Office of Aeronautics

Project Engineering Manual (Construction projects)

Revised November 2025

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Foreword

The primary purpose of this manual is to provide a guide and reference book to which engineers and architects can refer in carrying out their assignment as project managers of airport construction projects in the state of Michigan.

To maintain consistency throughout our program, we require all construction supervision contracts to reference this manual and indicate that the project engineer will adhere to all of the guidelines contained herein.

This manual is intended to be used as a guide in carrying out engineering and administrative responsibilities. It is not to be considered a substitute for good engineering judgment; however, when used as intended it will help to professionally accomplish all aspects of the projects.

We look forward to working with you to enhance the safety and infrastructure of Michigan's aviation system.

Project Engineering Manual Committee:

- Elyse Lower, P.E. - Project Management Unit Supervisor
- Zach Bormet - Project Manager
- Paul Nicastri - Project Manager
- Paige Luft - Project Manager
- Patrick Murphy - Aeronautics Analyst

General Procedures

Engineer's and Architect's General Duties and Responsibilities

The project engineer or architect, hereinafter referred to jointly as the consultant, unless otherwise stated, represents the sponsor (airport owner) on all matters pertaining to the execution of the construction contract. The consultant shall familiarize themselves completely with the plans, addendums, specifications and supplemental specifications pertinent to the various items of work in the contract.

The consultant will work directly with the project manager, or authorized representatives, of the Michigan Department of Transportation (MDOT) Office of Aeronautics Planning and Development Section (referred to as Aero in this manual).

The consultant assignment is to supervise the engineering and inspection required for the project to monitor the contractor's conformance with all the terms of the construction contract, including the plans and specifications. In general, the consultant's duties and responsibilities are as follows:

1. To inspect the contractor's performance to determine if the work conforms to the requirements of the contract plans and specifications.

2. Furnish the field equipment and personnel for construction management and project control as required for the project.

3. During construction, the consultant will be immediately available for consultation on project problems.

4. Prepare periodic cost estimates, change orders/contract modifications, start and stop orders, recommendations for changes and construction inspection reports. Copies shall be submitted to the Aero project manager within a timely manner.

5. Conduct periodic inspections to determine if the project is within budget and track funding breakdown. Submit recommendations to Aero to adjust the work if, in the consultant's opinion, it is advisable.

6. Verify all necessary project permits are on site.

7. Perform all quality assurance testing, as required by this manual, to determine the contractor's conformance with plans and specifications.

8. Prepare and maintain an accurate written record of contract time expended on the project by the contractor throughout the life of the contract. This written record may be of paramount importance at the time of closing out the contract to determine whether the assessment of liquidated damages is justified in the event the contract time is exceeded by the contractor.

9. Compute all final quantities and prepare complete "as-built" plans following the guidelines in Appendix I.

10. Approve shop drawings, catalog cuts and material certifications as required for the project as submitted by the contractor. Copies shall be submitted to the Aero project manager in a timely manner.

11. Approve the concrete and/or bituminous mix designs, including the required physical tests, and submit to Aero prior to paving operations.

12. Prepare a final construction contract report in accordance with the guidelines in Appendix I.

13. Update the Airport Layout Plan (ALP) to show any new construction and new runway end elevations and coordinates. All sheets within the ALP set shall be updated if they were affected by any construction. The consultant will submit electronic files to the Aero project manager.

The consultant shall always manifest the spirit of cooperation and is responsible for the following relationships to other personnel assigned to the project:

1. The consultant shall act as liaison between the contractor, the airport owner and Aero.

2. The consultant shall cooperate with the contractor to the extent of obtaining workmanship conforming to acceptable industry standards, as per the contract plans and specifications.

3. When work is under construction on existing airports, the consultant shall coordinate the work of the contractor with the activities of the airport to ensure safety and a minimum of disruption to all concerned. The consultant shall inform the contractor if temporary marking, lighting, flagging or barricading is not in accordance with the "Construction Safety/Phasing Plan." In accordance with Section 50-01 of the General Provisions for Construction on Airports, the consultant has the authority to suspend work if the contractor fails to comply. In the event

additional provisions are necessary or no safety plan is provided, the consultant, in cooperation with the airport manager, shall designate areas to be closed to traffic, displaced thresholds, relocated thresholds, etc., with the proper markings so as to alleviate any conflict to safe traffic movements during the project, and arrange, through the airport manager, the issuance of appropriate Notices to Airmen (NOTAMs). At lighted airports, the consultant shall designate those areas where lighted barricades, warning signs, hazard markings or other types of safety lights shall be placed (General Provisions 70-08 and 80-04).

4. The consultant shall conduct inspections and engineering supervision in a manner which is both efficient and reliable.

5. The consultant shall cooperate with the authorized Aero and Federal Aviation Administration (FAA) representatives and shall be available for consultation during their scheduled periodic construction inspections. The consultant shall provide the authorized representatives with access to all plans, inspection reports, files, notes and any other information that is pertinent to the project.

6. All instructions, irregularities, orders, rejection of work, etc., shall be transmitted to the contractor in writing. An electronic copy of this transmittal letter should be forwarded immediately to Aero. In order not to delay the execution of the work, oral instructions may be given to the contractor, with the instructions confirmed promptly in writing.

7. Coordinate activities between all utility companies, other prime contractors or any other authorized personnel in the vicinity.

There are several additional items that are more pertinent to building construction:

1. The consultant shall check and approve all the schedule of values and timeline documents furnished by the contractor in a timely manner. Electronic copies shall be submitted to the Aero project manager in a timely manner.

2. The consultant shall aid the airport owner on such details as selection of the color of paint and other details of similar nature not specifically covered in the documents.

3. The consultant shall check the location of all fixtures, outlets, conduit, etc., to determine that all details conform to the plans and architectural specifications.

4. The consultant shall observe the contractor on equipment tests and determine that all mechanical, electrical, plumbing, etc., details meet the specifications.

5. The consultant shall complete "as-built" plans showing all plan changes, including all change orders/contract modifications according to Appendix I. The "as-built" plans shall show all major equipment with details such as size and manufacturer. The "as-built" plans shall show coding, tagging and other details that will aid the airport owner in tracking down problems and making repairs. The plans shall show location details on all buried cables, conduit, pipe, fuel tanks, sewage system, etc., and their approximate depth below ground.

6. The consultant shall secure from the contractor copies of equipment operation manuals, roof bonds, guarantees, waivers of lien, etc., as called for in the architectural specifications. One copy of these documents shall be submitted to the airport owner and one copy, if requested, to Aero.

7. The consultant shall submit a breakdown of all allowance costs, as established by the specifications, to Aero. If the cost of these allowances is more or less than that of the price established by the specifications, a change order/contract modification must be prepared by changing the contract price.

Prior to Notice to Proceed

The contractor is responsible for submitting the appropriate Buy American forms, or a request for waiver, that were included in the bidding documents verifying the steel and manufactured goods are produced in the United States. These must be on file with Aero before an MDOT-let contract can be awarded and on locally let projects the completed forms must be submitted with bids.

After the construction contract has been executed by the contractor and airport owner, copies of the executed contract shall be distributed by the MDOT. In the case of a local let project, please refer to Appendix II.

Pre-Construction Meeting

A pre-construction meeting will be scheduled by Aero or the consultant before construction begins. This meeting will be attended by representatives of the contractor, consultant, FAA (where applicable), subcontractors, airport manager, local officials and any other interested parties. Minutes will be recorded by the consultant with a typed copy being sent to all in attendance.

The project schedule, as prepared by the prime contractor, shall be submitted in writing at this meeting (see example in Appendix I). The schedule will incorporate any dates or times included in the plans and documents, and the proposed starting and completion dates for major items of work. The schedule may be revised at the pre-construction meeting, in which case a copy of the revised schedule should be submitted to the consultant and airport owner for approval. Notification shall be given to the Aero project manager of any approved changes.

Notice to Proceed

Prior to start of construction by the contractor, an official “Notice to Proceed” will be issued to the contractor, consultant and airport owner by Aero for MDOT-let projects. The “Notice to Proceed” specifies when the contractor is authorized to start work. The contractor is required to start work on this date or within 10 calendar days. The consultant shall begin calculating contract time from the actual starting date or 10 calendar days after the contractor is authorized to begin work, whichever is earliest. The actual starting date should appear in the first weekly report. The “Notice to Proceed” also specifies the number of calendar days allotted for the completion of the work. (Sometimes the contract time will be a definite calendar date.) Under certain circumstances, specific information concerning contract time allotted to specific items of work in the contract may be included in the “Notice to Proceed.” The prime contractor is responsible for submitting all subcontract cover sheets and line-item lists to the consultant **prior** to the subcontractor working on the project site.

Start and Stop Orders

Stop orders shall be issued only when it is of the public interest to stop the work. Stop orders may be issued for strikes, lockouts, unusual delays in transportation, extensive periods of unsuitable weather conditions or any unusual delay over which the contractor has no control, or any suspensions ordered by the consultant for causes not the fault of the contractor.

Stop orders are numbered in consecutive order. Each stop order shall indicate the reason for stopping construction operations. The stop order shall also state the specific work covered, if other phases of work are allowed to continue, and the effective date. The stop order shall also state when the work is expected to resume. All copies shall be signed by the consultant and the contractor. The contractor and consultant shall each retain one copy with the consultant forwarding a copy to Aero and the airport owner.

Before the contractor is permitted to resume work that has been stopped by a stop order, the consultant must issue a start order. Start orders are numbered in consecutive order. Each start order shall specify the effective date when work shall resume, the number of the stop order cancelled by this action and the number of calendar days remaining for the work completion. All copies shall be signed by the consultant and the contractor. The contractor and consultant shall each retain one copy with the consultant forwarding a copy to Aero and the airport owner.

Construction

Construction Surveying

The consultant is responsible for the construction survey required to accomplish the contract work. This includes laying out the job, setting benchmarks and grade stakes, taking cross section elevations, and laying out the location and elevation of runway and taxiway lighting and navigational aids. The field method of staking is to be determined by the consultant, if adequate project control is provided, to allow the contractor to comply with project plans and specifications.

If applicable, permanent runway centerline monuments and approach surface markers shall be placed by the contractor at the runway alignment control points, with approach surface locations set by the consultant. Requirements for the location and installation of these markers must be shown in the construction plans.

Inspection and Testing

The General Provisions of the contract documents state the authority of the consultant relative to the quality and acceptability of materials, work performed and rate of progress. Work or materials not meeting specification requirements may be designated for removal and replacement at the contractor's expense.

All operations of the contractor do not require full-time inspection. However, the engineer/inspector shall keep informed as to what activities are in progress and be available in a timely manner when a problem arises or at the site when a major activity is to begin. The consultant is expected to use good judgment in determining when it is necessary to be on the job.

Throughout the life of the construction contract, the consultant is required to conduct testing and project control inspections in such a manner that will be both reliable and efficient. The consultant shall conduct tests and set stakes within a reasonable time after being requested by the contractor and in such a manner that will cause the least amount of delay to the contractor. As soon as tests are completed and results analyzed, the consultant shall inform the contractor of the test results.

It is not the responsibility of the consultant to tell the contractor how to do the work, but it is the responsibility of the consultant to tell the contractor whether the work conforms to the plans and specifications and, consequently, whether the work is accepted or rejected.

The consultant is responsible for the quality assurance field testing required by this manual in relation to the contract specifications. The consultant and inspectors shall be familiar with the tests required and the method of performing each test. The test required can be found in FAA AC 150/5370-10. One copy of each test report, certification, etc., shall be submitted by the consultant to Aero. Test reports will contain the consultant approval or disapproval of the results of the tests. Any acceptance of a failing test must be completely and clearly explained in writing. All documentation shall be made available by the consultant for review when requested by Aero or FAA.

Material samples will be taken by, or in the presence of, the consultant or the approved independent testing laboratory. It is the consultants' responsibility to ensure material test reports and certifications are completed and approved prior to use of the material in the project and prior to the contractor's payment for this material.

Testing is one of the most important duties and responsibilities of the consultant. The material testing section of the contract documents details the tests that are the responsibility of the contractor. At the beginning of the project, the consultant should examine each item of work listed on the plans and specifications and prepare a list of all the tests that are required to be performed. The list should include all the tests, even though some of the tests are the responsibility of the contractor, as denoted in the material testing section. The list of tests will provide a ready reference and check-off list for the consultant and will ensure that all required tests have been performed.

The consultant is required to perform the project control field testing as construction progresses for each item of work before allowing another item of work to start, which would cover up the particular item of work being tested. **No work shall be approved by the consultant unless all of the required testing and inspection has been performed and it has been determined that the work conforms to all of the requirements of the contract documents, plans and specifications.**

If the consultant is in doubt about acceptability of a test result or has a question regarding a construction issue/problem, the consultant should immediately contact the Aero project manager to discuss possible alternatives.

Aggregate Subbase and Base Inspection

The inspector shall have a thorough knowledge of the specification requirements. Testing shall include gradations, physical material test requirements and density. Field inspection shall include but not be limited to proper elevations and thickness determinations.

Bituminous Inspection

To maintain good quality control of asphalt production and construction, the consultant shall have a sufficient number of experienced inspectors (field and plant) for the project during paving operations. A prompt system of communication shall exist between the consultant's plant and field inspectors and the contractor's quality control personnel.

Prior to paving operations, the consultant shall receive from the contractor all of the applicable material acceptance test reports and certifications. This includes coarse and fine aggregate physical tests, mineral filler certification and asphalt cement certification/test results.

No bituminous mixture shall be produced for payment until a job mix formula prepared specifically for this contract has been approved by the consultant. The job mix formula shall be submitted by the contractor at least 10 days prior to paving operations. All test data used to develop the job mix formula shall also be submitted.

A test section using a quantity of bituminous mixture meeting the job mix formula specifications shall be placed as directed by the consultant. The section shall be tested by the consultant as outlined in the bituminous specification. Until the plant is producing the desired mix consistency, frequent testing may be necessary. The test section offers the contractor and the consultant an opportunity to determine the quality of the mixture in place, as well as performance of the plant and paving equipment.

Material acceptance and testing requirements for bituminous pavement are listed in FAA AC 150/5300-10.

Concrete Inspection

To maintain good quality control of concrete production and construction, the consultant shall have a sufficient number of inspectors for the project during paving operations. Prior to paving operations, the consultant shall receive from the contractor all of the applicable material acceptance test reports and certifications. This includes coarse and fine aggregate physical tests, cement certification, approval of admixtures, joint filler, steel reinforcement, calcium chloride and curing compound.

No concrete shall be produced for payment until a job mix formula prepared specifically for this contract has been approved by the consultant. The job mix formula shall be submitted by the contractor at least 10 days prior to paving operations. All test data used to develop the job mix formula shall also be submitted.

Material acceptance and testing requirements for concrete pavement are listed in FAA AC 150/5300-10.

Material Acceptance

Before any material is used at the project site, the proper independent laboratory test or manufacturer's material certification shall be submitted by the contractor. The consultant shall review the documentation submitted by the contractor for compliance with the specifications, and issue approval to proceed. Delivery and weight slips for materials shall be retained by the consultant in the project records. Any equipment that is part of the FAA Airport Lighting Equipment Certification Program must be verified by the consultant prior to installation.

Reports and Records

The consultant is responsible for approving and submitting all test documentation and material certifications to Aero. The acceptance of any test or material not within specification must be documented. Each test report or summary should be signed and approved for submission by the consultant. This documentation must be submitted as part of the final construction contract report and also upon request by the Aero project manager.

Every project must have daily inspection records completed by the consultant or consultant’s inspector, including the date and their signature. These need not be submitted but must be available at the time of the field inspections by Aero or upon request. They will be included in the project records at the end of the project and be retained by the consultant. Entries should include:

a. Daily weather conditions and temperatures.

b. Communications with Aero, FAA, contractor, airport owner, etc.

c. Items of work in progress, estimated quantities, difficulties encountered and methods used in correcting them.

d. Information concerning disputes with the contractor over quality or quantity of materials or work performance.

e. List of equipment in use, number and types of personnel and number of inspectors on job.

f. Starting and completion dates of major items of work and note any delays in progress and reason for the delays.

g. Tests performed and locations.

All test documentation, reports, daily inspection records, letters, etc., must be retained by the consultant for a period of six years from the date of the last payment to the consultant.

Weekly reports (FAA Form 5370-1) are to be submitted by the consultant to Aero as part of the final construction contract report and as requested by the Aero project manager. Both forms are included in Appendix I. The one selected is to be completed in its entirety. If a comment is not applicable, or no comment is necessary, please indicate in each block with "None" or "Not Applicable."

Payments to Contractors

The consultant shall prepare periodic contractor pay estimates, typically on a biweekly basis. For locally let projects, please refer to Appendix II. The consultant will not include any item of work for payment unless the required test reports and material certifications have been received from the contractor for that item of work and are considered acceptable by the consultant. The consultant shall verify that the results of these test reports conform to the specifications.

Contract Modification (Change Orders)

In the event of a need for changes to the construction contract time, quantities or unit prices, the consultant shall prepare the proper contract modification. The consultant shall submit three (four are needed for primary airports since they will need to go to the Airport District Office for approval) original contract modifications signed by the contractor, airport owner and the consultant to Aero for approval and processing. Major changes to scope or budget shall have prior approval by Aero before the work is accomplished.

Payroll Compliance

On contracts with federal participation, the consultant shall submit certified payrolls for the time period covered by the pay estimate. The instructions for completing payroll records are given in Appendix I.

After Construction

Final Inspection

Upon notice from the contractor of substantial completion of the contract, the consultant shall conduct a pre-final inspection with the contractor to assure that all of the contract requirements have been performed, in accordance with the plans and specifications. If the pre-final inspection discloses any unsatisfactory work, the consultant will give the contractor the necessary written instructions. Upon correction of the unsatisfactory work or if the pre-final inspection shows that the contractor has completed all work in accordance to the contract, the consultant will schedule the final inspection with the Aero project manager, airport owner, contractor and FAA (specifically for primary airports as defined by the National Plan of Integrated Airport Systems). All inspection reports, test reports, material certifications, shop drawings, etc., must be submitted to Aero in the final construction contract report if they have not been submitted already. Once the project is accepted, the consultant shall provide the airport owner with the Sponsor Certification for Construction Project Final Acceptance form for signature (see Appendix I). A signed original of the certification form shall be submitted to Aero.

If precision approach path indicators (PAPIs) are installed or moved as part of the construction project, the sponsor will coordinate a reimbursable agreement with FAA prior to construction starting to pay for flight check. After PAPI construction is completed, the sponsor or consultant will need to contact the FAA non-federal navigational aid (NAVAID) coordinator to request a flight check. Once completed, the non-federal NAVAID coordinator will notify the contact person of commissioning and confirm the PAPIs can be turned on. Additional information is available in Appendix II (B) of this manual under Guide for PAPI Flight Check.

Final Payment to Contractor

After the contractor's work has been approved and all contract requirements have been met, the consultant should submit a final contract modification, the contractor's final payment request and any other supporting documentation previously not submitted. Upon completion of Aero's review of the final project documentation, final payment to the contractor will be processed.

Final Payment to Consultant and Project Closeout

Final payment to the consultant will be processed by Aero after all project documentation has been submitted and approved by Aero. The final construction contract report and "as-built" plans shall be prepared in accordance with the guidelines in Appendix I.

Appendix I

A. Progress Schedule

MDOT Progress Schedule Form 1130:
https://mdotjboss.state.mi.us/webforms/GetDocument.htm?fileName=1130.pdf

B. Construction Management Program

On all contracts involving federal funds having paving work with costs in excess of $500,000, the consultant shall provide, in report form, the following information to Aero and FAA (if applicable) at/or prior to the pre-construction meeting. The $500,000 shall apply to the entire paving section from subgrade through surface course. This document shall detail the measures and procedures to be used to comply with the quality control provisions of the construction contract, including but not limited to all quality control provisions and tests required by the specifications. The program shall include as a minimum:

- The name of the individual from the consulting firm representing the sponsor that will have responsibility for contract administration for the project and the authority to take necessary actions to comply with the contract.

- Names of testing laboratories and consulting engineering firms with quality control responsibilities on the project, together with a description of the services to be provided.

- Provide documentation for determining testing laboratories meet the requirements of a recognized program such as the MDOT testing program or a national authority such as the American Society of Testing and Materials. This documentation is evidence of their competence to complete the required tests referenced in the contract specifications.

- A listing of and the qualifications of engineering supervision and construction inspection personnel that will be working on this contract (i.e., education, professional license, certificates including date and issuing agency, experience, etc.).

- A listing of all tests required by the contract specifications, including the type and frequency of tests to be taken, the method of sampling, the applicable test standard and the acceptance criteria or tolerances permitted for each type of test.

- Provide procedures for ensuring that the tests are taken in accordance with the program, that they are documented as required and that the proper corrective actions, where necessary, are undertaken.

The FAA or MDOT, at its discretion, reserves the right to conduct independent tests and to reduce payments accordingly if such independent tests determine that the consultant test results are inaccurate.

C. Instructions for Completing Certified Payroll Records

Applicable for federally funded projects only.

After the Notice to Proceed is issued to a contractor, it is their responsibility to submit certified payroll records from the date they are authorized to commence work to the date work is actually completed. Payrolls will be sent to the consultant and reviewed only for completeness. The consultant may submit these payrolls to Aero either electronically with valid electronic signatures or by paper with original signatures. Payrolls for locally let jobs will be reviewed by the consultant and kept on file. When work has been completed, "FINAL PAYROLL" should be written on the last payroll form submitted to the consultant.

Payrolls must be submitted on Form WH-347 or on another form of the contractor's choosing, providing a statement of compliance with respect to the wages and fringes paid to each employee engaged in the work is attached. This statement must be identical in wording to the statement of compliance on the back of Form WH-347. Payroll form WH-347 can be obtained from Aero or at www.dol.gov/agencies/whd/forms, where WH-347 payroll forms and interactive instructions are available. Each contractor or subcontractor shall submit consecutively numbered payrolls for all weeks worked and "FINAL PAYROLL" should be written on the last payroll form and submitted to the consultant. Payroll records are to be retained for a period of three years from date of completion of the contract.

Form WH-347 will satisfy the requirements of Regulations, Parts 3 and 5 (29 CFR, Subtitle A) as to payrolls submitted in connection with contracts subject to the Davis-Bacon Act and related acts. The web page to access current Davis-Bacon wage rates is www.dol.gov. The contractor and subcontractor must pay their employees Davis-Bacon prevailing wages or more plus fringe benefits as stipulated in the construction contract. A poster and wage rate listing is distributed to the contractor with the notice to proceed and must be displayed at the site at the time the contractor starts work. The poster can be found at www.dol.gov/agencies/whd/government-contracts/construction/posters.

Detailed interactive instructions concerning the preparation of certified payrolls can be found at www.dol.gov/agencies/whd/forms/wh347. Any additional questions can be directed to Aero.

D. Special Instructions for Bituminous Paving Projects

Section 1. Materials Testing

1.1 Aggregates

All aggregate samples required for testing are to be furnished by the contractor. Under the terms of each contract, the contractor is responsible for making arrangements with an independent laboratory to perform material acceptance tests. The contractor is obligated to pay all charges incurred in performing these tests, including shipping expenses, to transport the test samples to the laboratory. The consultant should verify that samples are taken by the contractor in accordance with procedures established in ASTM D75 (coarse and fine aggregates) and ASTM C183 (mineral filler).

No aggregate should be used in the production of mixtures unless it meets the specification requirements and the laboratory test reports have been approved by the consultant. The consultant should verify that all applicable test results have been indicated. Each report furnished must contain a definite statement by the testing laboratory indicating that the material tested does or does not meet the applicable specification.

The aggregate section of the bituminous mix design data form shall be completed by the consultant and given to the contractor prior to or at the preconstruction meeting. The consultant should submit the data form, the laboratory mix design, physical aggregate and asphalt cement test reports to Aero prior to the start of full production.

1.2 Asphalt

During each day of production, the consultant should obtain a minimum of one 16-ounce sample of the hot-mix asphalt. The sample should be drawn from the plant by the contractor. The consultant should direct the contractor to place the samples in sealed containers. The containers should be labeled as follows:

- Date,
- Airport Name,

- Project No.,
- Contract No.,
- Contractor,
- Supplier, and
- Grade of hot-mix asphalt.

The consultant should properly store the samples for a period of 12 months beyond the date of final acceptance of the contract. The samples will be held, should verification of the asphalt physical properties be necessary.

Section 2. Job Mix Formula (Consultant's Responsibilities)

No asphalt mixture shall be placed until an acceptable mix design has been submitted to the resident project representative (RPR) for review and accepted in writing. The RPR's review shall not relieve the contractor of the responsibility to select and proportion the materials to comply with this section. When the project requires asphalt mixtures of differing aggregate gradations and/or binders, a separate job mix formula shall be submitted for each mix. The asphalt mixture shall be designed using procedures contained in Asphalt Institute MS-2 Mix Design Manual, 7th Edition - Mix Design Methods with the following modifications:

Section 3. Job Control

3.1 Field Extraction

Extraction tests for bitumen content and gradation of aggregates will be required twice daily. The consultant will perform these tests in accordance with ASTM D2172 for bitumen content and ASTM D5444, C136 and C117 for aggregate gradation.

The aggregate gradation and bitumen content of the mixture should be maintained within the Range 1 limits in accordance with Table V of Specification P-411. Should a test indicate values outside of these limits, the contractor should be advised that modifications may be needed. Should two consecutive tests on one sieve or bitumen content fall outside of the Range 1 limits, the contractor should be directed to suspend full production. Paving should not begin again until the contractor can provide a mixture within the acceptable limits of the applicable specification.

In instances where the consultant recommends rejection of a bituminous mixture determined to be outside of specification tolerances, the contractor will be permitted to verify the test results at their expense. Only test data provided by the approved mix design laboratory will be accepted as verification of the test results. If the approved mix laboratory is owned by the contractor, an independent laboratory shall verify test results. Where the consultant's field data conflicts with the laboratory data, the independent laboratory data will be the basis for acceptance. It is recommended that a 30-pound sample be taken for the extraction to permit at least three extraction tests to be run from one sample. Although a minimum of one test for each half-day's production is required, this will provide sufficient material to permit verification of the original test results.

3.2 Verification of Marshall Criteria

On projects funded in part by grants from the FAA, the consultant will be required to test bituminous mixtures for conformance with the specified Marshall criteria (i.e., stability, flow, air voids and voids in the mineral aggregate (VMA)). Marshall testing will not be required on mixtures designed for aircraft weights of 12,500 pounds or less.

3.2.1 Frequency of Testing

The frequency of Marshall testing will be as follows:

a. One sample from the first day of full production. Two Marshall specimens shall be prepared from the sample and the test values averaged.

b. One sample taken each day when mixture extractions are determined outside specification tolerances (Range 2). Two Marshall specimens shall be prepared from each sample and the test values averaged.

3.2.2 Preparation and Testing Procedure

Samples for the Marshall specimens should be taken at the plant or job site from the hauling units. The Marshall specimens will be prepared and tested in accordance with the procedures contained in Chapter V of the Asphalt Institute Manual Series No. 2 (MS-2) - Mix Design Methods, current edition. Compaction of the Marshall specimen shall be by means of a flat-faced mechanical hammer.

3.2.3 Purpose and Intent

The purpose of testing bituminous mixtures for Marshall properties is twofold. First, it gives the consultant a check on whether the materials submitted for the mix design were representative of that being used during production. It is not intended that data obtained from field Marshalls is to be used as acceptance criteria of the mixture. However, large discrepancies between field data and that of the mix design should be investigated by the consultant. If the discrepancy is due to a change in materials, the contractor shall be required to provide a new mix design that is representative and meets specification criteria.

A second purpose of Marshall testing is to provide qualitative data on material produced outside of specification tolerances for gradation and/or bitumen content. The Marshall test data can be useful in determining the suitability of "out-of-spec" material to remain in place.

3.2.4 Reporting of Data

The consultant will report Marshall test data to Aero as soon as it is available. The information can be included with the weekly inspection report.

3.3 Compactions

3.3.1 In-Place Air Voids (Pavements Designed for Aircraft Weights 12,500 Pounds and More)

The compaction of pavements designated for aircraft weights of 12,500 pounds and more will be determined based on percent air voids in the completed pavement. Each bituminous paving project will be tested on a lot basis, as defined by the specification. Acceptance and payment of each lot is based upon the percentage of material within the in-place air voids specification limits (1 to 7 percent). **Since the specification is statistically based, it is mandatory that all material sampling be done at random.**

> **Sampling Procedures for Determination of Mixture Maximum Specific Gravity:** Samples for determining the maximum specific gravity of the mixture should be taken from trucks delivering material to the job site. The maximum specific gravity of each sample will be determined in accordance with ASTM D2041 (Rice Test)using Type C or D containers.
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> Two tests shall be run on each sample taken from the first lot. If the results of the two tests run on each sample fall within the tolerance listed in ASTM D2041 for single operator precision, it is not necessary to run two tests on each sample taken from subsequent lots. If the tests do not fall in this tolerance without retesting, two tests shall be run on each sample taken from the next lot and so on until the technician doing the testing is able to show consistency in running the test for an

entire lot. These procedures shall be followed for each technician running ASTM D2041 tests for this contract.

Selection of the hauling unit from which the sample is to be taken shall be based upon the procedures described in ASTM D3665 as is described in the following:

1. Determine the anticipated tonnage for a given lot and divide this tonnage into four equal parts.

2. Determine the anticipated number of truckloads of mixture that will deliver a completed sublot.

   To determine which truck to sample, randomly pick a number from a computerized random number generator within the range of anticipated number of trucks needed. This will be the truck that will be sampled.

Example: There are eight truck loads that make up one sublot for this example; therefore, enter the range of 1 through 8 in a random number generator. The number 5 comes up, so the fifth truck load would be sampled.

The following method may be used to obtain samples from the designated truckloads of material:

1. From two of the conical piles of mixture within the truck, two furrows 3 to 6 inches in depth will be dug extending from the top to the bottom of the pile. Each furrow will follow the slope of the pile and be formed as near its center as possible. Sampling in areas between piles will be avoided because of possible segregation.

2. Three scoops of approximately equal volumes of material will be taken from each furrow, representing the top third, center third and bottom third of the pile, and placed in a suitable container. The material will then be thoroughly mixed together to form one sample. When ready for use, very carefully remove the material so as to keep the sample representative.

3. All samples used for acceptance testing must be identified as to the time, date and truck number from which they were taken.

   Sampling Procedure for Obtaining Bulk Specific Gravity of the In-Place Pavement: Locations of sampling sites for determining the compaction of in-place pavement shall be taken in accordance with the procedures listed in the Asphalt Institute Manual. An acceptable procedure is outlined as follows:

4. From the contract specification, determine the lot size and the number of sublots per lot (n=4).

5. Determine the total length and width of the individual paving lanes placed in the sublot.

6. Using a computerized random number generator, select a random number to represent the length of paving sublot to be tested and another number to represent the width. These are the longitudinal sampling points from the beginning of the sublots measured from the left edge of the paving lane. This process can be repeated until the required number of test locations has been generated.

7. When a location indicates the test will be taken at less than 2 feet from a joint, the test shall be taken at a reasonable distance from the joint using engineering judgment.

   Example: A 121/2-foot paver places a 1,600-foot lot of material in three adjacent lanes (See Figure 1). The contract specifications require four core measurements per lot (one per sublot).

   Divide the lot into four equal sublots (1,600 divided by 4). Then select a random number between 0 and 400 for the longitudinal location and between 0 and 12.5 for the offset location each of the sublots. The sampling locations are as follows:

Sublot	**Longitudinal section of the sublot (from the beginning)**	**Offset***
1	400 feet x Random number = 128 feet	12.5 feet x Random number = 3 feet
2	400 feet x Random number = 195 feet	12.5 feet x Random number = 10 feet
3	400 feet x Random number = 217 feet	12.5 feet x Random number = 4 feet
4	400 feet x Random number = 61 feet	12.5 feet x Random number = 2 feet

* Station offsets referenced from left side of lanes.

Referring to Figure 1, sample increment #1 would be taken 128 feet from the start of sublot 1, #2 would be taken 195 feet from the start of sublot 2, #3 would taken 217 feet from the start of sublot 3, and #4 would taken 61 feet from the start of sublot 4.

3.3.2 Pavement Density (Pavements Designed for Aircraft Weights Less Than 12,500 Pounds)

The density of pavements designed for aircraft weights less than 12,500 pounds will be determined by comparing the density of cores taken from the compacted pavement to the Theoretical Density of the bituminous mixture. The Theoretical Density shall be computed as follows:

$$\text{Theoretical Density} = \frac{100}{\dfrac{\%\ \text{Aggregate by Weight}}{\text{Effective Sp. Gr. of Agg.}} + \dfrac{\%\ \text{Bitumen by Weight}}{\text{Sp. Gr. of Bitumen}}}$$

The effective specific gravity of the aggregate shall be calculated based upon the maximum specific gravity of the mixture designated by the job mix formula.

The consultant should follow procedures listed in the Asphalt Institute Manual to determine the core sampling locations. The procedure previously described in this manual (Section 4.3.l b) is acceptable.

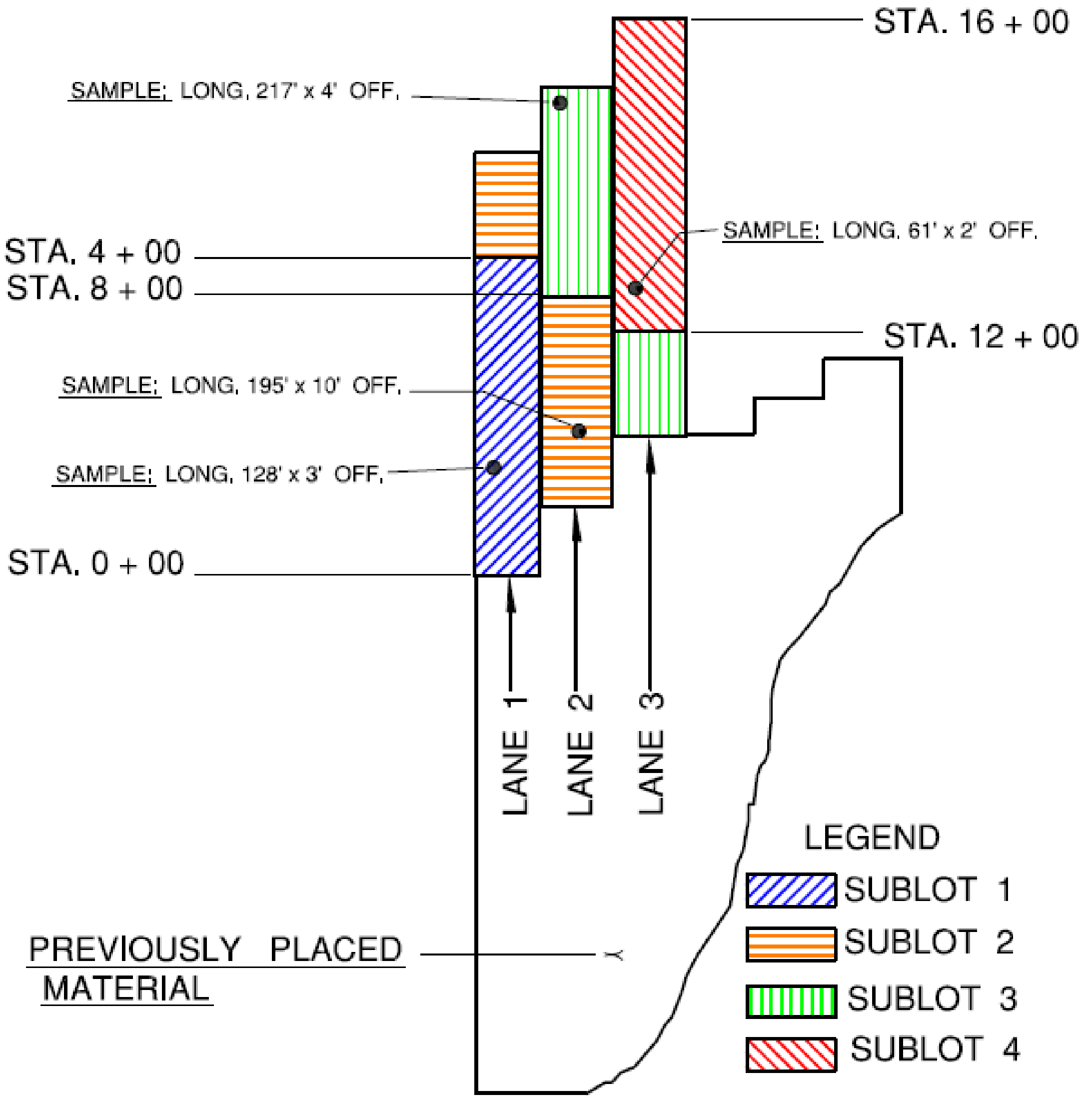

FIGURE 1

MAT DENSITY SAMPLING

N. T. S.

MDOT Forms

Contractor’s Bituminous Mix Design Communication Form 1820:
https://mdotjboss.state.mi.us/webforms/GetDocument.htm?fileName=1820.pdf

Submitted Superpave Mix Design Summary Sheet Form 1858:
https://mdotjboss.state.mi.us/webforms/GetDocument.htm?fileName=1858.pdf

E. Inspector's Daily Report

FAA Form 5370-1:

www.faa.gov/documentLibrary/media/Form/faa-form-5370-1-construction-progress-inspection-2024.pdf

F. Final Construction Contract Report

The final contract report is **required** on all airport projects with the state of Michigan and shall be submitted prior to final payment to the consultant.

The final construction contract report includes important information and documentation on each project and shall be prepared in a way that will benefit those who review it in the future. It will provide vital information if questions arise after the project was completed and will evaluate construction methods and techniques, materials used and any benefits or problems that may be useful information for other projects.

Conclusions and recommendations expressed in the text of the report must be supported by appropriate test data and/or recorded factual data. Referenced data should be incorporated into the body of the report or attached as an appendix.

The following items are needed for an electronic final construction contract report. Aero will insert the documents that are shown in light gray, unless it is a locally let project (then please insert as needed).

To create your final report, please combine your documents in the following order and insert them after the last page of the PDF document. A fillable final report file and instructions on how to populate and submit it can be requested from Aero.

1. Cover Page (optional)

2. Project Summary: Include airport name, location, project number, contract number, general description of the project, name of consultant representative,

name of Aero representative, list of contractors and subcontractors, bid price and final construction cost. If the final project cost was significantly higher or lower than the original bid price, include comments to explain this. Include an explanation of any construction issues or unexpected construction events that took place.

3. Summary of Contract Time: Include start date, completion date, start/stop orders, total contract days allotted and total contract days used. If the project went over the allotted contract days originally set up, include comments to explain this. Also include the amount of any liquidated damages assessed.

4. Safety Plan Compliance Document

5. FAA Airspace Comments

6. Engineer's Estimate

7. Addenda

8. Recommendation to Award (include bid tabs)

9. Pre-construction Meeting Minutes and Attendance Sheets

10. Project Progress Schedule

11. Executed Notice to Proceed

12. Weekly Reports or IDRs: FAA Form 5370-1, or IDRs. If FAA weekly reports are used, paper copies shall be included in this report. If IDRs are used, the electronic IDR file will suffice.

13. Important Correspondence and Progress Meeting Minutes (if applicable)

14. Final Inspection Notes, Attendance Sheet and Punch List

15. Contract Modifications: Include a summary of changes for any unusual circumstances, large changes in quantities not related to normal balancing of as-built items, or extra items that were added to the project.

16. Sponsor Certification for Construction Final Acceptance: Include an original copy with signatures from both the sponsor and consultant. A scanned copy may be accepted as part of this report as long as the signed original is also submitted to Aero separately.

17. Project Photos: Two or three photos showing an overview of the project site pre- and post-construction.

18. Material Certifications: Include a summary listing of all material certifications required for the project, followed by the forms filled out by the contractor and approved by the consultant.

19. Approved Mix Design(s) (if applicable)

20. Material Testing and Test Reports: Include a summary listing of all tests required for the project according to the specifications, followed by actual test reports highlighting any tests that failed or did not meet the applicable test standard. Explain the reasons for accepting the failed test and any penalties or pay reductions applied. Also give reasons for accepting any out-of-tolerance material. An interim test and quality control report shall be submitted, if requested by the Aero or FAA.

21. Shop Drawings/Catalog Cuts: Include a summary listing of all shop drawings required for the project, followed by actual shop drawings approved by the consultant.

22. Material Certifications: Include a summary listing of all material certifications required for the project, followed by the forms filled out by the contractor and approved by the consultant.

23. Construction Contract

24. Post-Certification of Sub-Contract Compliance (Form 1386)

25. Subcontracts and Purchase Orders

26. Construction Management Report (for paving projects more tha $500,000)

27. Executed Consultant Agreements: Executed construction administration contract and subconsultant agreements (if applicable).

28. Executed Subconsultant Agreements

29. Buy American Certificate or Waiver

30. Additional Miscellaneous Information

G. Preparation of "As-Built" Plans

Documenting what was constructed in the field is a very important task of the consultant. This information will serve the airport for many years.

The following information must be submitted to Aero:

- One full-size electronic copy of the "as-built" contract plans (paper copy when requested).
- One full-size electronic copy of the ALP sheets affected by the project (paper copy when requested). These are to be distributed to the FAA, MDOT, the sponsor and the consultant.

Procedures for “As-Built” Plans

Title Sheet

The following information shall be shown:

1. Name and address of prime contractor and all subcontractors.
2. The type of work each contractor performed.
3. The start and completion dates for construction.
4. Final project and grant numbers.

The title sheet shall also include the following statement and the project engineer's signature:

"AS-BUILT" CERTIFICATION

All construction performed under this contract has been completed in full conformity with the drawings, notes and specifications contained in these plans. All changes from plans, as bid, have been noted.

Project Engineer: Date:

Contract Modifications

The final as-built plans should reflect the changes in quantities of all items of work covered by the contract. All contract modifications shall be listed on the summary of contract quantity sheet. Also, the quantity sheet should show the final contract quantities and the final breakdown of federal and non-federal quantities.

All addendums and changes from the original contract shall be noted on each sheet of the plans where the change occurred. This area of change should be enclosed by a prominent identifier and the contract modification number noted, if applicable. Contract modifications adjusting final quantities need only be shown on the quantity sheet and other sheets where the original quantity had been shown. This may be done by striking out the original plan figure and writing in the revised figure for a simple dimension change. More extensive revisions may require a detail to be struck out and redrawn. Larger changes may require additional details to be added to the plans, or in some cases, a new sheet may be required to be added to the as-built plans. Under no circumstances shall items shown on the as-bid plans be erased from the as-built plans.

Cross Sections

Cross sections shall be revised to reflect all changes made from the original design cross sections so that an accurate determination of final quantities can be determined by the consultant. It is not necessary to submit final cross sections with the as-built plans, unless part of original plans.

Soils and Materials

Unusual features of soil conditions (or different soil conditions from the original plans) encountered on the project shall be noted on the as-built plans for future reference. Plans shall reflect the encountered soil along with any plan changes. Borrow pits and waste area locations shall be noted on the plans and elevations given, if critical.

If the original plans allowed the contractor to make a choice from several alternatives in paving materials, such as gradation of materials for subbase, base, concrete, bituminous or any other alternate, this shall be noted. The consultant shall indicate on the as-built plans the actual alternate used for the project.

Earthwork

The consultant is not required to take final elevations on earth grade where these earth grades were built within the tolerances of the plans and specifications, as originally bid by the contractor. The consultant must record as-built elevations and compute final earthwork on borrow areas, areas where muck was removed, areas where stripping of unsuitable material was removed, areas where changes in grade or limits of work were made from that on the bid plans and specifications, and any other areas where a question could arise as to the true amount of excavation to be paid the contractor. Also, the consultant is required to record as-built elevations and compute final earthwork figures on all earth grades where the original cross sections were inadequate to determine a true figure for the excavation item or where, for one reason or another, a doubt exists as to the true quantity of earth excavated.

Pavement

The consultant is not required to take final as-built elevations of pavement sections if the pavement was built within the tolerances of the plans and specifications, as originally bid by the contractor. The consultant is required to take final pavement elevations in those areas where a change in grade was made from the original plans and in those areas where, for one reason or another, the final grade is not within the tolerance of the specifications, or a question arises as to what the final pavement elevation is in any designated area.

Drainage

The consultant is not required to record the as-built information of drainage structures and pipes unless these structures and pipes have not been built to the slope, elevation and location as shown on the original plans, and within the tolerance of the specifications.

Survey Data

Descriptions of all witness to control points and permanent benchmarks should be noted on the final as-built plans. The consultant should indicate the exact location and elevation of all permanent runway centerline monuments and approach surface markers.

Utilities and Other Structures

Drawings must accurately locate all utilities and associated structures with reference to permanent unconcealed reference points, including identifiable depths, and be shown clearly on the plans. Use of permanent buildings and pavements as reference points is preferable. Field structures on unpaved airports should also be located.

Lighting/Electrical

All changes from the original plans in the location of underground duct, cable, runway and taxiway light fixture, floodlight, etc., shall be shown on the as-built plans. All changes in vault equipment or location of vault equipment shall be shown on the as-built plans.

The consultant shall list the manufacturer's name and serial number (if applicable) of each piece of electrical equipment used for the contract. The consultant shall verify an as-built wiring diagram was placed in the vault.

Buildings

The architect shall show on the as-built plans all major equipment with the details, such as size, manufacturer and serial number. These final plans shall show coding, tagging and other details that will aid the owner in tracking down problems and making repairs. The location of all buried cables, conduit, pipe, fuel tanks, sewage systems, etc., and their approximate depth below ground should be shown. Special attention should be given to the location of mechanical items such as heat ducts, risers, radiators, vents, conduits, electrical circuits and outlets and water supply fixtures on the final as-built plans.

Airport Layout Plans

The consultant is required to update each sheet of the ALP to show the construction accomplished under the project. If there is more than one contract in the project, then the consultant should update the ALP within 30 days after all the contracts have been completed in the project. The as-built ALP may be submitted separately from the as-built plans for each contract. A copy of the ALP is to be submitted to Aero along with the electronic file if CADD is available. If no CADD is available, then one PDF copy should be submitted. In addition, a copy shall be submitted to the airport sponsor.

If the consultant did not design the current ALP on file, then the consultant shall request the set of original drawings of the ALP from Aero. The original drawings shall be returned to Aero upon completion.

Should any of the built development differ in location, dimension or height from the development as was proposed on the ALP, the consultant shall reference the Airspace Case Number, indicating FAA approval of the development, which would result from FAA's review of the project safety/phasing plan.

Quality Assurance/Quality Control (QA/QC)

It is the responsibility of the consultant to perform QA/QC review of their as-built plans prior to submitting to Aero. The consultant shall review the as-built plans, sheet by sheet, to determine that all of the information for the final estimate, contract modifications, cross sections, computations, field notes and any other source has been correctly noted on these final plans. The final as-built plans shall show the condition of the field as it actually is at the completion of the project.

H. FAA Sponsor Certification for Construction Project Final Acceptance

www.faa.gov/documentLibrary/media/Form/faa-form-5100-129-sponsor-cert-final-project-2024.pdf

Appendix II

A. Guide for Projects Bid by Local Letting

For projects bid by a local letting, the following procedures should be followed:

1. Consultant submits project plans and Engineering Design Report (30 percent, 60 percent, 90 percent) and/or proposals to Aero for review (proposals only are sufficient for snow removal equipment or small contracts with 8 1/2-inch x 11-inch plan sheets). This also includes submitting the construction safety phasing plan for Aero review. Allow two weeks for Aero review and comments.

2. Submit an electronic copy of the Construction Safety phasing (CSP) plan (11 inches x 17 inches acceptable if readable) after preliminary review by Aero. These should be submitted at least 10 weeks prior to the letting date. The CSP should be entered into the OEAAA database directly at https://oeaaa.faa.gov/oeaaa/external/portal.jsp.

3. The consultant is responsible for assembling final plan and proposal packages for bidding. Refer to the proper proposal requirements attached that are based on funding type.

4. The consultant or sponsor is responsible for advertising the project on MDOT's website and/or in the local paper and/or any widely distributed publication. Projects must be let competitively and awarded to the lowest responsible bidder.

5. The consultant or sponsor is responsible for checking the federal website System for Award Management (SAM) for status of contractors excluded from work prior to awarding a low bid: https://sam.gov/data-services/Exclusions/Public%20V2?privacy=Public.

6. The consultant or sponsor is also responsible for assuring the contractor's bonds are current through the project and no liens exist at the end of the project.

7. Once the project is bid and bids are reviewed, a letter of recommendation to award should be submitted by the consultant to the sponsor with a copy sent to Aero. For projects directly let by the airport owner, the letter of recommendation to award would be sent directly to Aero for concurrence.

8. A concurrence of award letter will be submitted to the sponsor by Aero with a copy to the consultant, if applicable. This signals the notice to award.

9. A Notice of Award is issued by the consultant or sponsor to the contractor. The contractor signs the Notice of Award and returns it to the consultant or sponsor. A copy is distributed to the sponsor, Aero and the contractor.

10. The consultant or sponsor prepares the construction contracts and reviews the insurance and bonding documentation and companies submitted by the contractor. The consultant or sponsor submits original contract documents to the sponsor, Aero and the contractor.

11. A Notice to Proceed is issued by the consultant or sponsor after the construction contract, including the bonds and insurance, are accepted and executed. Copies are submitted to all parties.

12. A pre-construction meeting will be scheduled by the consultant before the project begins. This meeting will be attended by representatives of the contractor, consultant, Aero, FAA (where applicable), subcontractors, the sponsor, local officials and any other interested parties.

13. All certified payrolls will be reviewed by the consultant for compliance with federal wage requirements (see Appendix I, E).

14. Daily project management and submittals are as specified in the General Procedures of this manual.

Proposal Requirements

A. Proposal must include the following if there are **federal funds** in the project:

- Work items and estimated plan quantities
- Requirement for DBE* (20SP-102E-01)
- Sponsor’s insurance requirement (MDOT Form 1304A)
- Notice to Bidders - Certified Payrolls* (20SP-104D and 20SP-107D-02)
- Buy American forms* (found in FAA contract provisions)
- Federal requirements* (FAA required contract provisions found at www.faa.gov/airports/aip/procurement/federal_contract_provisions#requiredProvisions)

- FAA project specifications (e.g., AC 150/5370-10 - Standard Specifications for Construction of Airports)*

- Prohibition of Discrimination in State Contracts - Appendix A (on Aero website)*

- Federal wage rates (Davis-Bacon Act)**

- Sponsor's bonding requirements - bid, lien, and performance bonds

- Special Provision Industrial By-Products (20SP-900A-01)

- Labor Compliance (20SP-107D-01)

- Prompt Payment (20SP-109A-01)

- Other requirements of the sponsor, if applicable

B. Proposal must include the following if there are **no federal funds** in the project:

- Work items and estimated plan quantities

- Sponsor's insurance requirement (can elect to use MDOT's insurance requirements)

- Special Provision for Taxes*

- Special Notice for W9 submittal*

- Project specifications*

- Non-Discrimination in State Contracts (Appendix A)*

- State Prevailing Wage Rates* (send Aero a request with the project number (if applicable), project description/type of work, and county)

- Sponsor's bonding requirements - bid, lien and performance bonds (can elect to use MDOT's bonding requirements)

- Other requirements of the sponsor, if applicable

- Special Provision Industrial By-Products

* Available in electronic format from Aero.

** Go to https://www.access.gpo.gov/davisbacon/ for federal wage rates and obtain online. State prevailing wages are available through Aero by request.

Special provisions:
https://mdotjboss.state.mi.us/SpecProv/viewDocumentSet.htm?documentsetid=31

Payment and Contract Modification Processes

Payments

1. The consultant shall prepare periodic contractor pay applications, typically on a biweekly basis. An original pay estimate application should be submitted for processing.

2. The consultant will not include any item of work for payment unless the required test reports and material certifications have been received from the contractor for that item of work. The consultant shall verify that the results of these test reports conform to the specifications.

Contract Modifications

1. Contract modifications with major changes shall have approval by Aero and the sponsor prior to processing for budget and scope justification.

2. One digital contract modification should be submitted to Aero for approval. The contract modification must have signatures from the consultant, the sponsor, and the contractor prior to submitting to Aero.

3. Contract modifications will be approved by Aero with copies distributed to the contractor, the consultant and the sponsor.

Miscellaneous Documentation

The consultant should follow the same guidelines as listed for projects let through MDOT. This includes procedures outlined for project inspection, construction surveying, material testing, approval of shop drawings, catalog cuts, and material certifications, as-built plans and preparation of a Final Construction Contract Report.

B. Guide for PAPI Flight Check

For projects requiring a precision approach path indicator (PAPI), the following guidelines should be followed.

Prior to Construction

- Submit a plan and profile sheet with the design plans to verify the obstacle clearance surface is clear of any obstructions.

- Determine the person who will be the point of contact to schedule the flight check with FAA. This person will also share any follow-up information regarding the flight check. This can be the consultant or the airport manager.

- The sponsor will coordinate with FAA to set up a reimbursable agreement to fund the FAA flight check. The flight check will **not** be included in the sponsor contract but can be reimbursed to the airport after it is successfully completed. Only one flight check can be paid for with federal funds, so if a second flight check is required, only the successful flight check will be paid.

After Construction is Complete

- Verify that the PAPIs are functioning and are built according to the construction plans.

- The point of contact calls FAA Flight Procedures to schedule a PAPI commissioning flight check. A contact name, usually the airport manager, will need to be given to FAA as contact for the day of the flight check to turn the PAPIs on.

- The flight check date is to be distributed to the contractor, consultant, sponsor and Aero project manager. The contractor and the consultant are to be present during the FAA's flight check. A stop order can be issued to adhere to contract time, if necessary.

After Flight Check

- When the PAPIs pass flight check, they can be put into commission and the contractor can be paid in full for this portion of the work.

- A PAPI data sheet is to be submitted to the Aero project manager after the PAPI is operational. The PAPI data sheet must be submitted as part of the final report for a runway project.

- If Flight Check occurs and the PAPIs fail, the contractor and consultant are responsible for determining why they failed.

- If failure is due to a manufacturer or constructability issue, the contractor is responsible for correcting the issue and a follow-up flight check is to be requested as described previously. Costs for any additional flight check or related expenses will be the responsibility of the contractor.
- If failure is not a manufacture or constructability issue, the consultant is to coordinate with the Aero project manager prior to proceeding with a solution. Once the solution is in place, a follow-up flight check is to be requested as described above. Contractor costs are to be reimbursed for their time for the previous flight check. Either the sponsor or the party responsible for the failed flight check(s) are required to pay for all related costs of the failed flight check(s) since only one flight check is eligible for entitlement funding.

If you require assistance accessing this information or require it in an alternative format, contact the Michigan Department of Transportation's (MDOT) Americans with Disabilities Act (ADA) coordinator at Michigan.gov/MDOT-ADA.