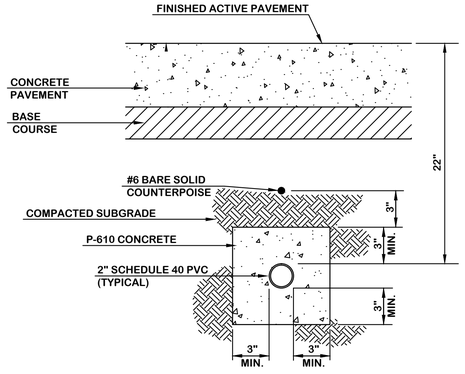


ANCHOR CAGE FOR L-868 LIGHT BASE - PCC PAVEMENT ONLY

N.T.S.

IN-PAVEMENT LIGHT BASES INSTALLATION NOTES

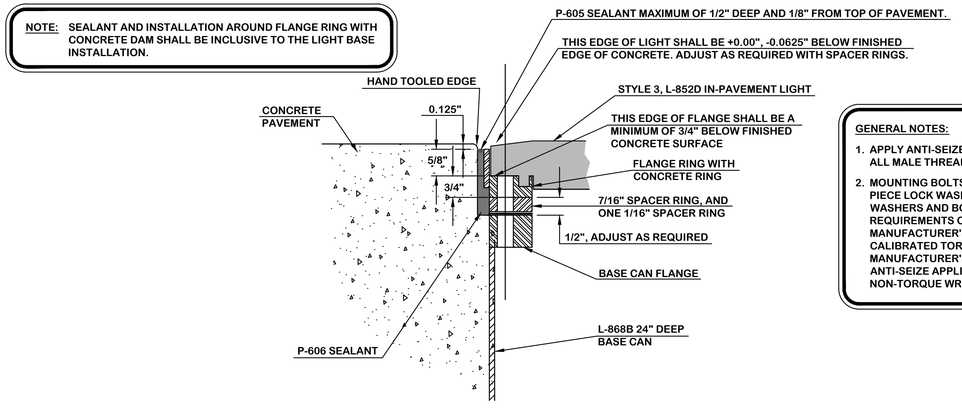
1. THE SPACER RINGS ARE DESIGNED AS A NOMINAL 1/2" THICKNESS (SEE DETAIL) THE SPACER RINGS MAY BE REQUIRED TO BE THINNER OR THICKER DEPENDING ON BASE CAN INSTALLATION AND PAVING TECHNIQUES. THIS CONTRACTOR SHALL BE RESPONSIBLE TO MEASURE AND DETERMINE THE REQUIRED THICKNESS OF EACH INDIVIDUAL SPACER RING REQUIRED TO PUT THE LIGHT AT THE CORRECT ELEVATION. AZIMUTH AND ROTATION PER FAA ADVISORY CIRCULARS, LATEST EDITIONS. THE CONTRACTORS BID PRICE SHALL INCLUDE FURNISHING AND INSTALLING ALL SPACER RINGS REQUIRED.
2. ALL BASE CAN INSTALLATION TECHNIQUES, METHODS, MATERIALS, ETC. SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE START OF WORK.
3. FLAT SPACER RINGS SHALL BE USED FOR HEIGHT ADJUSTMENTS FROM 1/16" TO 2" IN 1/16" INCREMENTS OR AS DETAILED. A BASE CAN EXTENSION SHALL BE USED FOR HEIGHT ADJUSTMENTS OF 2" AND GREATER. A MAXIMUM OF THREE SPACERS MAY BE USED BETWEEN BOLTED CAN EXTENSIONS, OR THE BASE CAN AND FIXTURE INCLUDING THE FLANGE RING.
5. IMMEDIATELY AFTER THE HOLES ARE CORED IN THE PAVEMENT OR BASE COURSE, THE BASE CANS SHALL BE INSTALLED AND THE CONCRETE INSTALLED SO AS TO PREVENT WATER FROM ENTERING THE SUBGRADE.
4. THE FINISHED PAVEMENT SURFACE SHALL BE PROTECTED FROM FOREIGN SUBSTANCES WHICH COULD CAUSE STAINING, I.E. OIL, ETC. THE CONTRACTOR SHALL IMMEDIATELY CLEAN ALL SPILLS AND CORRECT/CLEAN ANY STAINED SURFACES AT THE CONTRACTORS EXPENSE.
6. THE FIXTURE MOUNTING BOLTS SHALL EXTEND THRU THE BASE CAN MOUNTING FLANGE INTO THE BASE CAN A MINIMUM OF 1/2". THE BOLTS SHALL HAVE ENOUGH THREAD LENGTH SO THEY DO NOT SHOULDER OUT BEFORE THE LIGHT IS SECURELY TIGHTENED. MOUNTING BOLTS SHALL BE STAINLESS STEEL WITH TWO PIECE LOCK WASHERS. BOLTS, TWO PIECE LOCK WASHERS AND BOLT TORQUE SHALL MEET THE REQUIREMENTS OF FAA ENGINEERING BRIEF 83 AND MANUFACTURER'S TOLERANCE. TORQUE ALL BOLTS WITH CALIBRATED TORQUE WRENCH TO LIGHT MANUFACTURER'S TOLERANCE FOR BOLTS WITH ANTI-SEIZE APPLIED. IMPACT WRENCHES AND NON-TORQUE WRENCHES ARE NOT ALLOWED.
7. CONCRETE AROUND BASE CANS AND DUCT/CONDUIT SHALL BE COMPLETELY CONSOLIDATED BY MECHANICAL MEANS AND SHALL BE FREE OF ANY VOIDS.
8. THE CONCRETE SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS TO MEET THE PROJECT PHASING SCHEDULING REQUIREMENTS. NO CORROSIVE ADDITIVES (SUCH AS CALCIUM CHLORIDE) OR CORROSIVE MIXTURES WILL BE PERMITTED.
9. REPAIR OF EXISTING PAVEMENT CUT FOR THE INSTALLATION OF ELECTRICAL ITEMS SHALL BE IN ACCORDANCE PLANS AND SPECIFICATIONS, AS APPROVED BY THE PROJECT ENGINEER.
10. IF A LIGHT CAN IS INSTALLED INCORRECTLY, THE DUCT/CONDUIT IS PLUGGED/BROKEN, OR THE LIGHT CAN IS DAMAGED BY THE CONSTRUCTION ACTIVITIES, THE PAVEMENT AROUND THE LIGHT CAN, SHALL BE REMOVED AND REPLACED AT THE CONTRACTORS EXPENSE.
11. BLANK COVERS ON BASE CANS WHERE PAVEMENT WILL BE OPEN TO AIRCRAFT TRAFFIC SHALL BE 3/4" THICK GALVANIZED STEEL WITH RECESSED AREAS FOR STAINLESS STEEL BOLT HEADS AND TWO PIECE LOCK WASHERS. 3/4" COVERS ARE INCIDENTAL TO THE LIGHT BASE BID ITEM. DO NOT RE-USE BOLTS AND TWO PIECE LOCK WASHERS FOR FINAL INSTALLATION OF LIGHT FIXTURE.



CONDUIT TRENCH DETAIL UNDER ACTIVE PAVEMENT - PCC PAVEMENT

N.T.S.

NOTE: SEALANT AND INSTALLATION AROUND FLANGE RING WITH CONCRETE DAM SHALL BE INCLUSIVE TO THE LIGHT BASE INSTALLATION.



DETAIL FOR LIGHT BASE INSTALLATION IN PCC PAVEMENT

N.T.S.

GENERAL NOTES:

1. APPLY ANTI-SEIZE "NO-LOX", OR APPROVED EQUAL, TO ALL MALE THREADS.
2. MOUNTING BOLTS SHALL BE STAINLESS STEEL WITH TWO PIECE LOCK WASHERS. BOLTS, TWO PIECE LOCK WASHERS AND BOLT TORQUE SHALL MEET THE REQUIREMENTS OF FAA ENGINEERING BRIEF 83 AND MANUFACTURER'S TOLERANCE. TORQUE ALL BOLTS WITH CALIBRATED TORQUE WRENCH TO LIGHT MANUFACTURER'S TOLERANCE FOR BOLTS WITH ANTI-SEIZE APPLIED. IMPACT WRENCHES AND NON-TORQUE WRENCHES ARE NOT ALLOWED.

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1932
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HAMMOND, LOUISIANA

Michael Baker
INTERNATIONAL

STATE OF LOUISIANA
GARY H. LOTT
17516
License No. 30098
PROFESSIONAL ENGINEER
ELECTRICAL ENGINEERING

Designer:	Checked by:
RES	GHL
Technicion:	Project Number:
MTW	149090

NOTE:

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

ELECTRICAL DETAILS PLAN NO. 3

FAA A.I.P. Project Number:
3-22-00XX-0XX-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
AS SHOWN	Drawing Number: E-403

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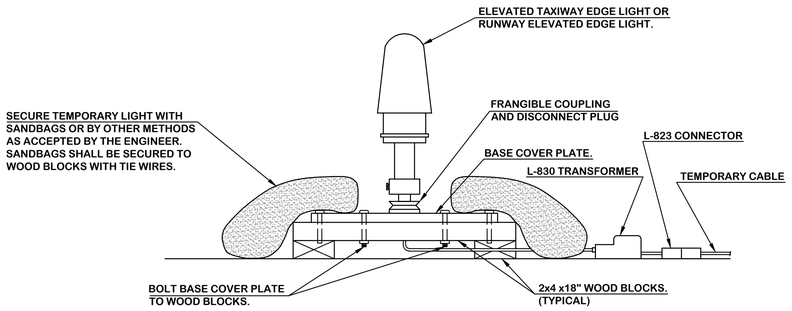
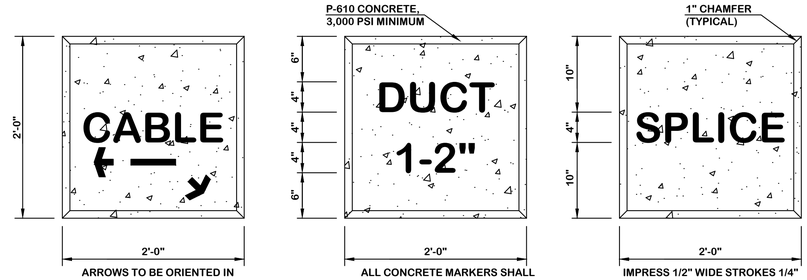
NOTE: SECURE TEMPORARY CABLE AND COUNTERPOISE WITH SANDBAGS OR BY OTHER METHODS AS ACCEPTED BY THE ENGINEER.



TEMPORARY LIGHT DETAIL

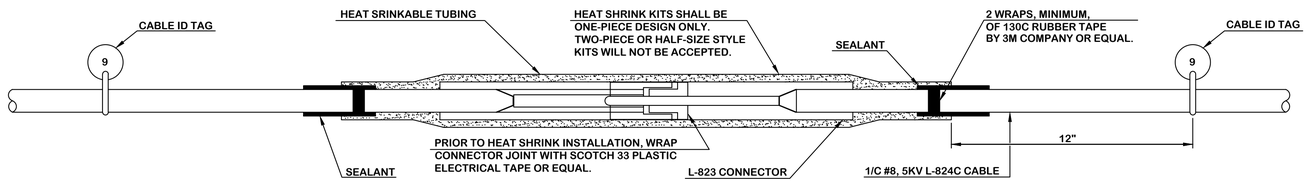
N.T.S.



CABLE, DUCT AND SPLICE MARKERS

N.T.S.

NOTE: INSTALL CABLE MARKERS AT ALL TURNS AND JUNCTIONS, AT NOT LESS THAN 200' INTERVALS ON STRAIGHT TRENCH RUNS, AND 10' FROM ENDS OF DUCT RUNS.

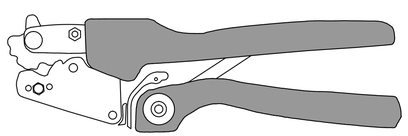


L-823 CONNECTOR DETAIL

N.T.S.

NOTE: CONTRACTOR SHALL USE AMERACE L-823 54 SUPER KIT OR EQUIVALENT OF INTEGRO IN LIEU OF USING HEAT SHRINK KITS. NO ADDITIONAL PAYMENT WILL BE MADE FOR THE USE OF SUPER KITS.

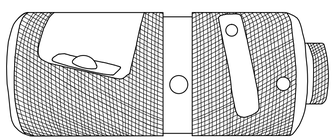
NOTE: CRIMPING TOOLS REQUIRED FOR ALL 5KV L-824C CABLE CONNECTIONS TO L-823 CONNECTORS. CRIMPING TOOL SHALL BE FURNISHED AS RECOMMENDED BY THE L-823 CONNECTOR KIT MANUFACTURER.



CRIMPING TOOL

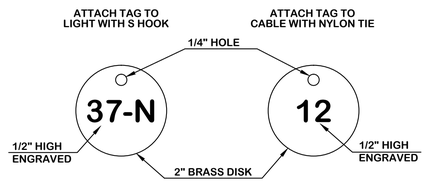
N.T.S.

NOTE: CABLE END STRIPPER/PENCILLER REQUIRED FOR ALL 5KV L-824C CABLE.



CABLE END STRIPPER/PENCILLER

N.T.S.



LIGHT ID TAG

N.T.S.

CABLE ID TAG

N.T.S.

NOTE: COORDINATE NUMBERING METHOD WITH THE OWNER.

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RES	GHL
Technicion:	Project Number:
MTW	149090

NOTE:

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No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

ELECTRICAL DETAILS PLAN NO. 4

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3-22-00XX-0XX-2016

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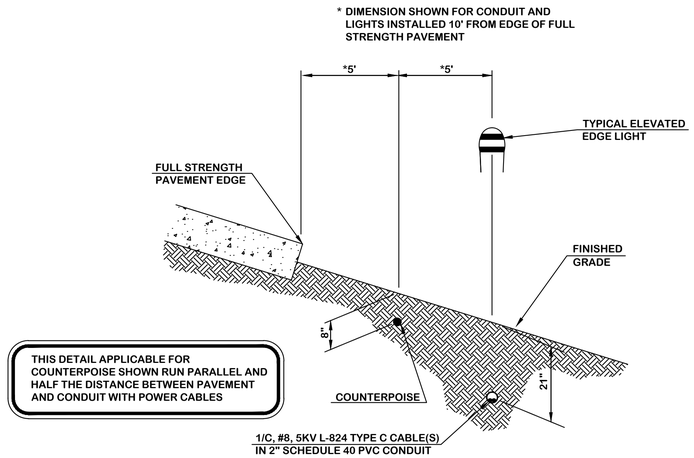
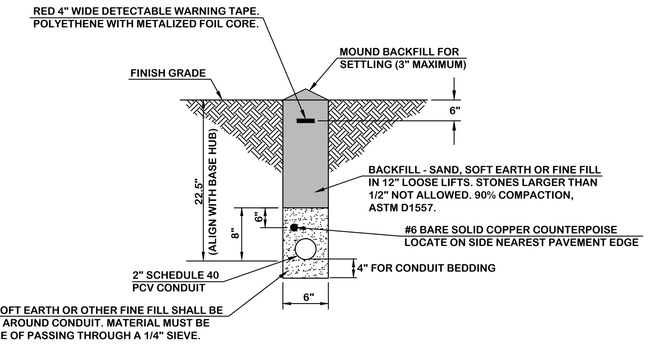


PROFILE VIEW

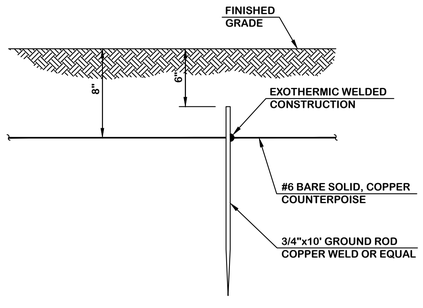
COUNTERPOISE INSTALLATION DETAIL

N.T.S.



CONDUIT TRENCH DETAIL IN EARTH - COUNTERPOISE IN SAME TRENCH

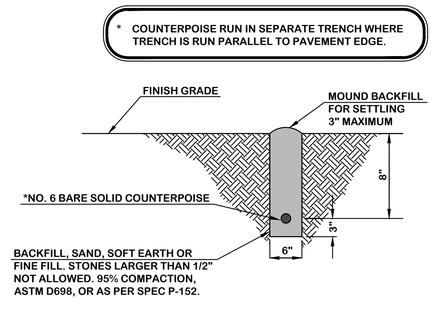
N.T.S.



NOTE:
1. INSTALL GROUND RODS (3/4" X 10') AT LOCATIONS SHOWN ON PLANS, NOT MORE THAN 500' APART.

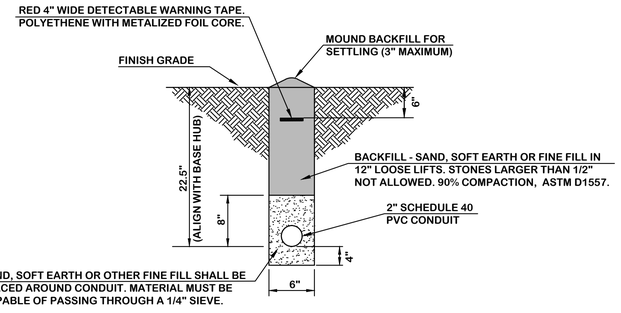
GROUND ROD

N.T.S.



TYPICAL SECTION OF COUNTERPOISE TRENCH PARALLEL TO PAVEMENT EDGE

N.T.S.



CONDUIT TRENCH DETAIL IN EARTH - COUNTERPOISE NOT IN SAME TRENCH

N.T.S.

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RES	GHL
Technicion:	Project Number:
MTW	149090

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Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

ELECTRICAL DETAILS PLAN NO. 5

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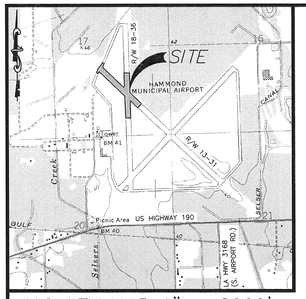
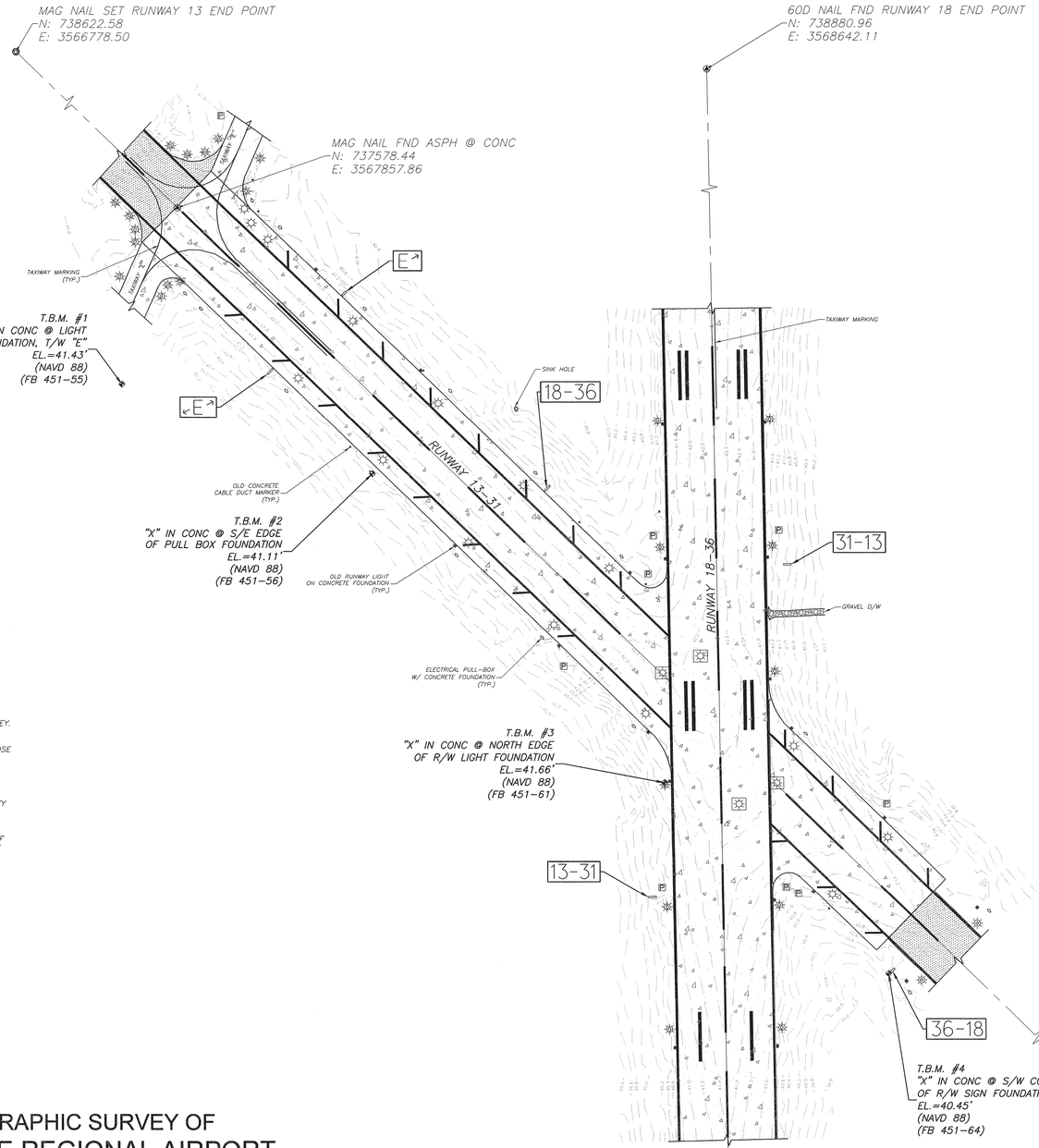


VICINITY MAP 1" = 2000'



GRAPHIC SCALE

100 0 50 100 200 400

(IN FEET)
1 inch = 100 ft.

LEGEND (NOT TO SCALE)

- ELECTRICAL PULL-BOX W/ CONCRETE FOUNDATION
- OLD CONCRETE CABLE DUCT MARKER
- OLD RUNWAY LIGHT ON CONCRETE FOUNDATION
- POWER VAULT W/ CONCRETE FOUNDATION
- RUNWAY LIGHT (RISER IN RUNWAY PAVEMENT)
- RUNWAY LIGHT (ON CONCRETE FOUNDATION)
- RUNWAY LIGHT (FLUSH TO RUNWAY PAVEMENT)
- XX-XX RUNWAY/TAXIWAY SIGN (ON CONCRETE FOUNDATION)
- RUNWAY CENTERLINE
- RUNWAY PAVEMENT EDGE
- RUNWAY MARKING
- GRAVEL EDGE
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT

GENERAL NOTES:

SITE BENCHMARK: SEE TOPOGRAPHIC MAP FOR BENCHMARK LOCATION AND ELEVATION.

REFERENCE BENCHMARK: LSU C4G VRS NETWORK, NAVD 88, GEOID09

COORDINATE SYSTEM: NAD83, STATE PLANE COORDINATES, LOUISIANA SOUTH, ZONE 1702, (FEET).

CONVERGENCE ANGLE: 0° 27' 26.24"
SCALE FACTOR: 0.999967202

NOTE: NO WETLANDS OR ENVIRONMENTAL ISSUES WERE REQUESTED OF OR INVESTIGATED BY THIS SURVEY.

NOTE: THIS SURVEY WAS BASED UPON INFORMATION SUPPLIED BY THE CLIENT AND IS SUBJECT TO THOSE ADVERSE FACTS WHICH MIGHT BE DISCLOSED BY A COMPLETE TITLE SEARCH. CONDUCTING A FULL ABSTRACT WAS NOT WITHIN THE SCOPE OF THIS SURVEY.

THE WORD "CERTIFY" OR "CERTIFICATION" AS SHOWN AND USED HEREON MEANS AN EXPRESSION OF PROFESSIONAL OPINION REGARDING THE FACTS OF THE SURVEY AND DOES NOT CONSTITUTE A WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED

CERTIFICATION DOES NOT EXTEND TO ANY OTHER PARTY WITHOUT THE EXPRESS WRITTEN PERMISSION OF THE LAND SURVEYOR. REPRODUCTION OF THIS PLAT IS PROHIBITED EXCEPT BY WRITTEN PERMISSION OF THE LAND SURVEYOR.

MAP SHOWING TOPOGRAPHIC SURVEY OF
HAMMOND NORTHSHORE REGIONAL AIRPORT
RUNWAY 18-36 / 13-31 INTERSECTION REHAB AREA
LOCATED IN
GREENSBURG LAND DISTRICT, HAMMOND, LOUISIANA
TANGIPAHOA PARISH, LOUISIANA
FOR
LPA GROUP

I HEREBY CERTIFY THAT I MADE THE ON THE GROUND SURVEY SHOWN HEREON AS PER RECORD DESCRIPTION, THAT THIS MAP IS ACCORDANCE WITH THE FIELD NOTES OF SAID SURVEY.

FEBRUARY 27, 2013

TODD A. HARRIS, PLS
PROFESSIONAL LAND SURVEYOR

DATE

STATE OF LOUISIANA
TODD A. HARRIS
REG. No. 5049
REGISTERED PROFESSIONAL
02-27-13
LAND SURVEYOR

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THIS SURVEY IS AN INSTRUMENT OF PROFESSIONAL SERVICE INTENDED FOR A ONE TIME USE IN CONJUNCTION WITH THIS PROJECT. IT IS, AND SHALL REMAIN THE PROPERTY OF FORTE AND TABLADA, INC. AND ANY REUSE WITHOUT WRITTEN PERMISSION OF IS PROHIBITED

SHEET NUMBER 1

TOPOGRAPHIC SURVEY FOR LPA GROUP
HAMMOND NORTHSHORE REGIONAL AIRPORT
RUNWAY 18-36 / 13-31 INTERSECTION REHAB
TOPOGRAPHIC SURVEY

SVY CREW	JB
PROJ #	12210S
DRAWN BY	TAH
CHECKED	-
DATE	02/27/13
SCALE	1:100

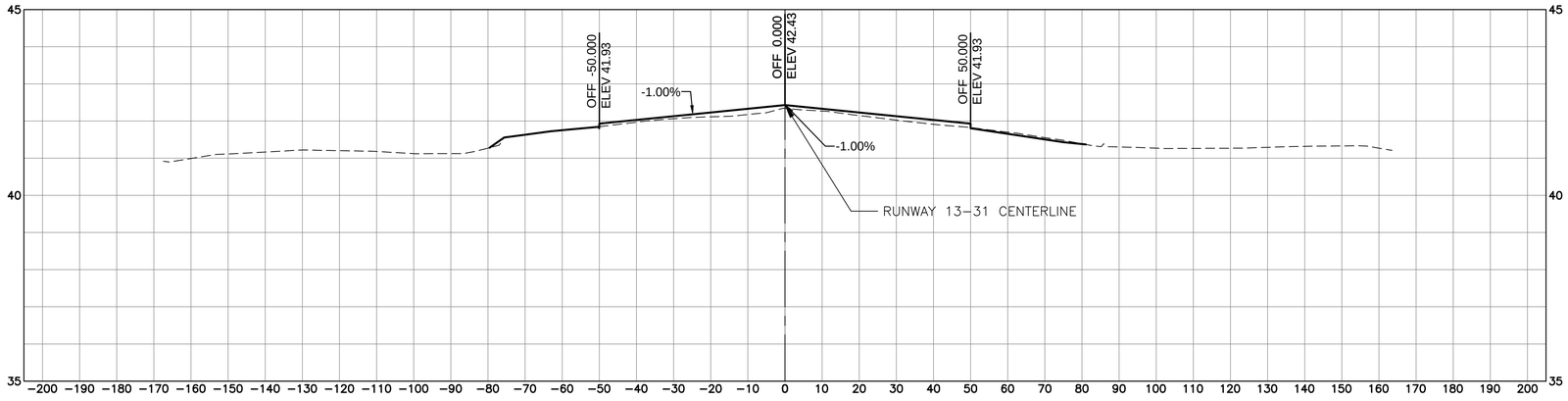
BATON ROUGE LAND SURVEYING
A Division of Forte & Tablada
9107 INTERLINE AVE. BATON ROUGE, LA 70809 PH: (225) 752-0336

ATTENTION:
THIS BAR = 1 INCH ON ORIGINAL DRAWING.
ADJUST SCALE IF THIS BAR ≠ 1 INCH.
1"

NO.	DATE	REVISION DESCRIPTION	BY

R:\1-BRLS SURVEYS\2012\2012-0210-1 HAMMOND AIRPORT TOPO\CADD\12210S HAMMOND REGIONAL AIRPORT.DWG

116+05.00



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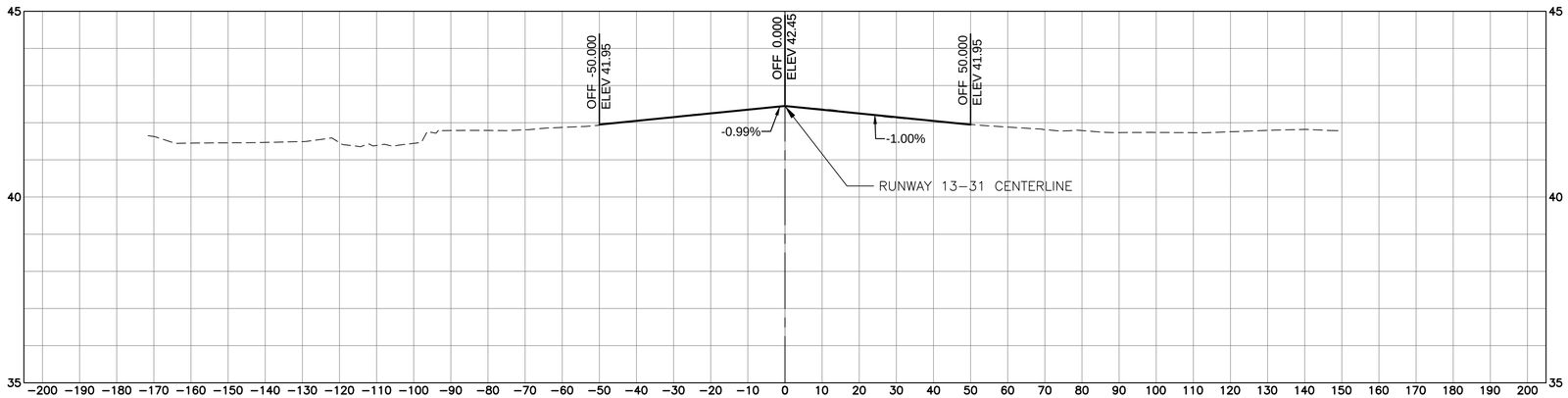

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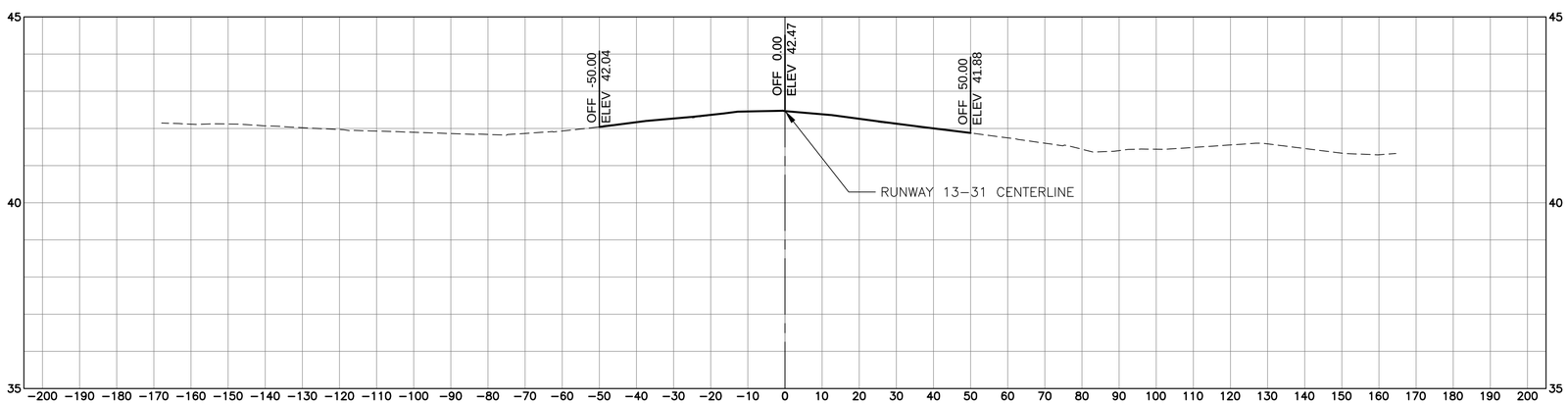

HAMMOND NORTHSHORE REGIONAL AIRPORT
1932
HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker
INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer: BSS	Checked by: MDH
Technician: SGK	Project Number: 149090

1. THE CONTRACTOR SHALL EXERCISE EXTREME CARE, PARTICULARLY IN AREAS IMMEDIATELY ADJACENT TO TAXIWAY AND RUNWAY EDGE, TO NOT DISTURB EXISTING UTILITIES, STRUCTURES AND FACILITIES WHICH ARE NOT PART OF THE PROJECT AND WHICH ARE TO REMAIN IN PLACE. CONTRACTOR SHALL REPAIR ANY DAMAGE AT NO COST TO THE OWNER.
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REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

RUNWAY 13-31
CROSS SECTIONS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date: JULY 2016	Division:
Scale: (22x34) NOTED	Sheet Number:
	Drawing Number: 401

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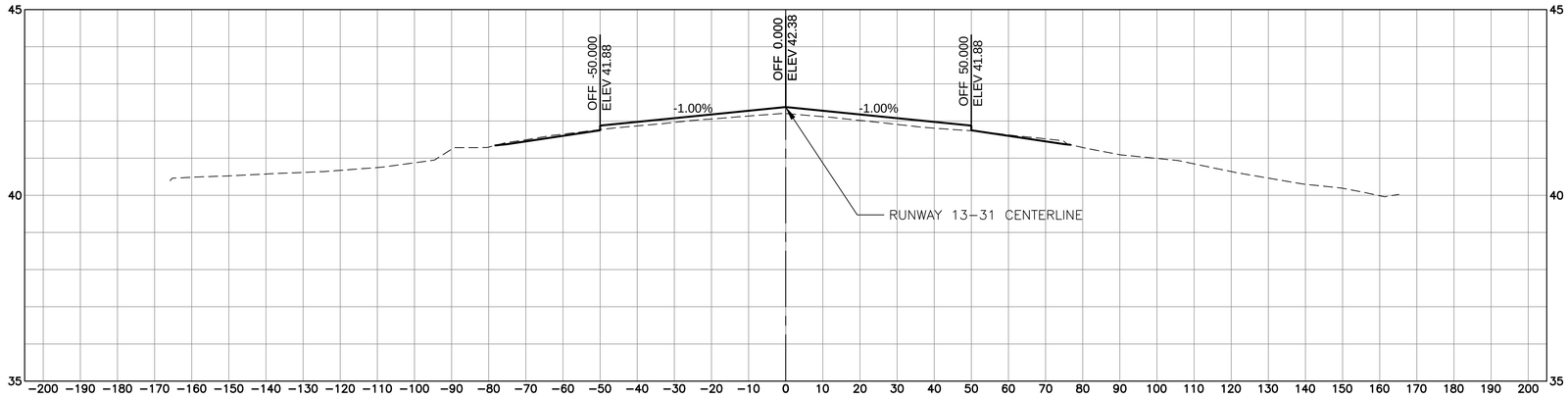
117+50.00



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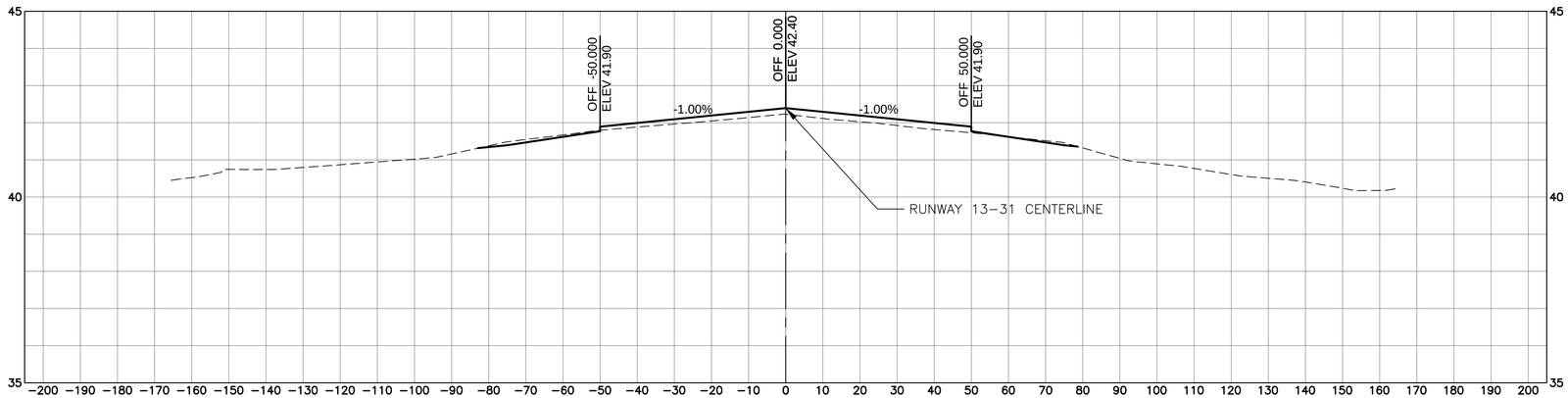

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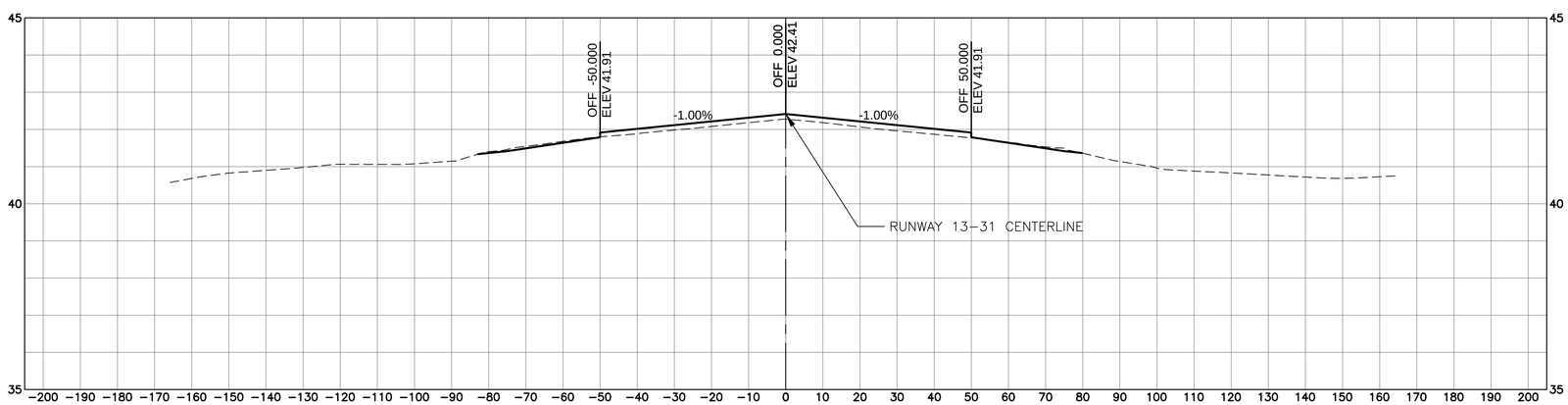

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
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7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

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RECONSTRUCTION

Drawing Name:

RUNWAY 13-31
CROSS SECTIONS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 402

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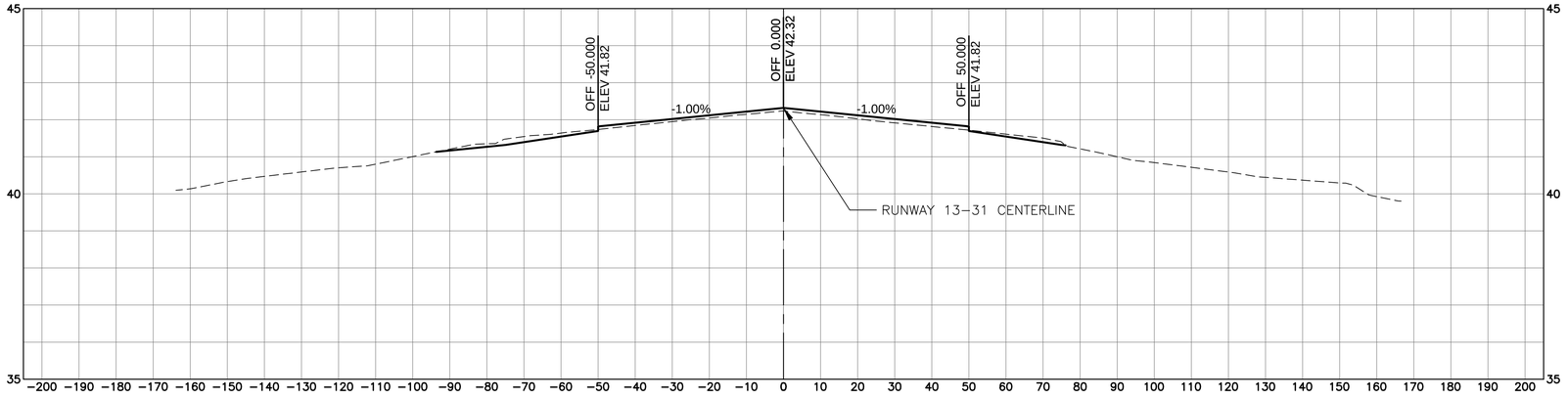
119+00.00



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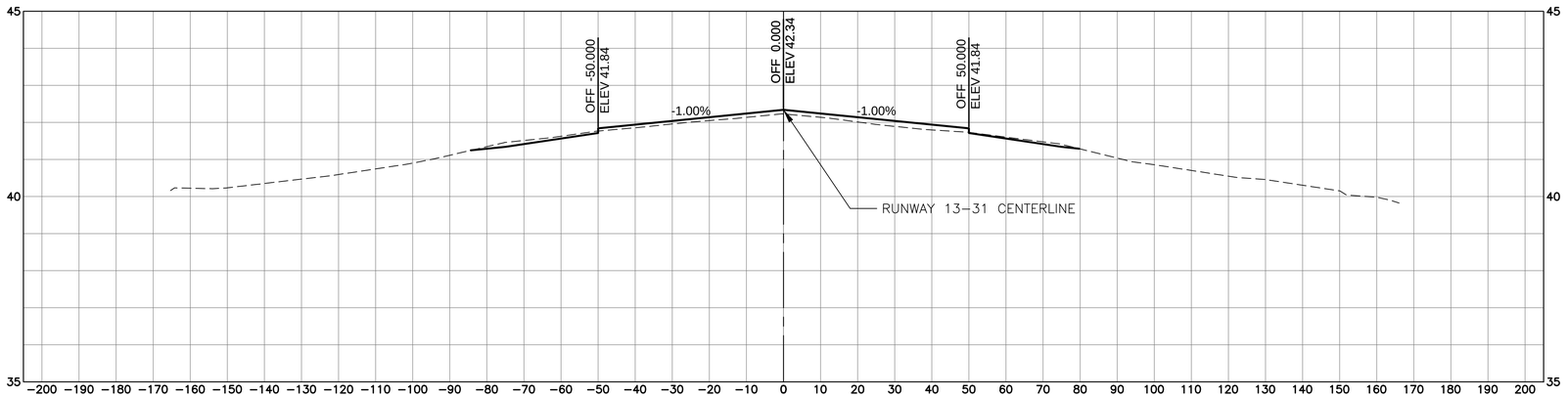

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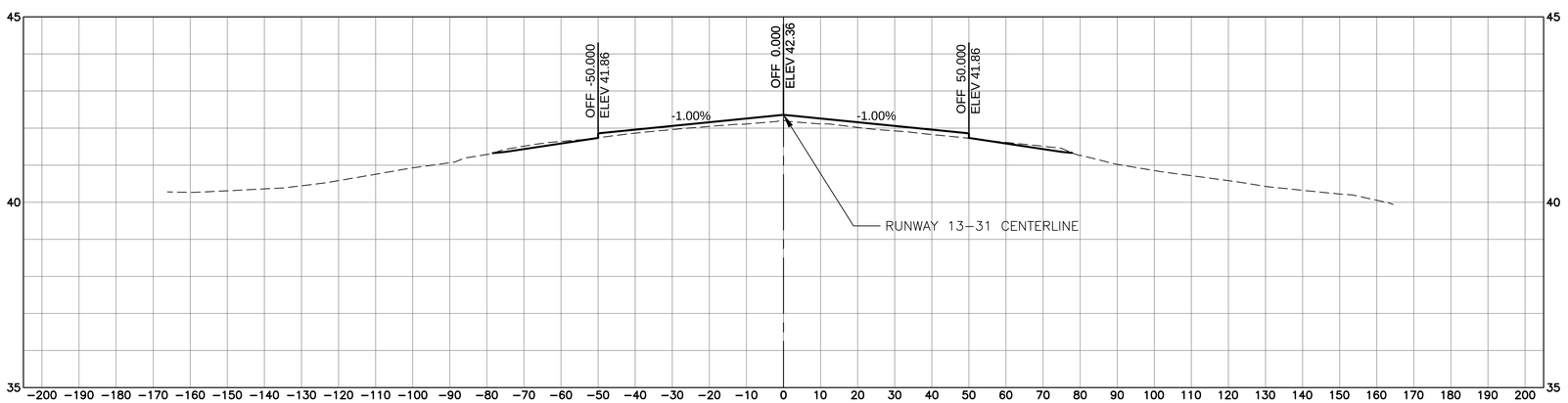

HAMMOND NORTHSHORE REGIONAL AIRPORT
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Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

RUNWAY 13-31
CROSS SECTIONS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 403

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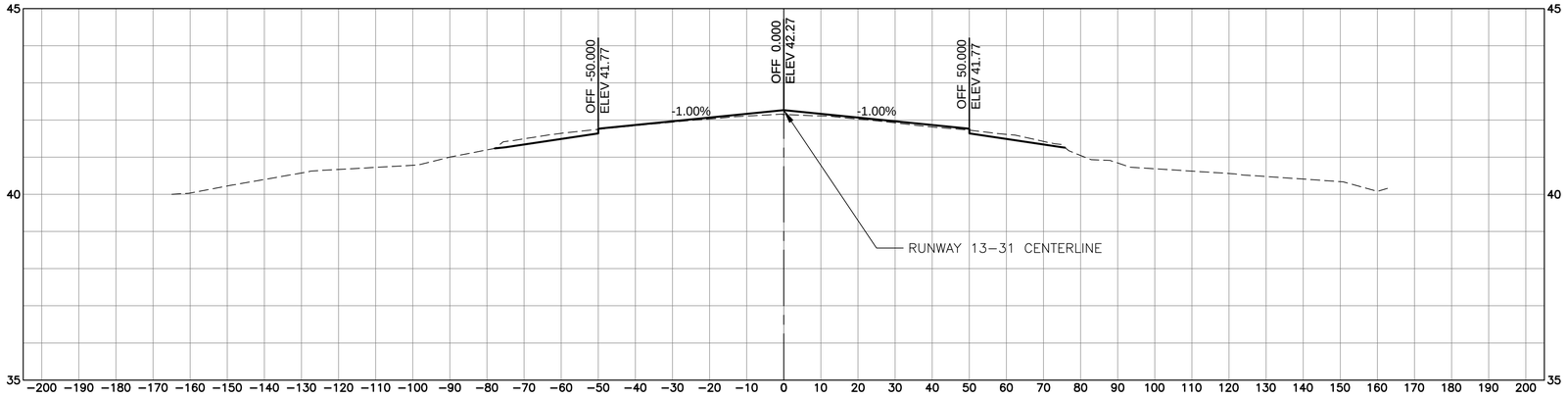

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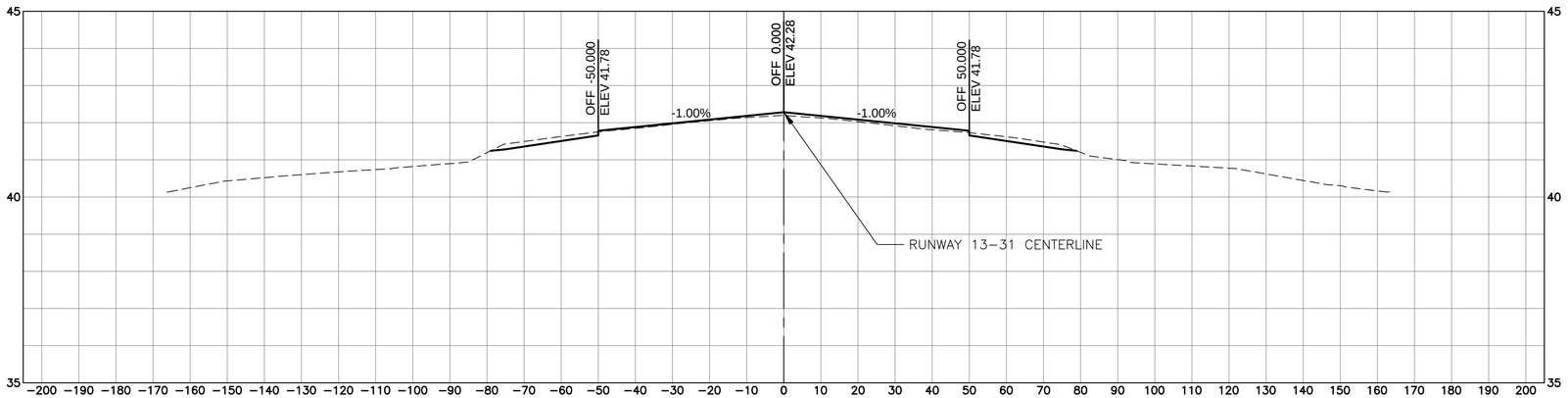

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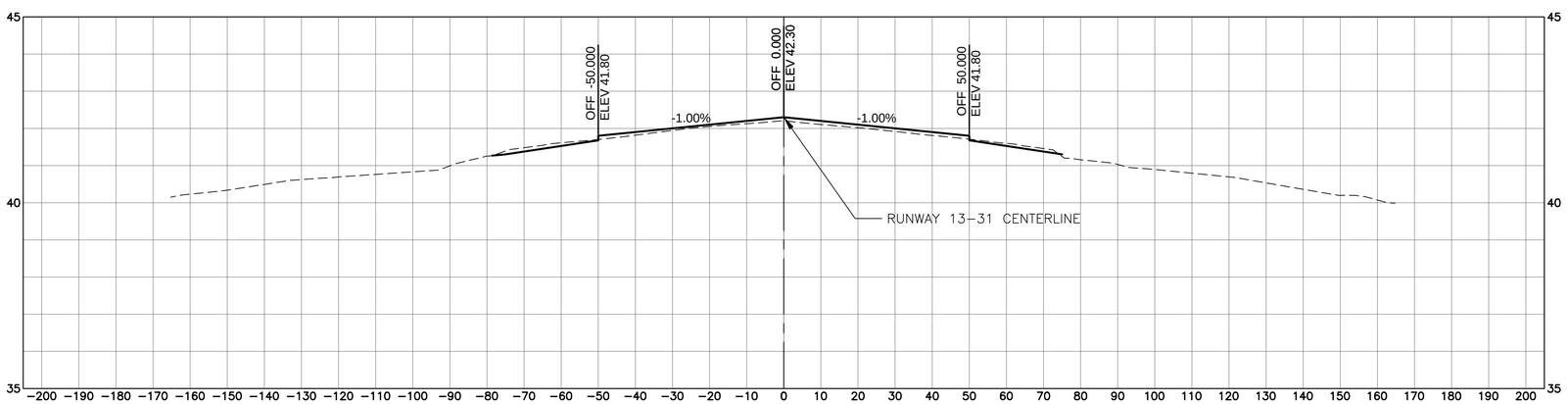

HAMMOND NORTHSHORE REGIONAL AIRPORT
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Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

RUNWAY 13-31
CROSS SECTIONS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
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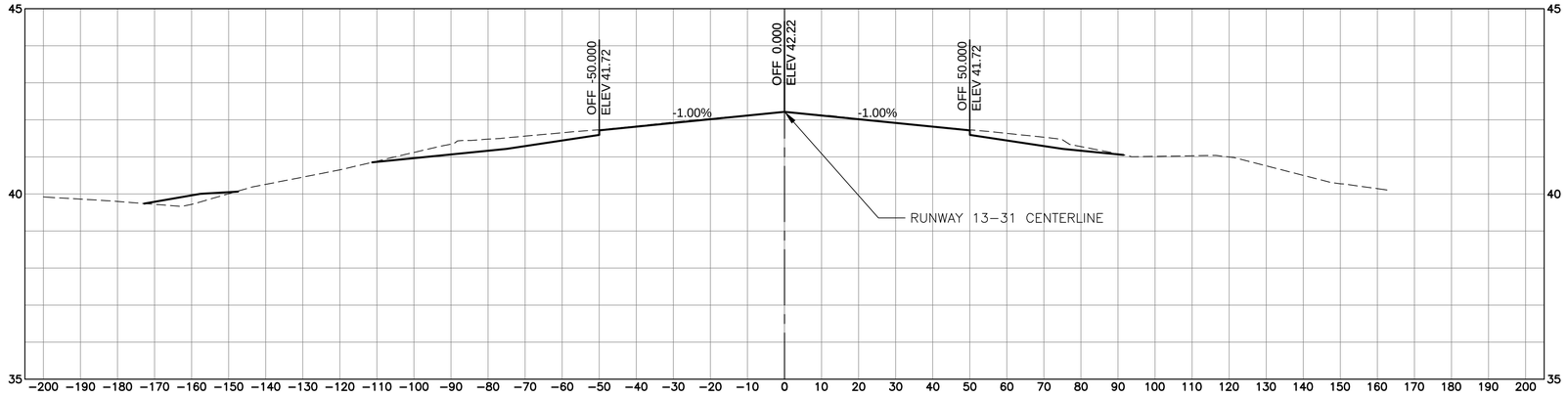

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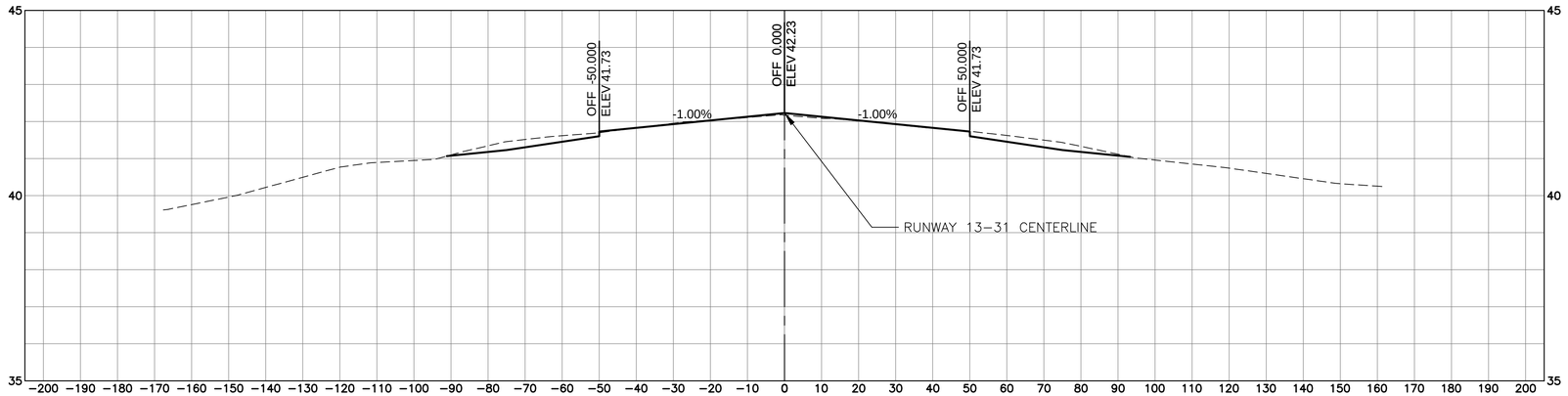

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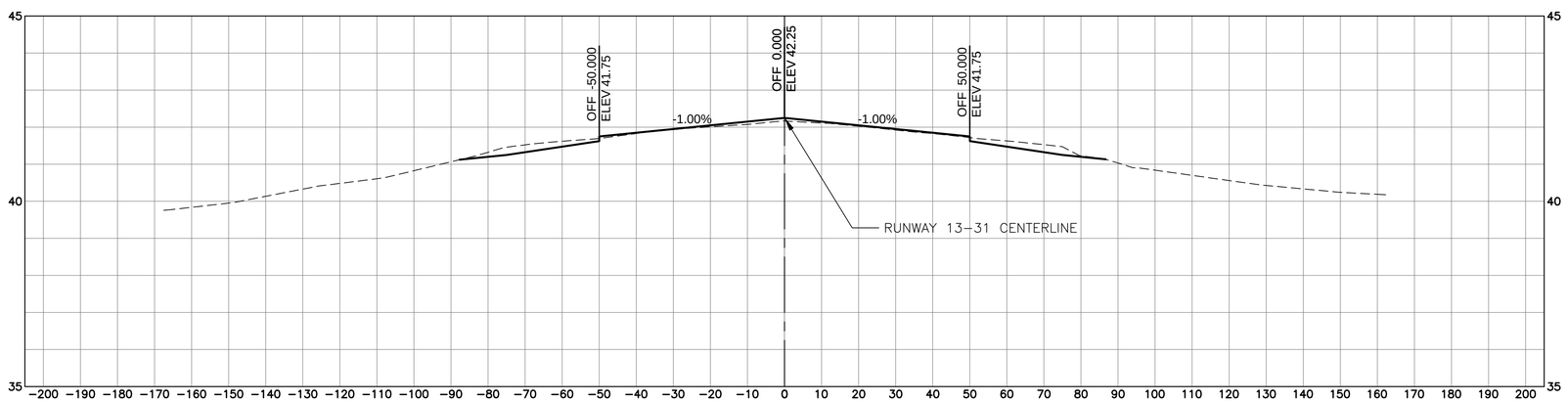

HAMMOND NORTHSHORE REGIONAL AIRPORT
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Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

RUNWAY 13-31
CROSS SECTIONS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 405

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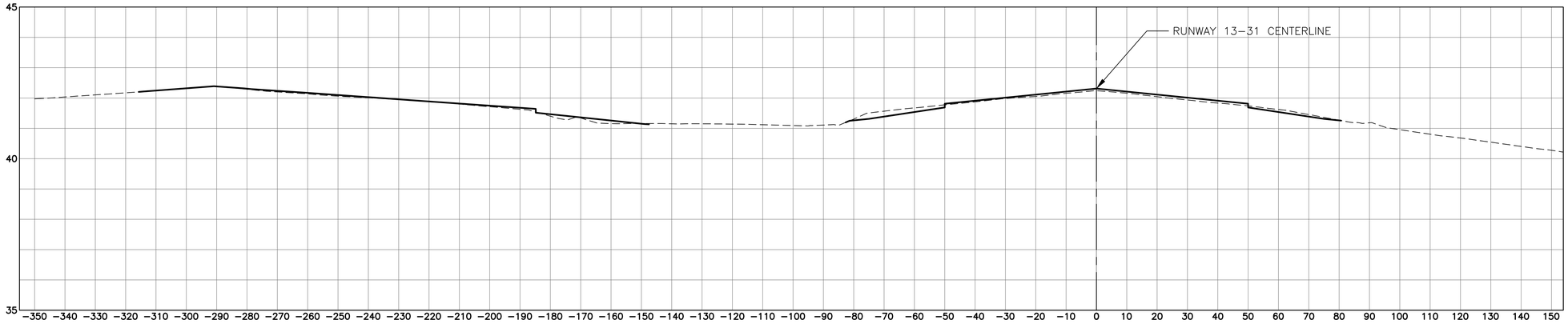

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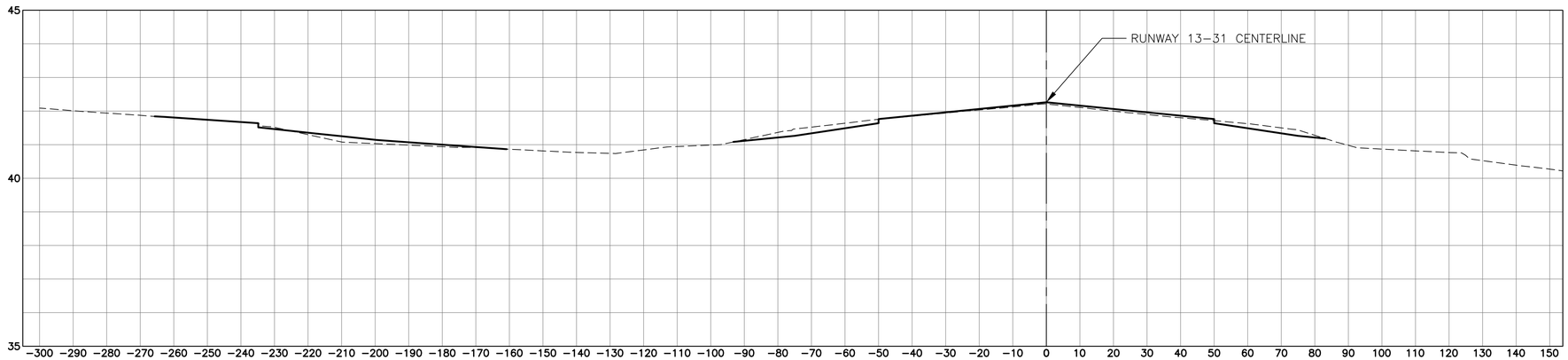

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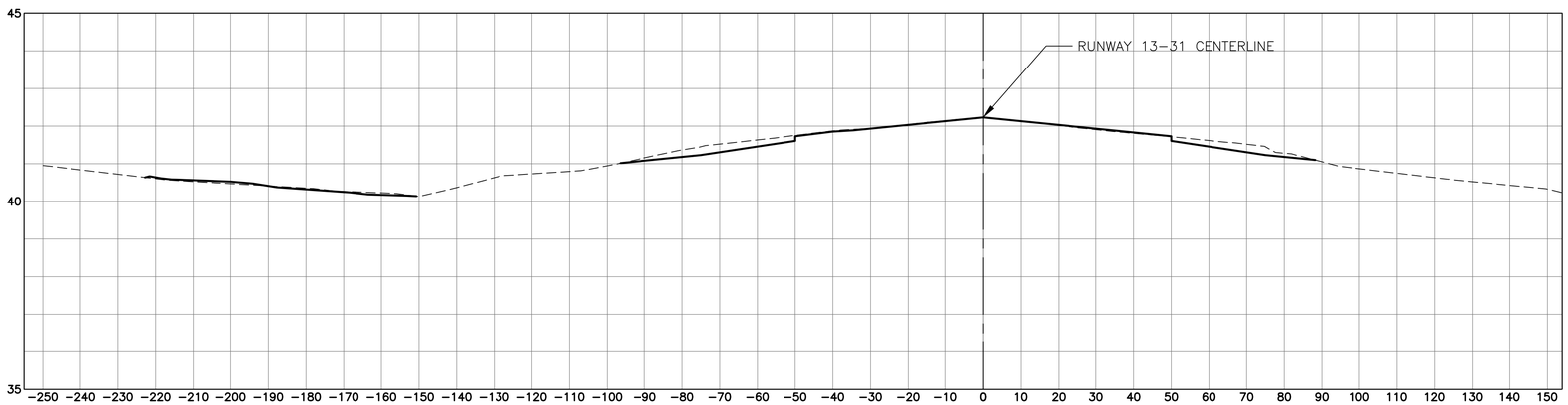

HAMMOND NORTHSHORE REGIONAL AIRPORT
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7/5/2016

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RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

RUNWAY 13-31
CROSS SECTIONS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 406

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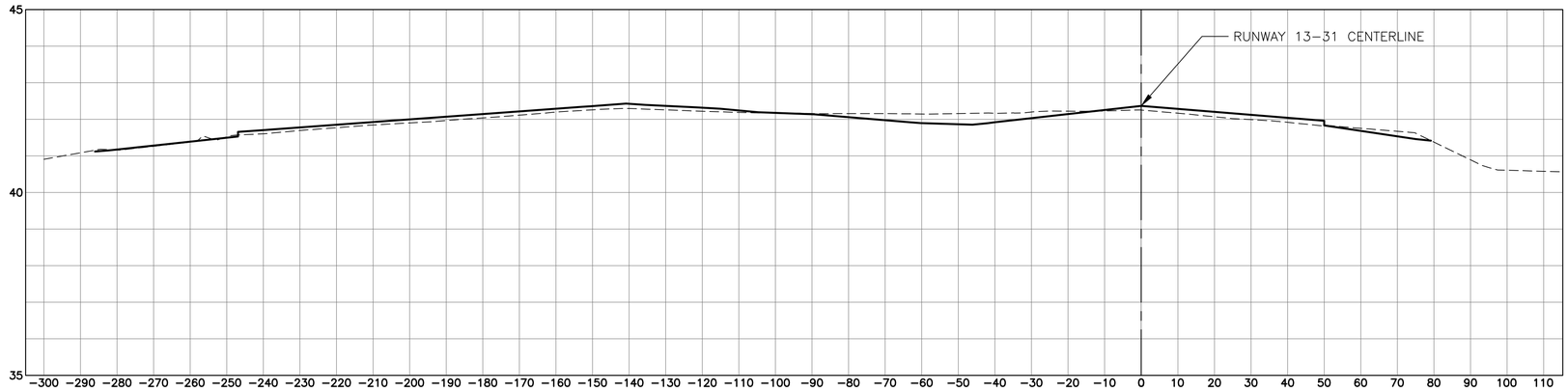

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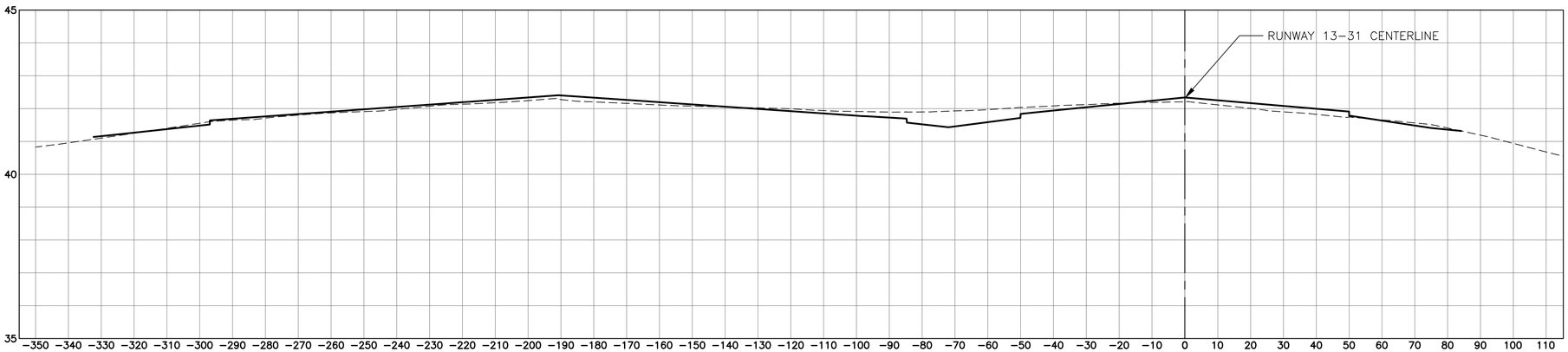

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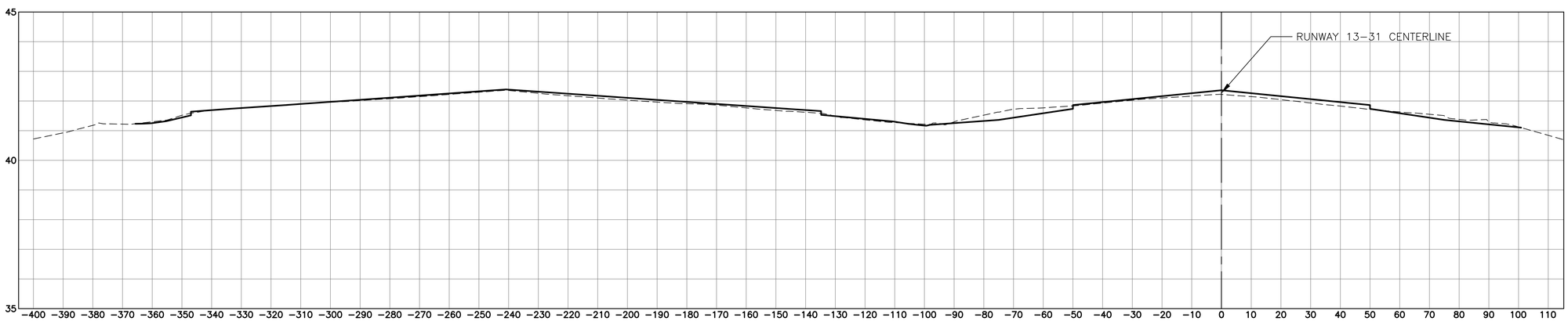

HAMMOND NORTHSHORE REGIONAL AIRPORT
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HAMMOND, LOUISIANA

Michael Baker
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RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

RUNWAY 13-31
CROSS SECTIONS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 407

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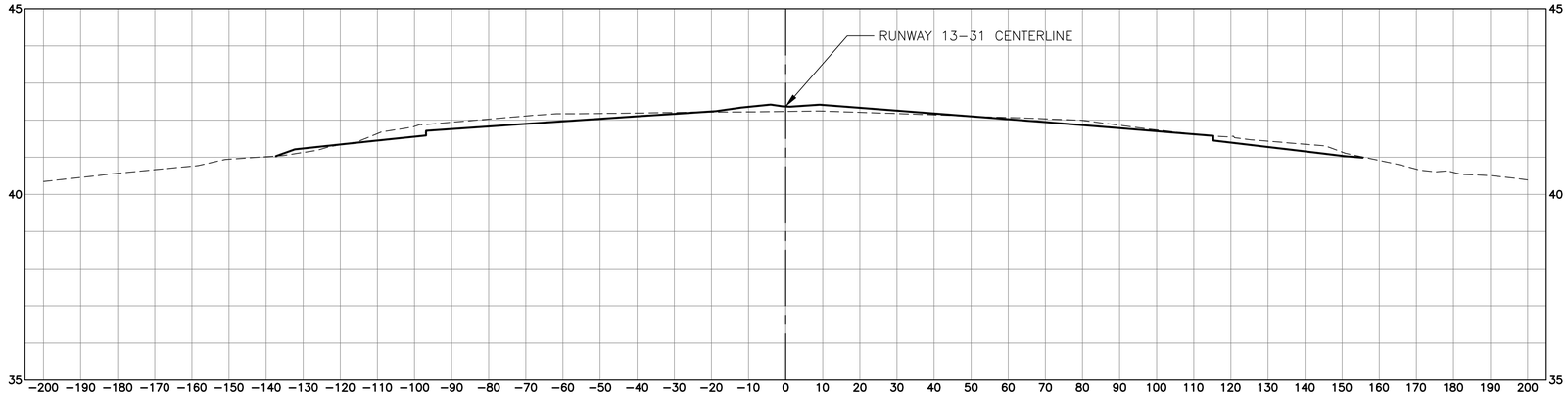

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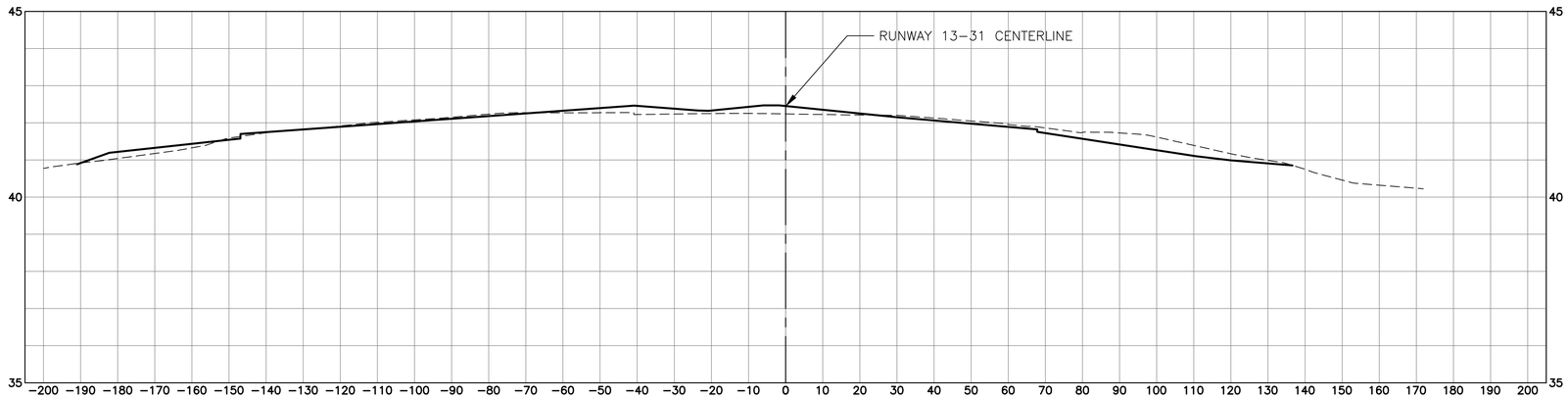

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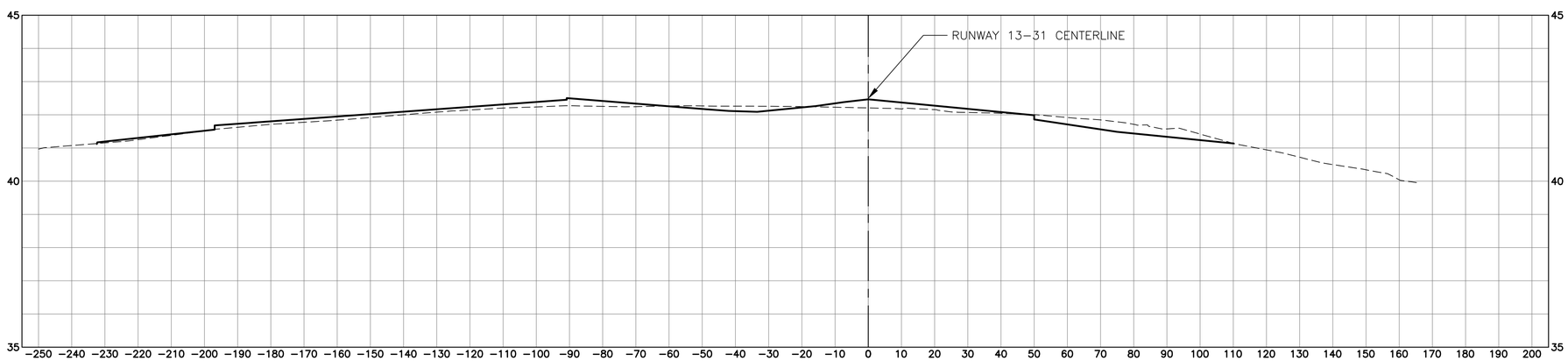

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Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
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CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

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RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

RUNWAY 13-31
CROSS SECTIONS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 408

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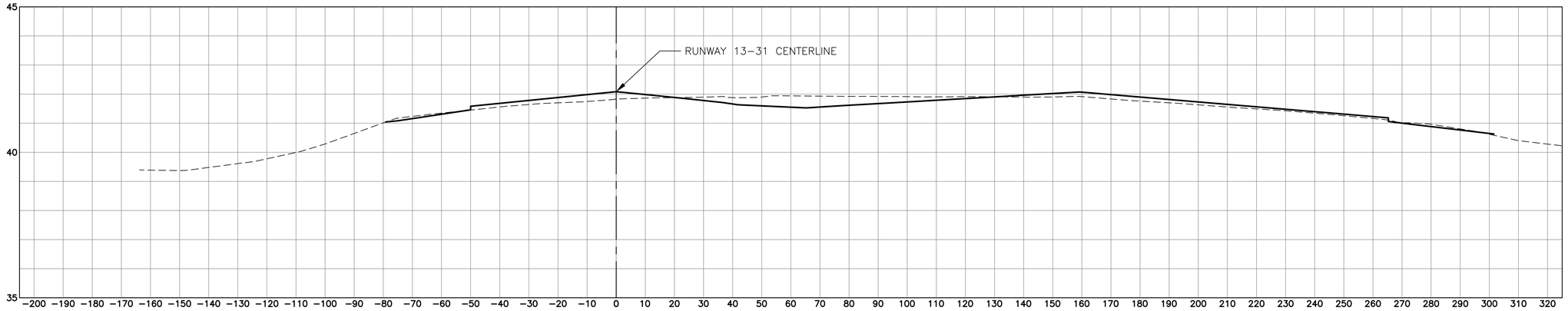

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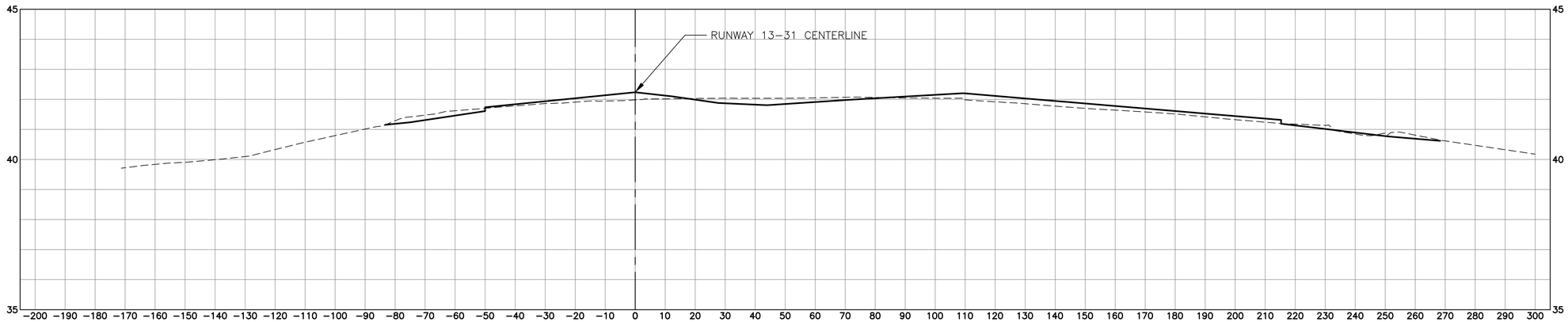

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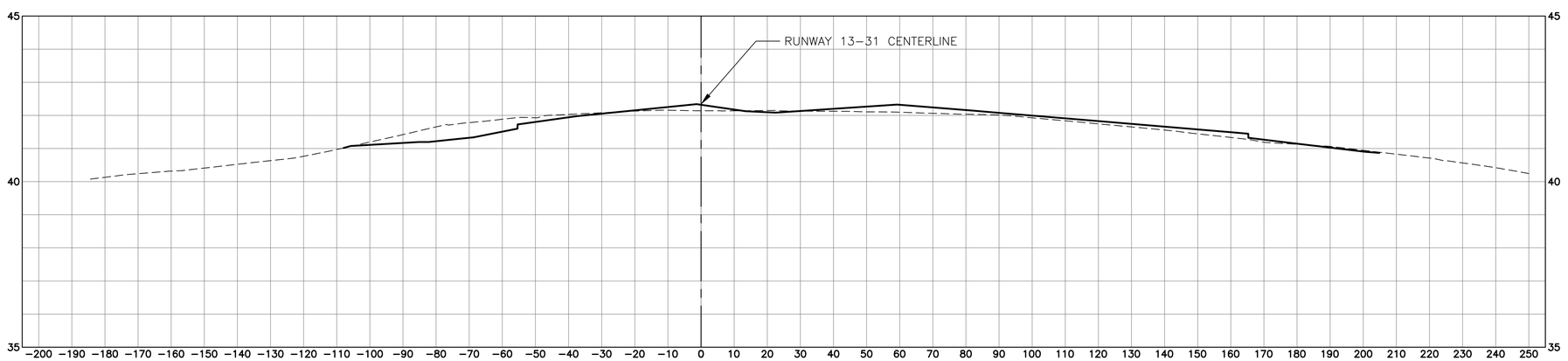

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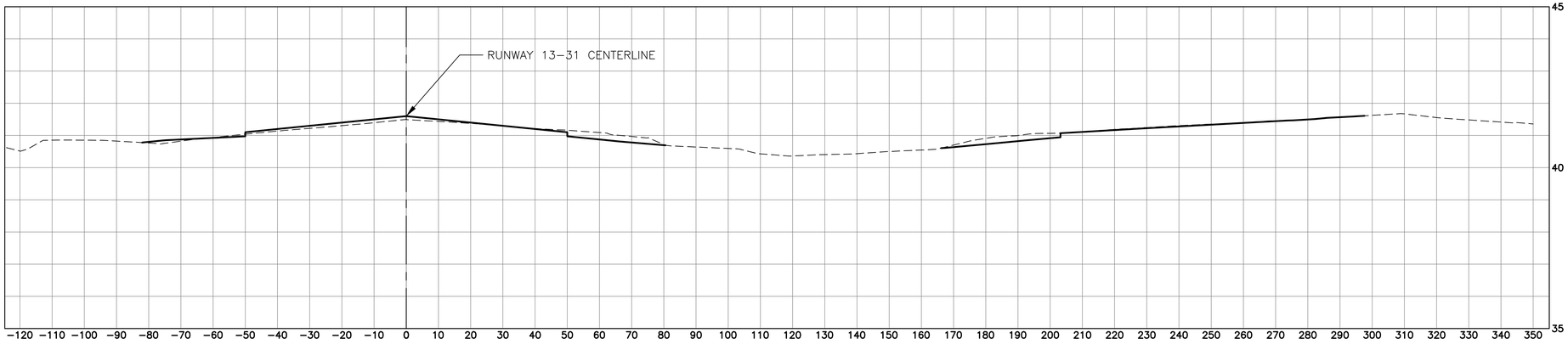

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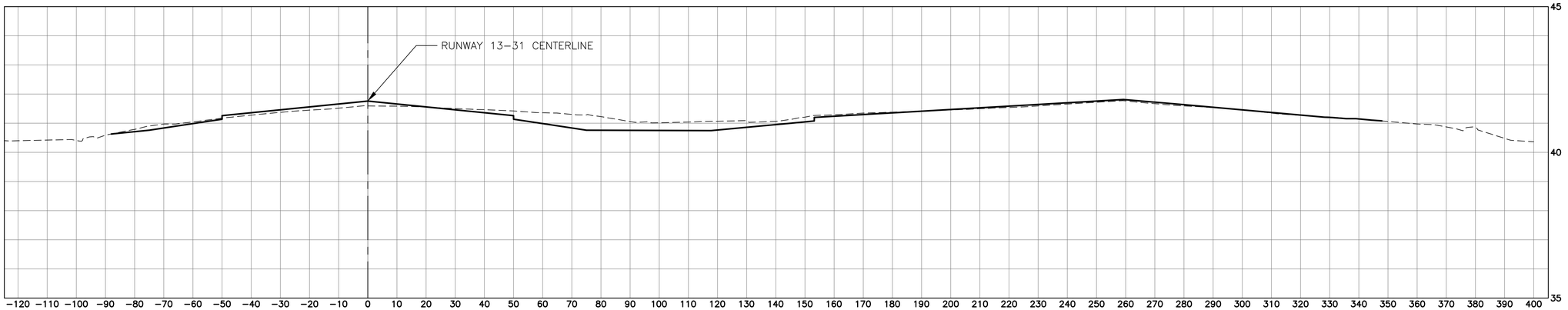

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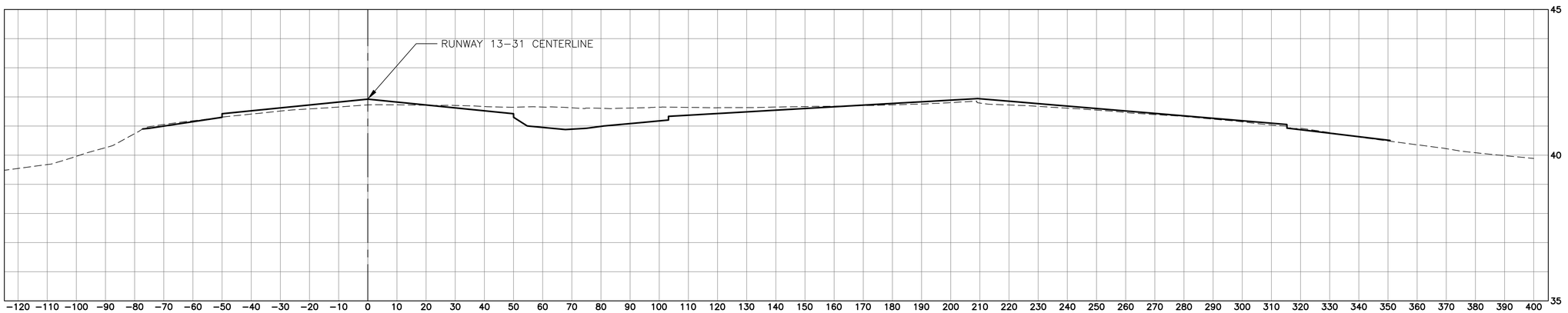

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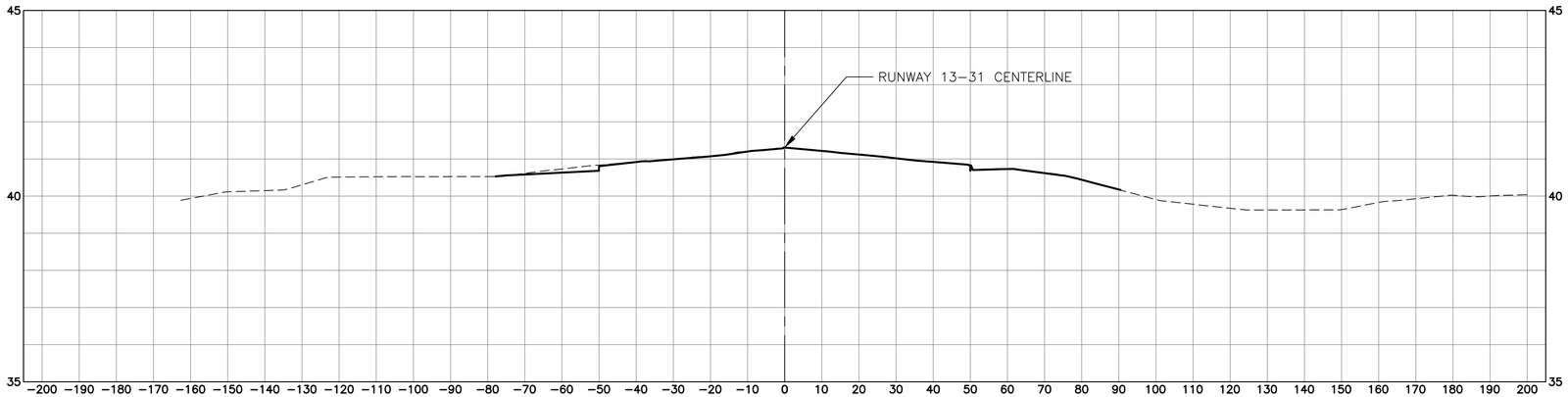

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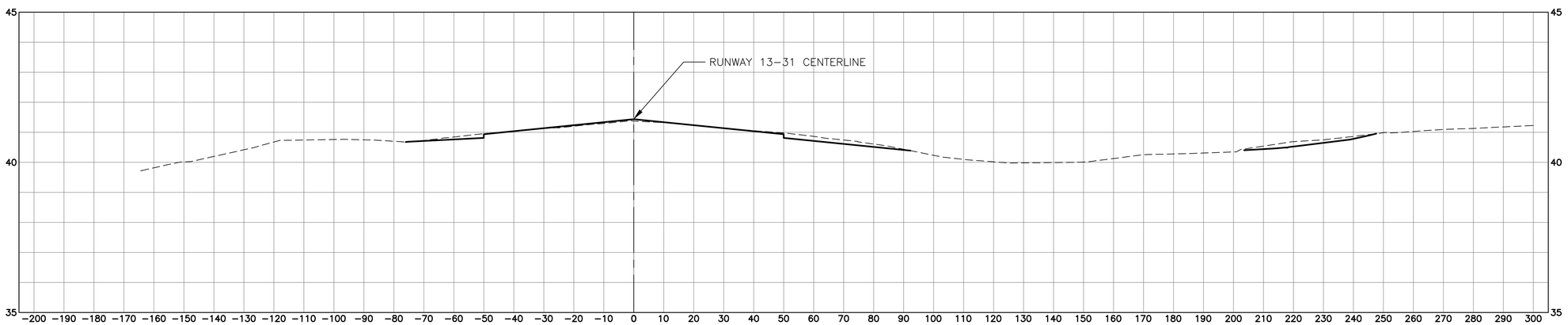

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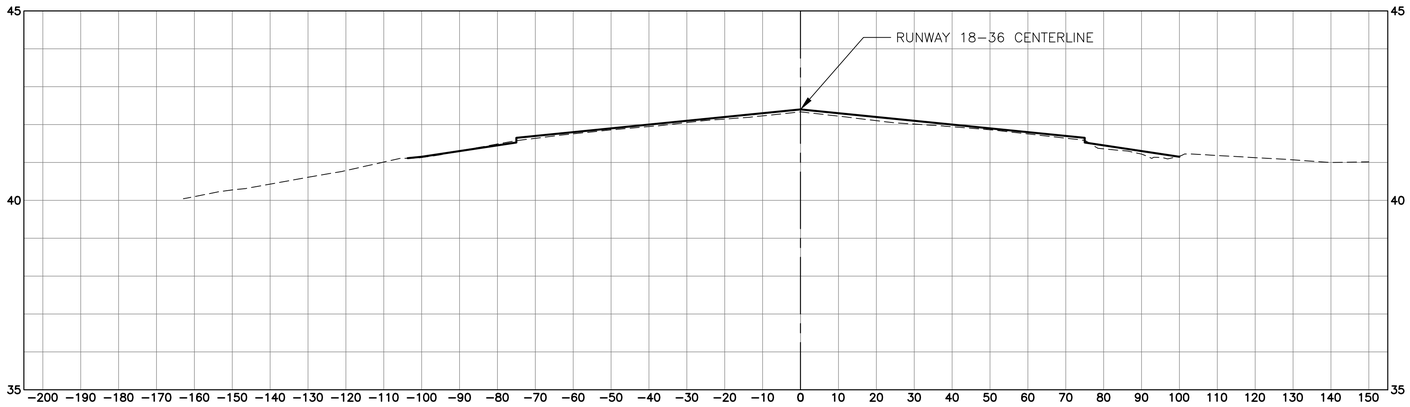

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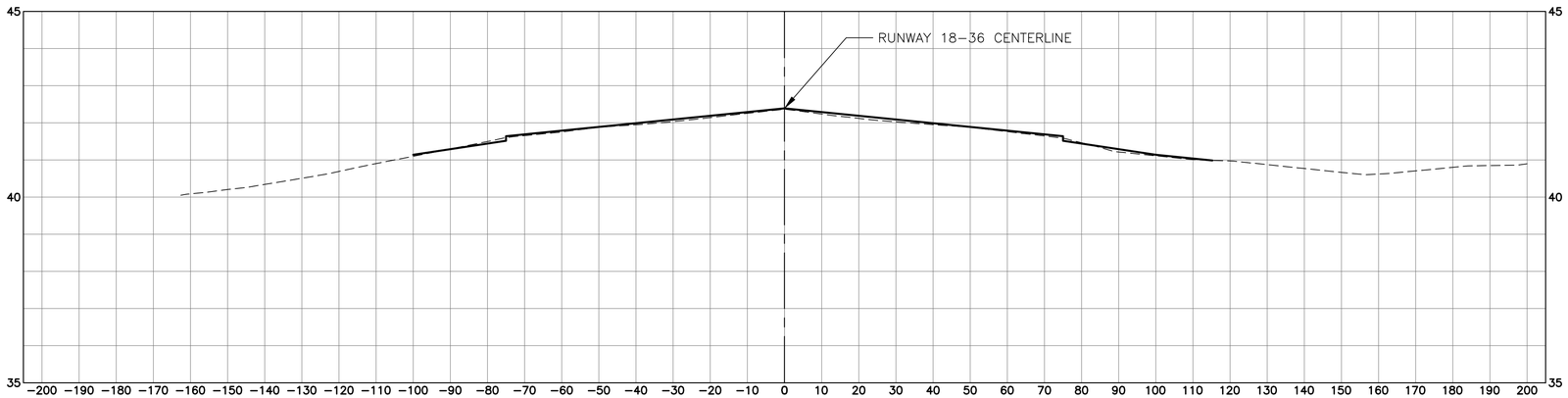

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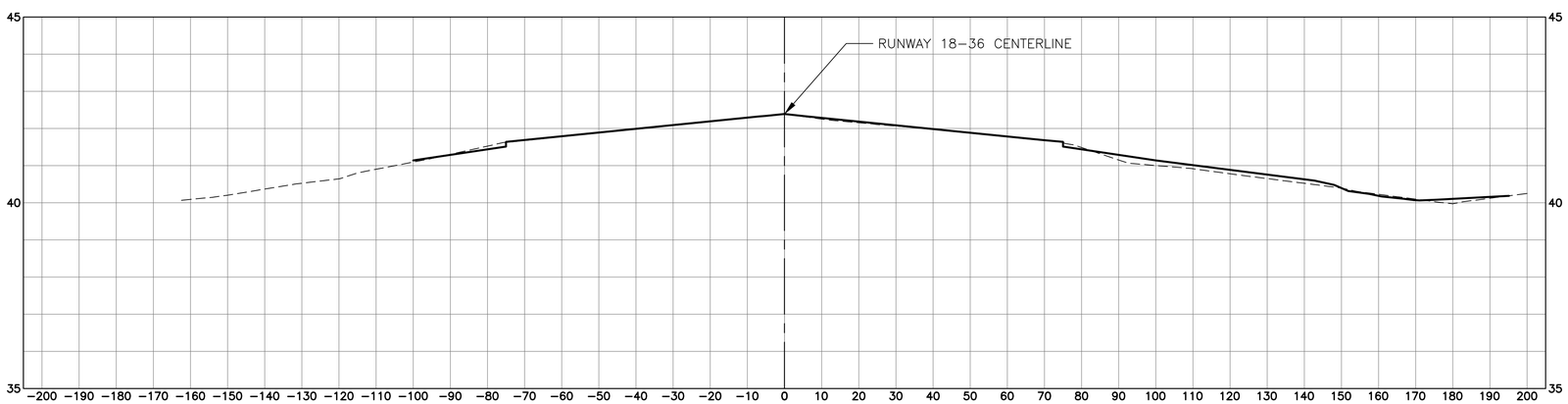

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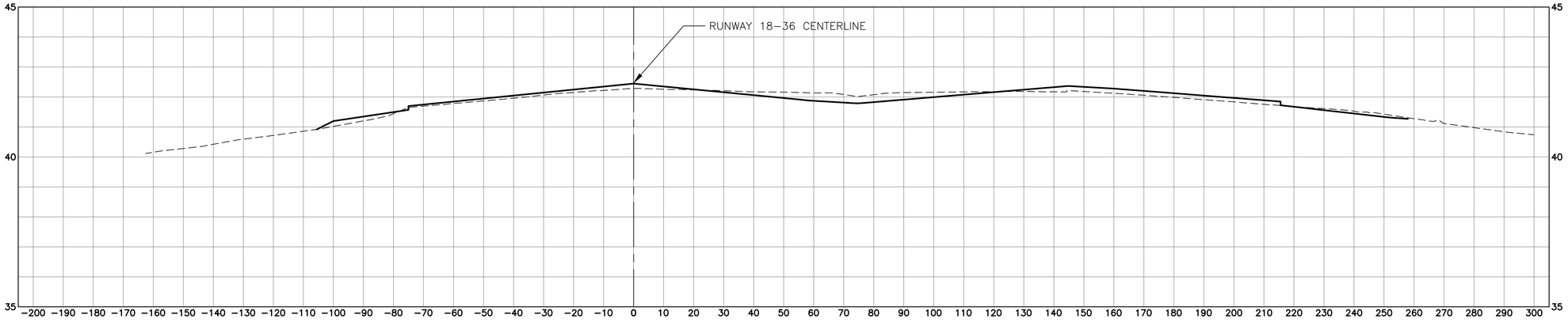

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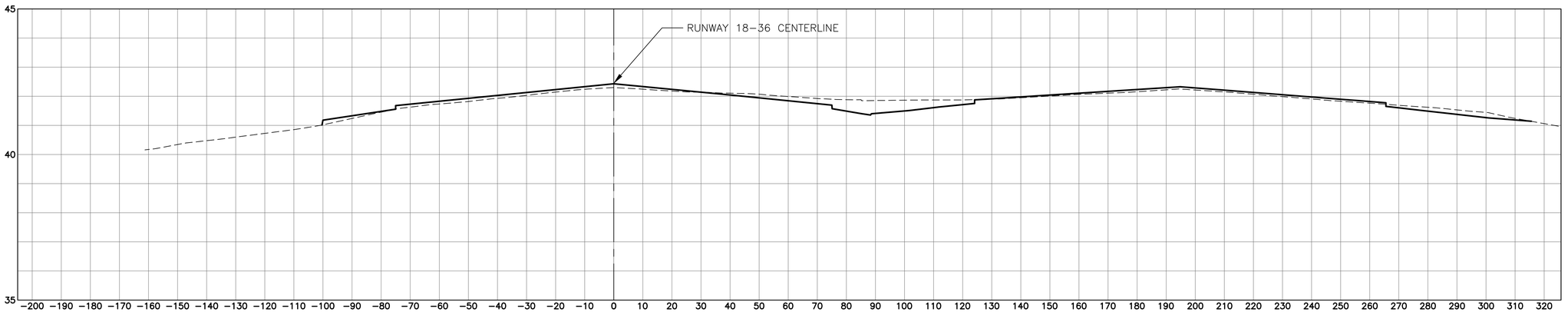

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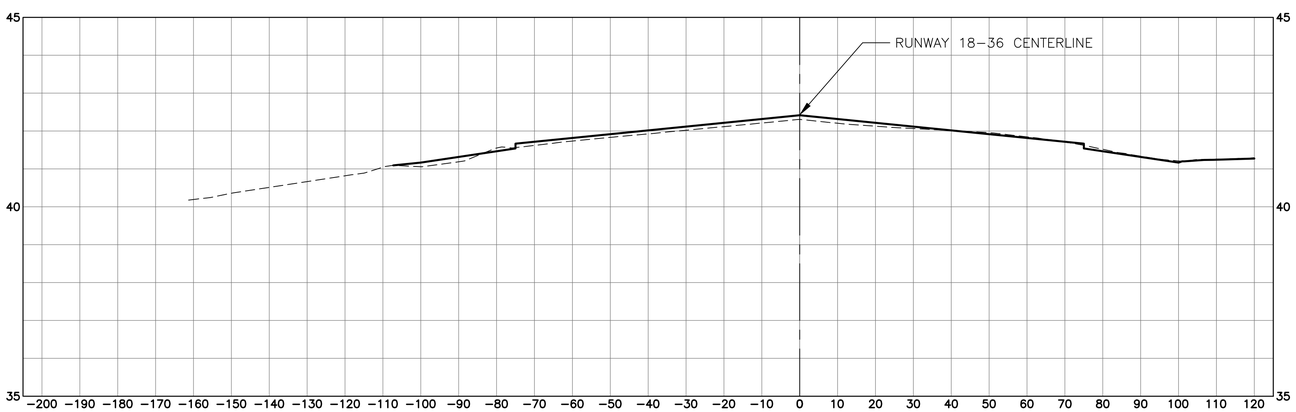

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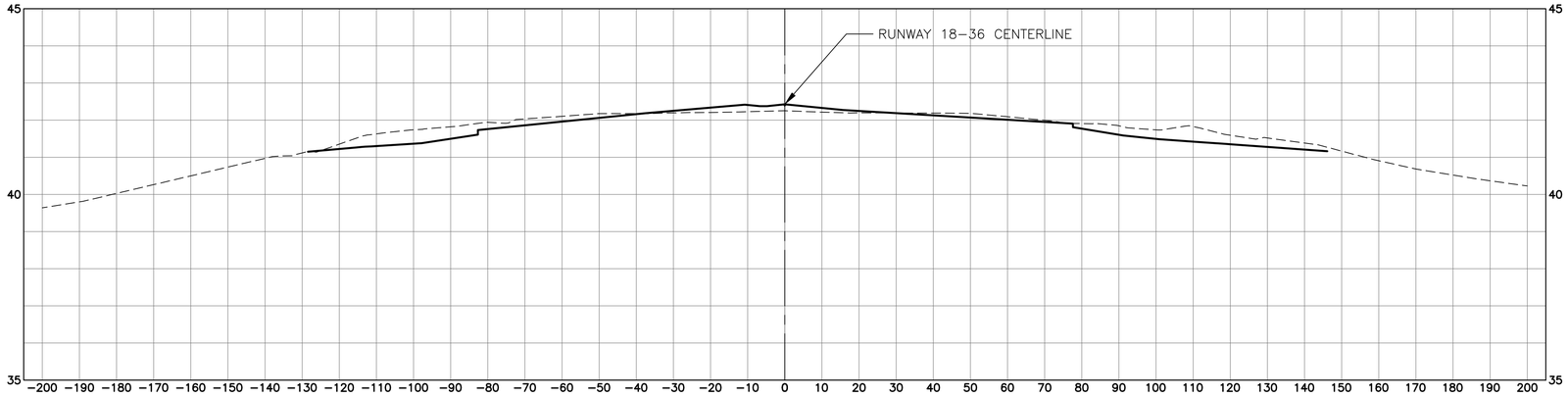

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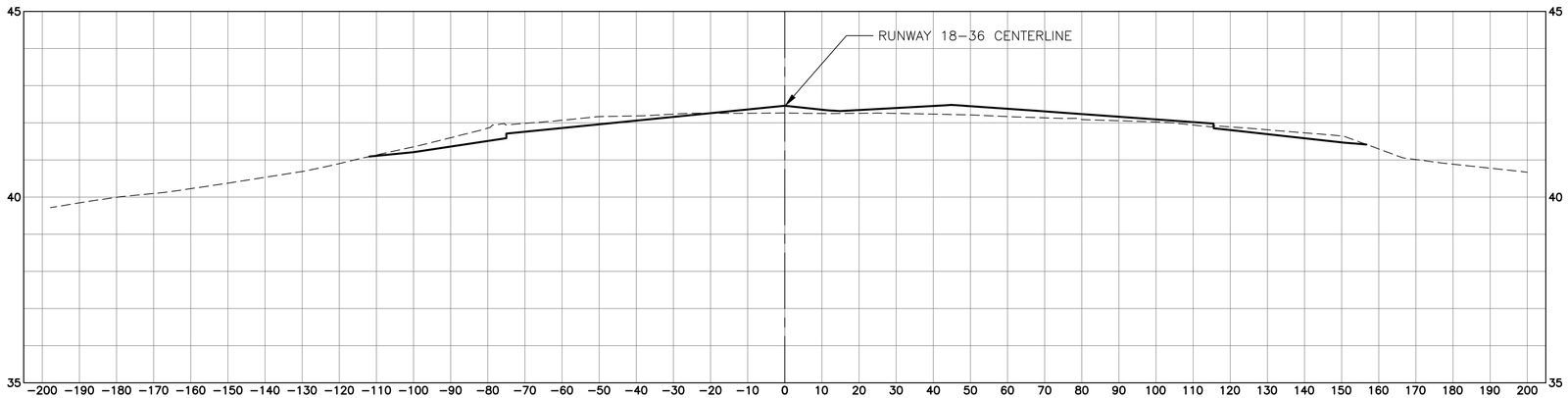

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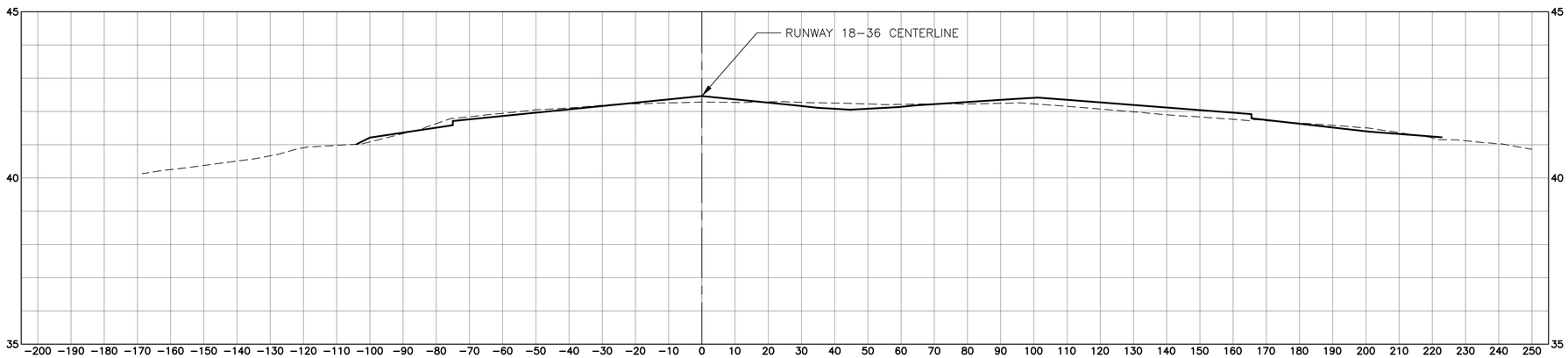

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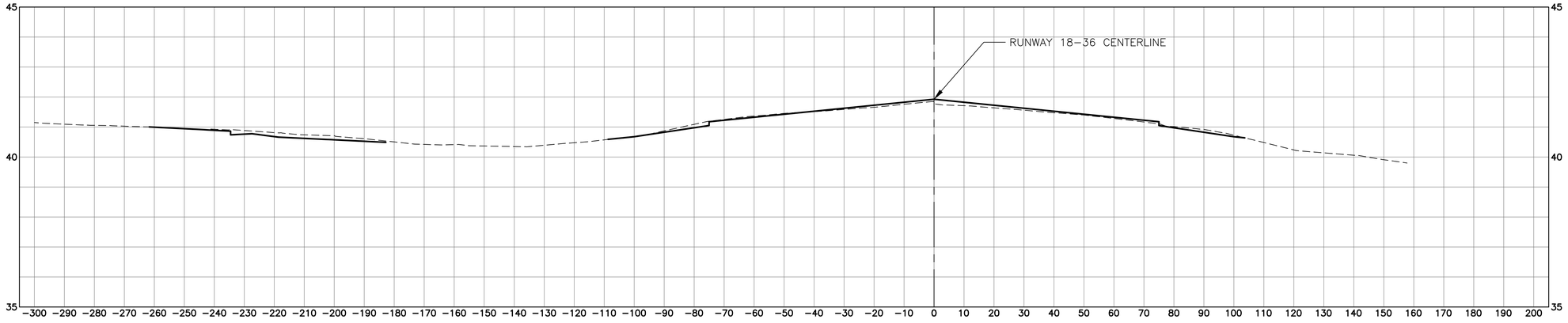

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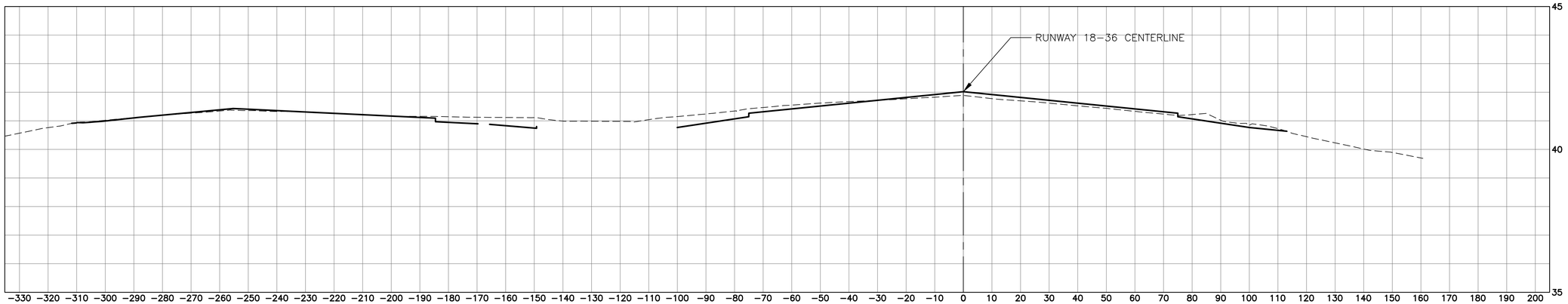

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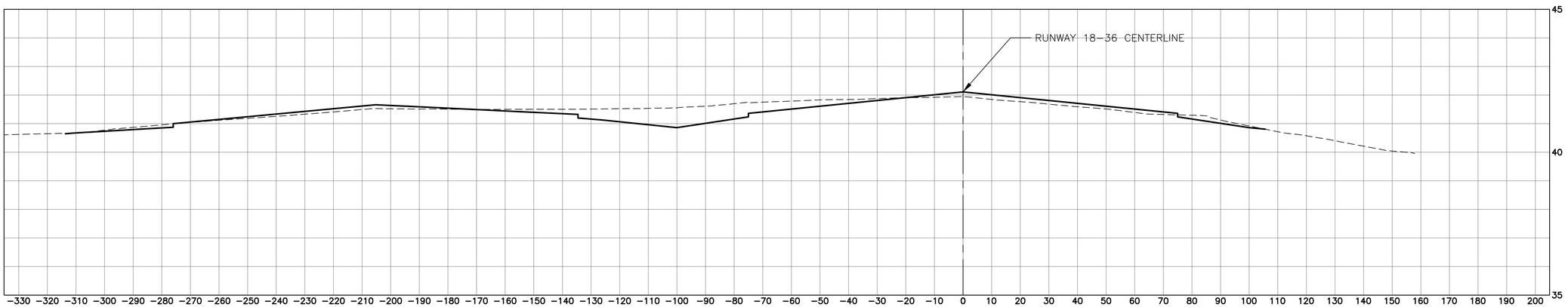

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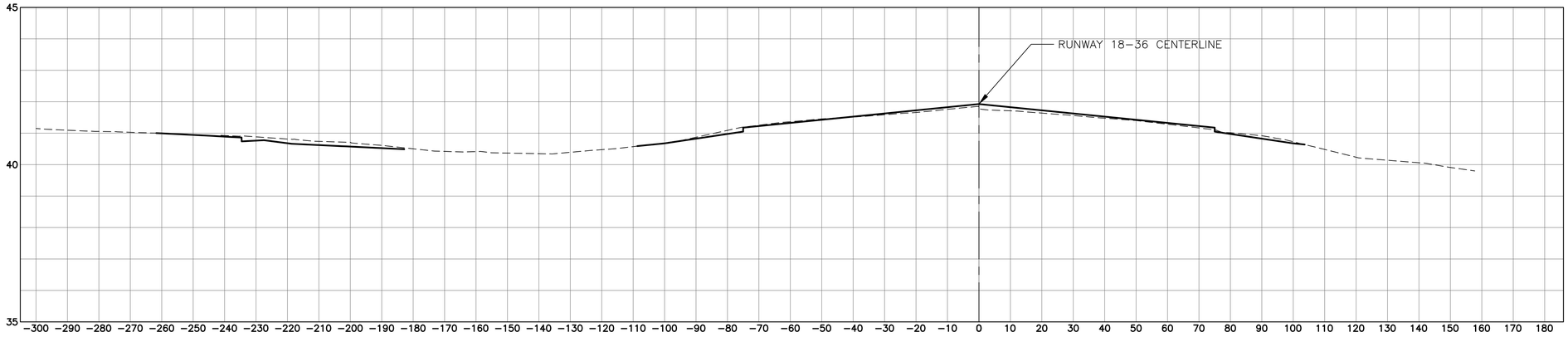

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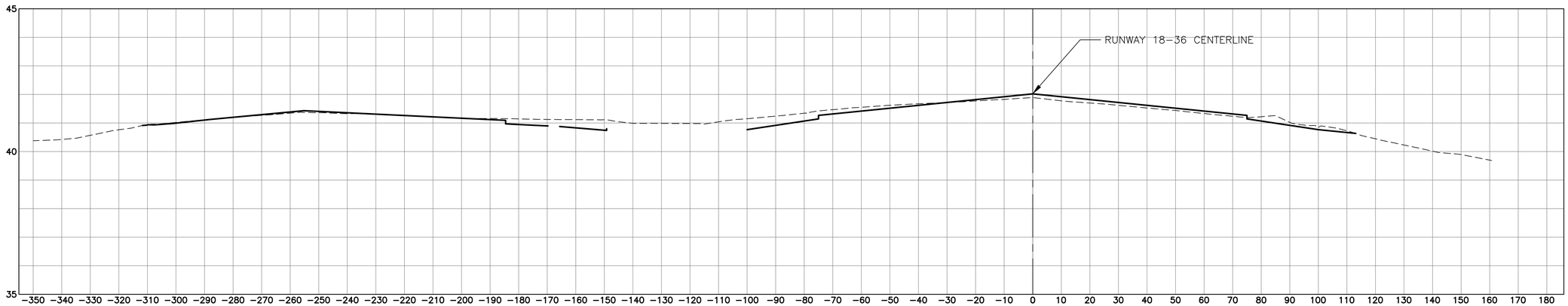

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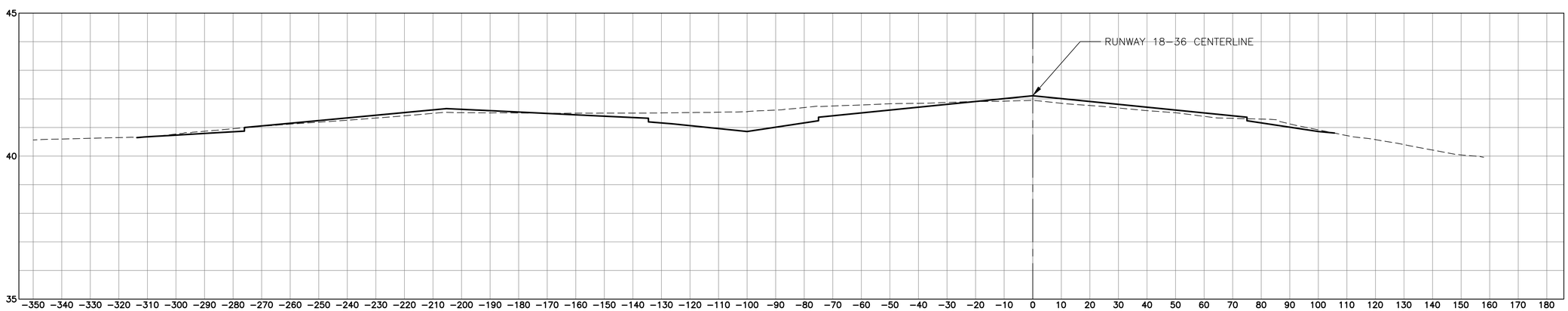

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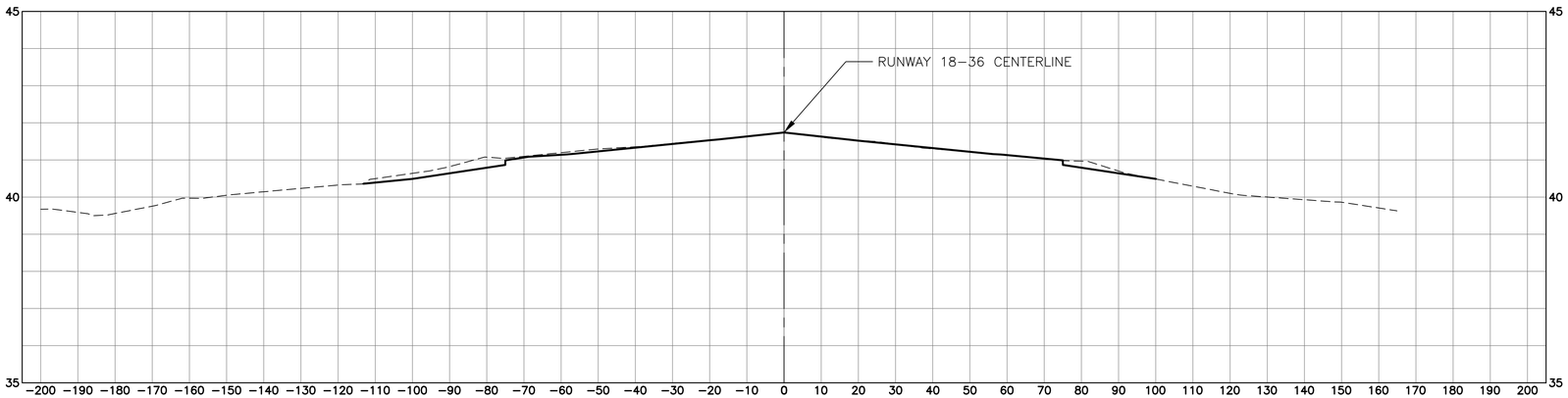

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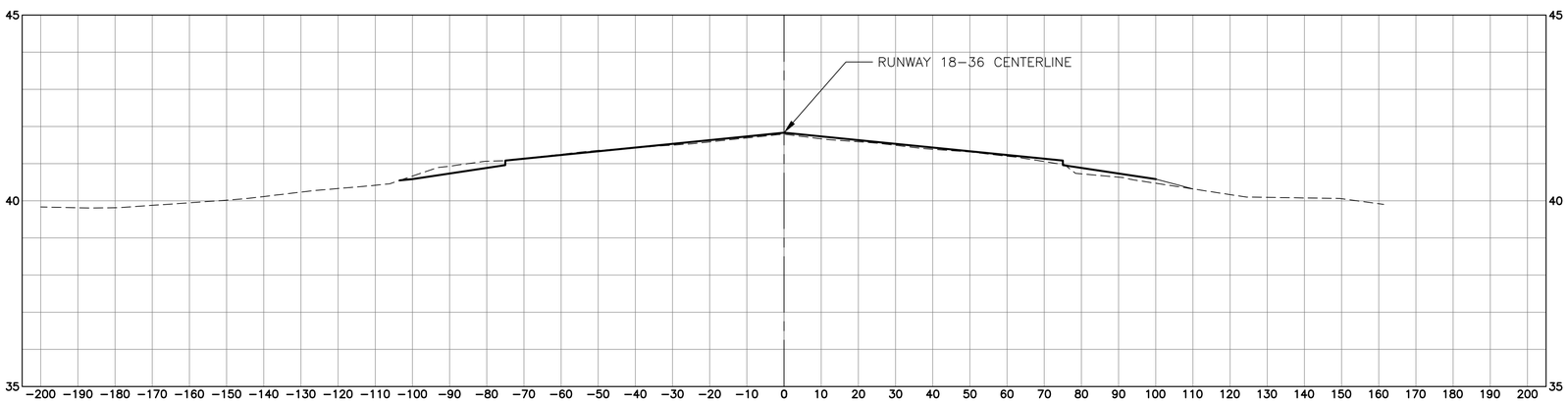

Y:\Projects\Active\Hammond\Projects\149090 - rw intersection\2 Design\ [DWG\400 - Cross Sections.dwg Modified: Jul 05, 2016 - 4:15pm Plotted: Jul 05, 2016 - 5:20pm Robert Rush

HAMMOND NORTHSHORE REGIONAL AIRPORT
HAMMOND, LOUISIANA

Michael Baker INTERNATIONAL

STATE OF LOUISIANA
BRIAN S. SMITH
REG. No. 32484
REGISTERED PROFESSIONAL ENGINEER
CIVIL ENGINEERING
7/5/2016

Designer:	Checked by:
BSS	MDH
Technician:	Project Number:
SGK	149090

1. THE CONTRACTOR SHALL EXERCISE EXTREME CARE, PARTICULARLY IN AREAS IMMEDIATELY ADJACENT TO TAXIWAY AND RUNWAY EDGE, TO NOT DISTURB EXISTING UTILITIES, STRUCTURES AND FACILITIES WHICH ARE NOT PART OF THE PROJECT AND WHICH ARE TO REMAIN IN PLACE. CONTRACTOR SHALL REPAIR ANY DAMAGE AT NO COST TO THE OWNER.

2. CONTRACTOR SHALL FIELD VERIFY ALL RUNWAY PAVEMENT RECONSTRUCTION LOCATIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY

REVISIONS

No.	Description	Date	By

Project Name:

RUNWAY 18-36 / 13-31
RECONSTRUCTION

Drawing Name:

RUNWAY 18-36
CROSS SECTIONS

FAA A.I.P. Project Number:
3-22-0018-019-2016

Date:	Division:
JULY 2016	
Scale: (22x34)	Sheet Number:
NOTED	Drawing Number: 417