PROJECT MANUAL

TAXIWAY C OFA REHABILITATION

BID NO. PUR-1674 FAA AIG 3-24-0019-070-2024 (DESIGN/CONSTRUCTION)



HAGERSTOWN REGIONAL AIRPORT – HAGERSTOWN, MD

Prepared For:

THE BOARD OF COUNTY COMMISSIONERS OF WASHINGTON COUNTY MARYLAND

Prepared By:



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APRIL 2024

BID DOCUMENTS

SECTION 5 – TECHNICAL SPECIFICATIONS

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Item C-100 Contractor Quality Control Program (CQCP)

100-1 General. Quality is more than test results. Quality is the combination of proper materials, testing, workmanship, equipment, inspection, and documentation of the project. Establishing and maintaining a culture of quality is key to achieving a quality project. The Contractor shall establish, provide, and maintain an effective Contractor Quality Control Program (CQCP) 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 Contractor shall establish a CQCP that will:

- a. Provide qualified personnel to develop and implement the CQCP.
- **b.** Provide for the production of acceptable quality materials.
- c. Provide sufficient information to assure that the specification requirements can be met.
- d. Document the CQCP process.

The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the CQCP has been reviewed and approved by the Resident Project Representative (RPR). No partial payment will be made for materials subject to specific quality control (QC) requirements until the CQCP has been reviewed and approved.

The QC requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the quality assurance (QA) testing requirements. QA testing requirements are the responsibility of the RPR or Contractor as specified in the specifications.

A Quality Control (QC)/Quality Assurance (QA) workshop with the Engineer, Resident Project Representative (RPR), Contractor, subcontractors, testing laboratories, and Owner's representative must be held prior to start of construction. The QC/QA workshop will be facilitated by the Contractor. The Contractor shall coordinate with the Airport and the RPR on time and location of the QC/QA workshop. Items to be addressed, at a minimum, will include:

a. Review of the CQCP including submittals, QC Testing, Action & Suspension Limits for Production, Corrective Action Plans, Distribution of QC reports, and Control Charts.

b. Discussion of the QA program.

c. Discussion of the QC and QA Organization and authority including coordination and information exchange between QC and QA.

d. Establish regular meetings to discuss control of materials, methods and testing.

e. Establishment of the overall QC culture.

100-2 Description of program.

a. General description. The Contractor shall establish a CQCP to perform QC inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. The CQCP shall ensure conformance to applicable specifications and plans with respect to materials, off-

site fabrication, workmanship, construction, finish, and functional performance. The CQCP 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 QC.

b. Contractor Quality Control Program (CQCP). The Contractor shall describe the CQCP in a written document that shall be reviewed and approved by the RPR prior to the start of any production, construction, or off-site fabrication. The written CQCP shall be submitted to the RPR for review and approval at least 14 calendar days before the CQCP Workshop. The Contractor's CQCP and QC testing laboratory must be approved in writing by the RPR prior to the Notice to Proceed (NTP).

The CQCP shall be organized to address, as a minimum, the following:

- (1) QC organization and resumes of key staff
- (2) Project progress schedule
- (3) Submittals schedule
- (4) Inspection requirements
- (5) QC testing plan
- (6) Documentation of QC activities and distribution of QC reports
- (7) Requirements for corrective action when QC and/or QA acceptance criteria are not met
- (8) Material quality and construction means and methods. Address all elements applicable to the project that affect the quality of the pavement structure including subgrade, subbase, base, and surface course. Some elements that must be addressed include, but is not limited to mix design, aggregate grading, stockpile management, mixing and transporting, placing and finishing, quality control testing and inspection, smoothness, laydown plan, equipment, and temperature management plan.

The Contractor must add any additional elements to the CQCP that is necessary to adequately control all production and/or construction processes required by this contract.

100-3 CQCP organization. The CQCP shall be implemented by the establishment of a QC organization. An organizational chart shall be developed to show all QC personnel, their authority, and how these personnel integrate with other management/production and construction functions and personnel.

The organizational chart shall identify all QC staff by name and function, and shall indicate the total staff required to implement all elements of the CQCP, 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 CQCP, the personnel assigned shall be subject to the qualification requirements of paragraphs 100-03a and 100-03b. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

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

a. Program Administrator. The Contractor Quality Control Program Administrator (CQCPA) must be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The CQCPA must have a minimum of five (5) years of experience in QC pavement construction with prior QC experience on a project of comparable size and scope as the contract.

Included in the five (5) years of paving/QC experience, the CQCPA must meet 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) National Institute for Certification in Engineering Technologies (NICET) Civil Engineering Technology Level IV with three (3) years of airport paving experience.

(4) An individual with four (4) years of airport paving experience, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.

The CQCPA must have full authority to institute any and all actions necessary for the successful implementation of the CQCP to ensure compliance with the contract plans and technical specifications. The CQCPA authority must include the ability to immediately stop production until materials and/or processes are in compliance with contract specifications. The CQCPA must report directly to a principal officer of the construction firm. The CQCPA 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. QC technicians. A sufficient number of QC technicians necessary to adequately implement the CQCP must be provided. These personnel must be either Engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II in Civil Engineering Technology or higher, and shall have a minimum of two (2) years of experience in their area of expertise.

The QC technicians must report directly to the CQCPA 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 paragraph 100-6.

(2) Performance of all QC tests as required by the technical specifications and paragraph100-8.

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

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

c. Staffing levels. The Contractor shall provide sufficient qualified QC 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 CQCP shall state where different technicians will be required for different work elements.

100-4 Project progress schedule. Critical QC activities must be shown on the project schedule as required by Section 80, paragraph 80-03, *Execution and Progress*.

100-5 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 as a minimum:

- **a.** Specification item number
- **b.** Item description
- c. Description of submittal
- d. Specification paragraph requiring submittal
- e. Scheduled date of submittal

100-6 Inspection requirements. QC 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 paragraph 100-9.

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

a. During plant operation for material production, QC 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 CQCP shall detail how these and other QC functions will be accomplished and used.

b. During field operations, QC 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 CQCP shall document how these and other QC functions will be accomplished and used.

100-7 Contractor QC testing facility.

a. For projects that include Item P-401, Item P-403, and Item P-404, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM D3666, *Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials*:

- 8.1.3 Equipment Calibration and Checks;
- 8.1.9 Equipment Calibration, Standardization, and Check Records;
- 8.1.12 Test Methods and Procedures

b. For projects that include P-501, the Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM C1077, Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation:

- 7 Test Methods and Procedures
- 8 Facilities, Equipment, and Supplemental Procedures

100-8 QC testing plan. As a part of the overall CQCP, the Contractor shall implement a QC 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 QC tests that the Contractor deems necessary to adequately control production and/or construction processes.

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

- **a.** Specification item number (e.g., P-401)
- **b.** Item description (e.g., Hot Mix Asphalt Pavements)
- **c.** Test type (e.g., gradation, grade, asphalt content)

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

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

f. Responsibility (e.g., plant technician)

g. Control requirements (e.g., target, permissible deviations)

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

All QC test results shall be documented by the Contractor as required by paragraph 100-9.

100-9 Documentation. The Contractor shall maintain current QC records of all inspections and tests performed. These records shall include factual evidence that the required QC 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 RPR daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the CQCPA.

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

a. Daily inspection reports. Each Contractor QC 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 QC 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) Summary of any necessary corrective actions
- (7) Safety inspection.
- (8) Photographs and/or video

The daily inspection reports shall identify all QC inspections and QC tests 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 QC technician and the CQCPA. The RPR shall be provided at least one copy of each daily inspection report on the work day following the day of record. When QC inspection and test results are recorded and transmitted electronically, the results must be archived.

b. Daily test reports. The Contractor shall be responsible for establishing a system that will record all QC 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 RPR prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical QC charts. When QC daily test results are recorded and transmitted electronically, the results must be archived.

100-10 Corrective action requirements. The CQCP 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 CQCP as a whole, and for individual items of work contained in the technical specifications.

The CQCP shall detail how the results of QC inspections and tests will be used for determining the need for corrective action and shall contain clear 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 QC charts for individual QC tests. The requirements for corrective action shall be linked to the control charts.

100-11 Inspection and/or observations by the RPR. All items of material and equipment are subject to inspection and/or observation by the RPR at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate QC 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 inspection and/or observation by the RPR at the site for the same purpose.

Inspection and/or observations by the RPR does not relieve the Contractor of performing QC inspections of either on-site or off-site Contractor's or subcontractor's work.

100-12 Noncompliance.

a. The Resident Project Representative (RPR) will provide written notice to the Contractor of any noncompliance with their CQCP. After receipt of such notice, the Contractor must take corrective action.

b. When QC activities do not comply with either the CQCP or the contract provisions or when the Contractor fails to properly operate and maintain an effective CQCP, and no effective corrective actions have been taken after notification of non-compliance, the RPR will recommend the Owner take the following actions:

- (1) Order the Contractor to replace ineffective or unqualified QC personnel or subcontractors and/or
- (2) Order the Contractor to stop operations until appropriate corrective actions are taken.

METHOD OF MEASUREMENT

100-13 Basis of measurement and payment. Contractor Quality Control Program (CQCP) is for the personnel, tests, facilities and documentation required to implement the CQCP. The CQCP will be paid as a lump sum with the following schedule of partial payments:

- **a.** With first pay request, 25% with approval of CQCP and completion of the Quality Control (QC)/Quality Assurance (QA) workshop.
- **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 20%.
- d. When 75% or more of the original contract is earned, an additional 20%

e. After final inspection and acceptance of project, the final 10%.

BASIS OF PAYMENT

100-1.1 Payment will be made under:

C-100-1.1 Contractor Quality Control Program (CQCP) - lump sum

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

National Institute for Certification in Engineering Technologies (NICET)

ASTM International (ASTM)

ASTM C1077	Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation
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

END OF ITEM C-100

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Item C-105 Mobilization

105-1 Description. This item of work shall consist of, 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.

105-2 Mobilization limit. Mobilization shall be limited to 5 percent of the total project cost.

105-3 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.

105-4 Engineer/RPR field office. An Engineer/RPR field office is not required.

METHOD OF MEASUREMENT

105-5 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 Section 90, paragraph 90-11, *Contractor Final Project Documentation*, the final 10%.

BASIS OF PAYMENT

105-6 Payment will be made under:

C-105-6.1 Mobilization – per lump sum

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Office of Federal Contract Compliance Programs (OFCCP)

Executive Order 11246, as amended

EEOC-P/E-1 – Equal Employment Opportunity is the Law Poster

United States Department of Labor, Wage and Hour Division (WHD)

WH 1321 - Employee Rights under the Davis-Bacon Act Poster

END OF ITEM C-105

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

110-1 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.

110-2 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 test values within the lot by using the following formula:

$$\mathbf{X} = (\mathbf{x}_1 + \mathbf{x}_2 + \mathbf{x}_3 + \dots \mathbf{x}_n) / \mathbf{n}$$

Where: X = Sample average of all sublot test values within a lot

 $x_1, x_2, \ldots x_n =$ Individual sublot test values

n = Number of sublot test values

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

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

Where: $S_n =$ Sample standard deviation of the number of sublot test values in the set

 $d_1, d_2, \dots d_n$ = Deviations of the individual sublot test values x_1, x_2, \dots from the average value X

that is: $d_1 = (x_1 - X), d_2 = (x_2 - X) \dots d_n = (x_n - X)$

n = Number of sublot test values

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

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL WITHIN SPECIFICATION LIMITS (PWL)

$$\mathbf{Q}_{\mathrm{L}} = (\mathbf{X} - \mathbf{L}) / \mathbf{S}_{\mathrm{n}}$$

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 (i.e., 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

 $P_{\rm U}$ = 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 = 96.60A-2 = 97.55A-3 = 99.30A-4 = 98.35n = 4

2. Calculate average density for the lot.

$$\begin{split} &X = (x_1 + x_2 + x_3 + \dots x_n) \ / \ n \\ &X = (96.60 + 97.55 + 99.30 + 98.35) \ / \ 4 \\ &X = 97.95\% \ density \end{split}$$

3. Calculate the standard deviation for the lot.

$$\begin{split} S_n &= \left[((96.60 - 97.95)^2 + (97.55 - 97.95)^2 + (99.30 - 97.95)^2 + (98.35 - 97.95)^2) \right) / (4 - 1) \right]^{1/2} \\ S_n &= \left[(1.82 + 0.16 + 1.82 + 0.16) / 3 \right]^{1/2} \\ S_n &= 1.15 \end{split}$$

4. Calculate the Lower Quality Index Q_L for the lot. (L=96.3)

$$Q_{L} = (X - L) / S_{n}$$

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL WITHIN SPECIFICATION LIMITS (PWL)

 $Q_L = (97.95 - 96.30) / 1.15$ $Q_L = 1.4348$

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 = 5.00A-2 = 3.74A-3 = 2.30A-4 = 3.25

2. Calculate the average air voids for the lot.

 $X = (x_1 + x_2 + x_3 \dots n) / n$ X = (5.00 + 3.74 + 2.30 + 3.25) / 4X = 3.57%

3. Calculate the standard deviation S_n for the lot.

$$\begin{split} S_n &= \left[((3.57 - 5.00)^2 + (3.57 - 3.74)^2 + (3.57 - 2.30)^2 + (3.57 - 3.25)^2) \, / \, (4 - 1) \right]^{1/2} \\ S_n &= \left[(2.04 + 0.03 + 1.62 + 0.10) \, / \, 3 \right]^{1/2} \\ S_n &= 1.12 \end{split}$$

4. Calculate the Lower Quality Index Q_L for the lot. (L= 2.0)

 $\begin{aligned} Q_L &= (X - L) / S_n \\ Q_L &= (3.57 - 2.00) / 1.12 \\ Q_L &= 1.3992 \end{aligned}$

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

$$P_{\rm L} = 97$$

6. Calculate the Upper Quality Index Q_U for the lot. (U= 5.0)

$$\begin{aligned} Q_U &= (U - X) / S_n \\ Q_U &= (5.00 - 3.57) / 1.12 \\ Q_U &= 1.2702 \end{aligned}$$

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

$$P_{\rm U} = 93$$

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. From ASTM E178, Table 1, for n=4 an upper 5% significance level, 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 $(97.95 + 1.463 \times 1.15) = 99.63\%$

OR

less than $(97.95 - 1.463 \times 1.15) = 96.27\%$.

Percent Within	Positive Values of Q (QL and QU)							
Limits (PL and PU)	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 50	0.3568	0.3000 0.2700	0.2822 0.2537	0.2738	0.2691	0.2660	0.2639	0.2624
59 58	0.3222	0.2700		0.2461	0.2418 0.2147	0.2391	0.2372 0.2105	0.2358
58	0.2872 0.2519	0.2400	0.2254 0.1971	0.2186 0.1911	0.2147	0.2122		0.2093 0.1829
56	0.2319	0.2100	0.1971	0.1911	0.1877	0.1855 0.1588	0.1840 0.1575	0.1829
55	0.1806	0.1800	0.1688	0.1030	0.1338	0.1388	0.1373	0.1306
55	0.1806	0.1300	0.1406	0.1363	0.1338	0.1322	0.1312	0.1304
53	0.1087	0.1200	0.0843	0.1090	0.1070	0.1057	0.1049	0.1042
53	0.0725	0.0900	0.0843	0.0817	0.0802	0.0793	0.0786	0.0781
52	0.0725	0.0800	0.0362	0.0344	0.0334	0.0328	0.0324	0.0321
50	0.0000	0.0300	0.0281	0.0272	0.0207	0.0204	0.0202	0.0200

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

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL WITHIN SPECIFICATION LIMITS (PWL)

Percent	Negative Values of Q (Q _L and Q _U)							
Within Limits (PL and PU)	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
12	-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	-1.2000	-1.2683	-1.2419	-1.2492	-1.3032	-1.3081	-1.2002
8	-1.1184	-1.2300	-1.2083	-1.2860	-1.2964	-1.3554	-1.3620	-1.3118
8 7	-1.1269	-1.2000	-1.3508	-1.3323	-1.3401	-1.3334	-1.3620	-1.4265
6	-1.1269	-1.3200	-1.3946	-1.3810	-1.3991	-1.4112	-1.4199	-1.4265
5	-1.1342	-1.3200	-1.3940	-1.4329	-1.4361	-1.5381	-1.4829	-1.5635
4	-1.1405	-1.3800	-1.4407	-1.4887	-1.5871	-1.6127	-1.6313	-1.6454
	-1.1436	-1.3800	-1.4897	-1.6181		-1.6993	-1.7235	-1.6454
3	-1.1496	-1.4100	-1.6016	-1.6982	-1.6661		-1./235	
2	-1.1524 -1.1541	-1.4400	-1.6016	-1.6982	-1.7612 -1.8888	-1.8053 -1.9520	-1.8379	-1.8630 -2.0362

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM E178

Standard Practice for Dealing with Outlying Observations

END OF ITEM C-110

METHOD OF ESTIMATING PERCENTAGE OF MATERIAL WITHIN SPECIFICATION LIMITS (PWL)

Item M-100 Maintenance and Protection of Traffic

DESCRIPTION

1.1- General. This work shall consist of maintaining aircraft and vehicular traffic and protecting the public from damage to person and property within the limits of and for the duration of the Contract. This work shall also consist of implementing and complying with the Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD).

2.1- Maintenance of Aircraft and Vehicular Traffic. The requirements of Section 104, as specified in the Maryland State Department of Transportation State Highway Administration Standard Specifications for Construction and Materials latest issue, plus all revisions and addenda pertaining thereto, shall apply with the following modifications and/or revisions as described below.

The following additional items are specifically included without limiting the generality implied by these Specifications and the Contract Drawings.

- Restoration of all surfaces disturbed as a result of the Contractor's Operations.
- Installation, maintenance, and removal of temporary barricades, warning signs and hazard markings.
- Installation, maintenance, and removal of all temporary markings.
- Installation, maintenance, and removal of temporary taxiway closure markers.
- Testing and maintenance of existing and new lighting circuitry.
- Installation, maintenance, and removal of barricade lights.
- Cleaning and maintenance of all paved areas.
- Security requirements including crossing guards, gate guards, and airfield escorts.
- Communication with the air traffic control tower.
- Dust control for the duration of the project.
- The Contractor shall have a dedicated employee to monitor the airfield radio during the execution of all work.

2.2- Construction Safety and Phasing Plan (CSPP). The Contractor shall complete the work in accordance with the approved Construction Safety and Phasing Plan (CSPP) developed in accordance with AC 150/5370-2, Operational Safety on Airports During Construction, latest edition. The requirements of the CSPP are included in the contract drawings and Appendix A of the Specifications.

If it is 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 is specified and indicated on the approved Construction Safety and Phasing Plan (CSPP) and the contract drawings. When so specified, the Contractor shall complete such portions of the work on or before the date specified or as otherwise specified.

Contractor shall refer to the plans, specifications, and the approved CSPP to identify barricade requirements, temporary and/or permanent markings, transition ramps, airfield lighting, guidance signs and other safety requirements prior to opening up sections of work to traffic.

All Contractors' operations shall be conducted in accordance with the approved project Construction Safety and Phasing Plan (CSPP) and the Safety Plan Compliance Document (SPCD) and the provisions set forth within the current version of AC 150/5370-2, Operational Safety on Airports During Construction, latest edition. 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 SPCD that details how it proposes to comply with the requirements presented within the CSPP. The SPCD must be approved by the RPR/Owner prior to issuance of the Notice to Procced.

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 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 SPCD and that they implement and maintain all necessary measures.

No deviation or modifications may be made to the approved CSPP and SPCD unless approved in writing by the Owner. The necessary coordination to review Contractor proposed modifications to an approved CSPP or approved SPCD can require a significant amount of time.

The Contractor shall obtain approval from the RPR 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 work in accordance with the approved CSPP and SPCD.

In addition to the items listed in 2.1, the following items are specifically included in the CSPP, without limiting the generality implied by these Specifications and the Contract Drawings.

- Preparing the SPCD
- Scheduling and Updates
- Look Ahead Schedules
- Conducting and Attending Construction Progress, Safety and Security Meetings
- Providing flag people
- Installation, maintenance, and removal of flood lights for night time construction.
- Maintenance of access roads and staging areas
- Maintenance and protection of utilities
- Installation, maintenance, and removal of temporary protection during demolition, milling and paving operations
- Cleaning of paved surfaces
- Foreign Object Debris (FOD) removal
- Wildlife Management
- Restoration of surfaces disturbed as a result of the Contractor's operations
- Providing, maintaining, and removing warning signs, hazard markings, barricade lights
- Providing padlocks for access gates
- Providing a guard at access gates
- Security requirements.

METHOD OF MEASUREMENT

3.1-Basis of measurement. Maintenance and Protection of Traffic and CSPP will not be measured, payment will be made on a lump sum basis. The lump sum shall include all items required to satisfy this Specification.

BASIS OF PAYMENT

4.1-Basis of payment. The lump sum price bid for maintenance and protection of traffic and CSPP shall include all equipment, materials, and labor necessary to adequately and safely maintain and protect traffic and to implement and comply with the CSPP and SPCD.

In the event the contract completion date is extended, no additional payment will be made for maintenance and protection of traffic and for the CSPP.

Progress payments will be made for this item in proportion to the total amount of contract work completed, less any deductions for unsatisfactory maintenance and protection of traffic and non-compliance and failure to implement the CSPP and SPCD.

No payment will be made under maintenance and protection of traffic and CSPP for each calendar day during which there are substantial deficiencies in compliance with the Specification requirements of any subsection of this Section as determined by the RPR.

The amount of such calendar day non-payment will be determined by dividing the lump sum amount bid for maintenance and protection of traffic and CSPP by the number of calendar days between the date the Contractor commences work and the date of completion as designated in this proposal, without regard to any extension of time.

If the Contractor fails to maintain and protect traffic and/or fails to comply with or implement the CSPP and SPCD adequately and safely for a period of 24 hours, the Owner shall correct the adverse conditions by any means it deems appropriate and shall deduct the cost of the corrective work from any monies due the Contractor. The cost of this work shall be in addition to the liquidated damages and non-payment for maintenance and protection of traffic and CSPP listed above.

However, where major nonconformance with the requirements of this Specification is noted by the RPR and prompt Contractor compliance is deemed not to be obtainable, all contract work may be stopped by direct order of the RPR regardless of whether corrections are made by the Owner as stated in the paragraph above.

Payment will be made under: Item M-100-4.1

Maintenance and Protection of Traffic and CSPP – per lump sum

END OF ITEM M-100

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Item M-150 Project Survey and Stakeout

DESCRIPTION

1.1- Under this item, the Contractor shall perform all necessary surveying required to construct all elements of the Project as shown on the Contract Drawings and specified in the Proposal and Specifications. This shall include but not be limited to stakeout, layout and elevations for pavement, structures, and control joints, forms, as shown and required, consistent with the current practices. The stakeout survey shall proceed immediately following the award of the Contract and shall be expeditiously progressed to completion in a manner and at a rate satisfactory to the RPR. The Contractor shall keep the RPR fully informed as to the progress of the stakeout survey. All survey work shall be provided under the direction of a Maryland licensed land surveyor.

MATERIALS

2.1- All instruments, equipment, stakes and any other material necessary to perform the work satisfactorily shall be provided by the Contractor.

All stakes used shall be of a type approved by the RPR. It shall be the Contractor's responsibility to maintain these stakes in their proper position and location at all times.

CONSTRUCTION DETAILS

3.1- The exact position of all work shall be established from control points, baseline transit points or other points of similar nature which are shown on the Contract Drawings and/or modified by the RPR. Any error, apparent discrepancy or absence in or of data shown or required for accurately accomplishing the stakeout survey shall be referred to the RPR for interpretation or furnishing when such is observed or required.

The Contractor shall place two offset stakes or references at each centerline station and at such intermediate locations as the RPR may direct. From computations and measurements made by the Contractor, these stakes shall be clearly and legibly marked with the correct centerline station number, offset and cut or fill so as to permit the establishment of the exact centerline location and elevation during construction. If markings become faded or blurred for any reason, the markings shall be restored by the Contractor and at the request of the RPR. He shall locate and place all cut, fill, slope, fine grade or other stakes and points, as the RPR may direct for the proper progress of the work. All control points shall be properly guarded and flagged for easy identification.

All structures shall be staked out by the Contractor at the locations and elevations shown on the Contract Drawings or specified by the RPR. Reference points, baselines, stakes and benchmarks for borrow pits shall be established by the Contractor. Permanent survey marker locations shall be established and referenced by the Contractor.

The Contractor shall be responsible for the accuracy of his work and shall maintain all reference points, stakes, etc., throughout the life of the Contract. Damaged or destroyed points, benchmarks or stakes, or any reference points made inaccessible by the progress of the construction, shall be replaced or transferred by the Contractor. Any of the above points which may be destroyed or damaged shall be transferred by the Contractor before they are damaged or destroyed. All control points shall be referenced by ties to acceptable

objects and recorded. Any alterations or revisions in the ties shall be so noted and the information furnished to the RPR immediately. All stakeout survey work shall be referenced to the centerlines shown on the Contract Drawings. All computations necessary to establish the exact position of the work from control points shall be made and preserved by the Contractor. All computations, survey notes and other records necessary to accomplish the work; shall be neatly made. Such computations, survey notes and other records shall be made available to the RPR upon request and shall become the property of the Owner and delivered to the RPR not later than the date of acceptance of the Contract.

The RPR may check all or any portion of the stakeout survey work or notes made by the Contractor. Any necessary correction to the work shall be made immediately by the Contractor. Such checking by the RPR shall not relieve the Contractor of any responsibilities for the accuracy or completeness of his work.

Prior to the final cross-section survey of the Project by the RPR, the Contractor shall reestablish centerline or baseline points and stationing as required by the RPR.

During the progress of the construction work, the Contractor will be required to furnish all of the surveying and stakeout incidental to the proper location by line and grade for each phase of the work. For paving and any other operation requiring extreme accuracy, the Contractor will re-stake with pins or other acceptable hubs located directly adjacent to the work as stated in the FAA General Provisions Section 50-07 Construction Layout and Stakes.

Any existing stakes, iron pins, survey monuments or other markers defining property lines or airfield features which may be disturbed during construction shall be properly tied into fixed reference points before being disturbed and accurately reset in their proper position upon completion of the work. Just prior to completion of the Contract, the Contractor shall reestablish, if necessary, and retie all control points as permanently as possible and to the satisfaction of the RPR. Contractor shall coordinate and confirm with QA survey firm the reestablishment of all control points. Contractor must also turn over all data collected to the RPR.

METHOD OF MEASUREMENT

4.1- Payment will be made at the lump sum price bid for this item.

BASIS OF PAYMENT

5.1- The lump sum price bid shall include the cost of furnishing all labor, equipment, instruments and all other material necessary to satisfactorily complete the Project surveying and stakeout. Partial payments may be made at the discretion of the RPR and owner as the work progresses.

Payment will be made under:

Item M-150-5.1 Project Survey and Stakeout – per lump sum

END OF ITEM M-150

Item P-101 Preparation/Removal of Existing Pavements

DESCRIPTION

101-1 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 plans.

EQUIPMENT AND MATERIALS

101-2 All equipment and materials shall be specified here and in the following paragraphs or approved by the Resident Project Representative (RPR). The equipment shall not cause damage to the pavement to remain in place.

CONSTRUCTION

101-3.1 Removal of existing pavement.

The Contractor's removal operation shall be controlled to not damage adjacent pavement structure, and base material, cables, utility ducts, pipelines, or drainage structures which are to remain under the pavement.

a. Concrete pavement removal. Not used.

b. Asphalt pavement removal. Asphalt pavement to be removed shall be cut to the full depth of the asphalt pavement 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. The removed asphalt materials shall be disposed of off airport property in accordance with local laws and regulations. Any damage caused by the Contractor's removal process shall be repaired at the Contractor's expense.

c. Repair or removal of Base, Subbase, and/or Subgrade. All failed material including surface, base course, subbase course, and subgrade shall be removed and repaired as shown on the plans or as directed by the RPR. Materials and methods of construction shall comply with the applicable sections of these specifications. Any damage caused by Contractor's removal process shall be repaired at the Contractor's expense. The failed materials removed shall be disposed of off airport property in accordance with local laws and regulations.

101-3.2 Preparation of joints and cracks prior to overlay/surface treatment. Remove all vegetation and debris from cracks to a minimum depth of 1 inch. If extensive vegetation exists, treat the specific area with a concentrated solution of a water-based herbicide approved by the RPR.

Cracks along with soft or sunken spots, indicate that the pavement or the pavement base should be repaired or replaced as stated below.

101-3.3 Removal of foreign substances/contaminates prior to overlay. Removal of foreign substances/contaminates from existing pavement that will affect the bond of the new treatment shall consist of removal of rubber, fuel spills, oil, crack sealer, at least 90% of paint, and other foreign substances from the surface of the pavement. Areas that require removal are designated on the plans and as directed by the RPR in the field during construction.

Chemicals high-pressure water heater scarifier (asphaltic concrete only) cold milling rotary grinding sandblasting may be used. If chemicals are used, they shall comply with the state's environmental protection regulations. Removal methods used shall not cause major damage to the pavement, or to any structure or utility within or adjacent to the work area. Major damage is defined as changing the properties of the pavement, removal of asphalt causing the aggregate to ravel, or removing pavement over 1/8 inch deep. If it is deemed by the RPR that damage to the existing pavement is caused by operational error, such as permitting the application method to dwell in one location for too long, the Contractor shall repair the damaged area without compensation and as directed by the RPR.

Removal of foreign substances shall not proceed until approved by the RPR. Water used for high-pressure water equipment shall be provided by the Contractor at the Contractor's expense. No material shall be deposited on the pavement 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. Not Used.

b. Asphalt pavement repair. The Contractor shall repair all spalled concrete as shown on the plans or as directed by the RPR. 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. Materials and methods of construction shall comply with the applicable sections of these specifications.

101-3.5 Cold milling. Milling shall be performed with a power-operated milling machine or grinder, capable of producing a uniform finished surface. The milling machine or grinder shall operate without tearing or gouging the underlaying surface. The milling machine or grinder shall be equipped with grade and slope controls, and a positive means of dust control. All millings shall be removed and disposed of off Airport property in accordance with all local laws and regulations. If the Contractor mills or grinds deeper or wider than the plans specify, the Contractor shall replace the material removed with new material at the Contractor's Expense.

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 RPR shall layout the area to be milled with a straightedge in increments of 1-foot 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 be repaired by the Contractor at the Contractor's Expense.

b. Profiling, grade correction, or surface correction. The milling machine shall have a minimum width of 7 feet (2 m) and it shall be equipped with electronic grade control devices that will cut the surface to the grade specified. The tolerances shall be maintained within +0 inch and -1/4 inch (+0 mm and -6mm) of the specified grade. The machine must cut vertical edges and have a positive method of dust control. The machine must have the ability to remove the millings or cuttings from the pavement and load them into a truck. All millings shall be removed and disposed of off the airport property in accordance with local laws and regulations.

c. Clean-up. The Contractor shall sweep the milled surface daily and immediately after the milling until all residual materials 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 loose residual material. Waste materials shall be collected and removed from the pavement surface and adjacent areas by sweeping or vacuuming. Waste materials shall be removed and disposed of off Airport property in accordance with local laws and regulations.

101-3.6. Preparation of asphalt pavement surfaces prior to surface treatment.

Clean pavement surface immediately prior to placing the surface treatment 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 RPR. 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 prior to resealing. Prior to application of sealant material, clean and dry the joints of all scale, dirt, dust, old sealant, curing compound, moisture and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method used cleans the joint and does not damage the joint.

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 from each joint face. Immediately after sawing, flush out joint with water and other tools as necessary to completely remove the slurry.

101-3.8.2 Cleaning prior to sealing. Immediately before sealing, joints shall be cleaned by removing any remaining laitance and other foreign material. Allow sufficient time to dry out joints prior to sealing. Joint surfaces will be surface-dry prior to installation of sealant.

101-3.8.3 Joint sealant. Joint material and installation will be in accordance with Item P-605.

101-3.9.2 Removal of Existing Crack Sealant. Existing sealants will be removed by random crack saw. Following sawing any remaining debris will be removed by use of a hot lance combined with oil and water-free compressed air.

101-3.9.3 Crack Sealant. Crack sealant material and installation will be in accordance with Item P-605.

101-3.9.4 Removal of Pipe and other Buried Structures. Not used.

METHOD OF MEASUREMENT

101-4.1 Cold milling. The unit of measurement for cold milling shall be the number of square yards milled by the Contractor. The location and average depth of the cold milling shall be as shown on the plans.

101-4.2 Removal of Existing Joint Sealant. The unit of measurement for the removal of existing joint sealant shall be the number of linear feet of sealant removed. The location of joint sealant removal shall be as shown on the plans.

101-4.3 Joint and crack repair. Joint filler shall be measured and paid under P-605. Crack repair shall be considered incidental to Item P-603.

101-4.4 Removal of Foreign Substances/Contaminants. No separate measurement of payment will be made. The work covered by this section shall be considered as a subsidiary obligation of the Contractor and covered under the other contract items.

BASIS OF PAYMENT

101-5.1 Payment. Payment shall be made at the 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-101-5.1 Cold Milling, 3-Inch Depth – per square yard

Item P-101-5.2 Removal of Existing Joint Sealant – per linear foot

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

Advisory Circulars (AC)

AC 150/5380-6 Guidelines and Procedures for Maintenance of Airport Pavements.

ASTM International (ASTM)

ASTM D6690 Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

END OF ITEM P-101

Item P-401 Asphalt Mix Pavement

DESCRIPTION

401-1.1 This item shall consist of pavement courses composed of mineral aggregate and asphalt binder mixed in a central mixing plant and placed on a prepared base or stabilized 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, natural sand, and mineral filler, as required. The aggregates should have no known history of detrimental pavement staining due to ferrous sulfides, such as pyrite. Coarse aggregate is the material retained on the No. 4 (4.75 mm) sieve. Fine aggregate is the material passing the No. 4 (4.75 mm) sieve.

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 asphalt material and free from organic matter and other deleterious substances. Coarse aggregate material requirements are given in the table below.

Material Test	Requirement	Standard
Resistance to Degradation	Loss: 40% maximum	ASTM C131
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 12% maximum using Sodium sulfate - or - 18% maximum using magnesium sulfate	ASTM C88
Clay lumps and friable particles	0.3% maximum	ASTM C142
Percentage of Fractured Particles	For pavements designed for aircraft gross weights of 60,000 pounds (27200 kg) or more: Minimum 75% by weight of particles with at least two fractured faces and 85% with at least one fractured face ¹	ASTM D5821
	For pavements designed for aircraft gross weights less than 60,000 pounds (27200 kg): Minimum 50% by weight of particles with at least two fractured faces and 65% with at least one fractured face ¹	
Flat, Elongated, or Flat and Elongated Particles	8% maximum, by weight, of flat, elongated, or flat and elongated particles at 5:1 ²	ASTM D4791

Coarse Aggregate Material Requirements

¹ 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.

² A flat particle is one having a ratio of width to thickness greater than five (5); an elongated particle is one having a ratio of length to width greater than five (5).

b. Fine aggregate. Fine aggregate shall consist of clean, sound, tough, durable, angular shaped particles produced by crushing stone, slag, or gravel and shall be free from coatings of clay, silt, or other objectionable matter. Natural (non-manufactured) sand may be used to obtain the gradation of the fine

aggregate blend or to improve the workability of the mix. Fine aggregate material requirements are listed in the table below.

Material Test	Requirement	Standard
Liquid limit	25 maximum	ASTM D4318
Plasticity Index	4 maximum	ASTM D4318
Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate	Loss after 5 cycles: 10% maximum using Sodium sulfate - or - 15% maximum using magnesium sulfate	ASTM C88
Clay lumps and friable particles	0.3% maximum	ASTM C142
Sand equivalent	45 minimum	ASTM D2419

Fine Aggregate Material Requirements

c. Sampling. ASTM D75 shall be used in sampling coarse and fine aggregate.

401-2.2 Mineral filler. Mineral filler (baghouse fines) may be added in addition to material naturally present in the aggregate. Mineral filler shall meet the requirements of ASTM D242.

Mineral Filler Requirements

Material Test	Requirement	Standard
Plasticity Index	4 maximum	ASTM D4318

401-2.3 Asphalt binder. Asphalt binder shall conform to ASTM D6373 Performance Grade (PG) 64H-22.

401-2.4 Anti-stripping agent. Any anti-stripping agent or additive (anti-strip) shall be heat stable and shall not change the asphalt binder grade beyond specifications. Anti-strip shall be an approved material of the Department of Transportation of the State in which the project is located.

COMPOSITION

401-3.1 Composition of mixture(s). The asphalt mix shall be composed of a mixture of aggregates, filler and anti-strip agent if required, and asphalt binder. The 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) laboratory. The laboratory used to develop the JMF shall possess a current certificate of accreditation, listing D3666 from a national accrediting authority and all test methods required for developing the JMF; and be listed on the accrediting authority's website. A copy of the laboratory's current accreditation and accredited test methods shall be submitted to the Resident Project Representative (RPR) prior to start of construction.

401-3.3 Job mix formula (JMF). No asphalt mixture shall be placed until an acceptable mix design has been submitted to the 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 JMF shall be submitted for each mix. Add anti-stripping agent to meet tensile strength requirements.

The JMF shall be prepared by an accredited laboratory that meets the requirements of paragraph 401-3.2. The asphalt mixture shall be designed using procedures contained in Asphalt Institute MS-2 Mix Design Manual, 7th Edition. Samples shall be prepared and compacted using the gyratory compactor in accordance with ASTM D6925.

Should a change in sources of materials be made, a new JMF must be submitted to the RPR for review and accepted in writing before the new material is used. After the initial production JMF has been approved by the RPR and a new or modified JMF is required for whatever reason, the subsequent cost of the new or modified JMF, including a new control strip when required by the RPR, will be borne by the Contractor.

The RPR may request samples at any time for testing, prior to and during production, to verify the quality of the materials and to ensure conformance with the applicable specifications.

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 proposed for project use.

The JMF shall be dated, and stamped or sealed by the responsible professional Engineer of the laboratory and shall include the following items as a minimum:

- Manufacturer's Certificate of Analysis (COA) for the asphalt binder used in the JMF in accordance with paragraph 401-2.3. Certificate of asphalt performance grade is with modifier already added, if used and must indicate compliance with ASTM D6373. For plant modified asphalt binder, certified test report indicating grade certification of modified asphalt binder.
- Manufacturer's Certificate of Analysis (COA) for the anti-stripping agent if used in the JMF in accordance with paragraph 401-2.4.
- Certified material test reports for the course and fine aggregate and mineral filler in accordance with paragraphs 401-2.1.
- Percent passing each sieve size for individual gradation of each aggregate cold feed and/or hot bin; percent by weight of each cold feed and/or hot bin used; and the total combined gradation in the JMF.
- Specific Gravity and absorption of each coarse and fine aggregate.
- Percent fractured faces.
- Percent by weight of flat particles, elongated particles, and flat and elongated particles (and criteria).
- Percent of asphalt.
- Number of gyrations
- Laboratory mixing and compaction temperatures.
- Supplier-recommended field mixing and compaction temperatures.
- Plot of the combined gradation on a 0.45 power gradation curve.
- Graphical plots of air voids, voids in the mineral aggregate (VMA), and unit weight versus asphalt content. To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.
- Tensile Strength Ratio (TSR).
- Type and amount of Anti-strip agent when used.

- Asphalt Pavement Analyzer (APA) results.
- Date the JMF was developed. Mix designs that are not dated or which are from a prior construction season shall not be accepted.

Test Property	Value	Test Method	
Number of blows or gyrations	75		
Air voids (%)	3.5	ASTM D3203	
Percent voids in mineral aggregate (VMA), minimum	See Table 2	ASTM D6995	
Tensile Strength Ratio (TSR) ¹	not less than 80 at a saturation of 70-80%	ASTM D4867	
Asphalt Pavement Analyzer (APA) ²	Less than 10 mm @ 4000 passes	AASHTO T340 at 250 psi hose pressure at 64°C test temperature	

Table 1. Asphalt Design Criteria

¹ Test specimens for TSR shall be compacted at 7 ± 1.0 % air voids. In areas subject to freeze-thaw, use freeze-thaw conditioning in lieu of moisture conditioning per ASTM D4867[.]

² AASHTO T340 at 100 psi hose pressure at 64°C test temperature may be used in the interim. If this method is used the required Value shall be less than 5 mm @ 8000 passes

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 2 when tested in accordance with ASTM C136 and ASTM C117.

The gradations in Table 2 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.

Sieve Size	Percentage by Weight Passing Sieves
1 inch (25.0 mm)	100
3/4 inch (19.0 mm)	90-100
1/2 inch (12.5 mm)	68-88
3/8 inch (9.5 mm)	60-82
No. 4 (4.75 mm)	45-67
No. 8 (2.36 mm)	32-54
No. 16 (1.18 mm)	22-44
No. 30 (600 μm)	15-35
No. 50 (300 μm)	9-25
No. 100 (150 μm)	6-18
No. 200 (75 μm)	3-6
Minimum Voids in Mineral Aggregate (VMA)	14.0
Stone or gravel	4.5-7.0
Recommended Minimum Construction Lift Thickness	3 inch

Table 2. Aggregate - Asphalt Pavements

¹To achieve minimum VMA during production, the mix design needs to account for material breakdown during production.

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.

401-3.4 Reclaimed asphalt pavement (RAP). RAP shall not be used.

401-3.5 Control Strip. Full production shall not begin until an acceptable control strip has been constructed and accepted in writing by the RPR. The Contractor shall prepare and place a quantity of asphalt according to the JMF. The underlying grade or pavement structure upon which the control strip is to be constructed shall be the same as the remainder of the course represented by the control strip.

The Contractor will not be allowed to place the control strip until the Contractor quality control program (CQCP), showing conformance with the requirements of paragraph 401-5.1, has been accepted, in writing, by the RPR.

The control strip will consist of at least 250 tons or 1/2 sublot, whichever is greater. The control strip shall be placed in two lanes of the same width and depth to be used in production with a longitudinal cold joint. The cold joint must be cut back in accordance with paragraph 401-4.14 using the same procedure that will be used during production. The cold joint for the control strip will be an exposed construction joint at least four (4) hours old or when the mat has cooled to less than 160°F (71°C). The equipment used in construction of the control strip shall be the same type, configuration and weight to be used on the project.

The control strip will be considered acceptable by the RPR if the gradation, asphalt content, and VMA are within the action limits specified in paragraph 401-5.5a; and Mat density, air voids, and joint density meet the requirements specified in paragraphs 401-6.2.

If the control strip is unacceptable, necessary adjustments to the JMF, plant operation, placing procedures, and/or rolling procedures shall be made and another control strip shall be placed. Unacceptable control strips shall be removed at the Contractor's expense.

Payment will only be made for an acceptable control strip in accordance with paragraph 401-8.1 using a lot pay factor equal to 100.

CONSTRUCTION METHODS

401-4.1 Weather limitations. The asphalt 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 RPR, if requested; however, all other requirements including compaction shall be met.

Mad This law and	Base Temperature (Minimum)		
Mat Thickness	°F	°C	
3 inches (7.5 cm) or greater	40 ¹	4	
Greater than 2 inches (50 mm) but less than 3 inches (7.5 cm)	45	7	

 Table 4. Surface Temperature Limitations of Underlying Course

401-4.2 Asphalt plant. Plants used for the preparation of asphalt shall conform to the requirements of American Association of State Highway and Transportation Officials (AASHTO) M156 including the following items.

a. Inspection of plant. The RPR, or RPR'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.

b. Storage bins and surge bins. The asphalt mixture stored in storage and/or surge bins shall meet the same requirements as asphalt mixture loaded directly into trucks. Asphalt mixture shall not be stored in storage and/or surge bins for a period greater than twelve (12) hours. If the RPR determines there is an excessive heat loss, segregation, or oxidation of the asphalt mixture due to temporary storage, temporary storage shall not be allowed.

401-4.3 Aggregate stockpile management. Aggregate stockpiles shall be constructed in a manner that prevents segregation and intermixing of deleterious materials. Aggregates from different sources shall be stockpiled, weighed and batched separately at the asphalt batch plant. Aggregates that have become segregated or mixed with earth or foreign material shall not be used.

A continuous supply of materials shall be provided to the work to ensure continuous placement.

401-4.4 Hauling equipment. Trucks used for hauling asphalt shall have tight, clean, and smooth metal beds. To prevent the asphalt 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 RPR. 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.

401-4.4.1 Material transfer vehicle (MTV). Material transfer vehicles are not required.

401-4.5 Asphalt pavers. Asphalt pavers shall be self-propelled with an activated heated screed, capable of spreading and finishing courses of asphalt 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 asphalt paver shall be equipped with a control system capable of automatically maintaining the specified screed grade and elevation.

If 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.

The paver shall be capable of paving to a minimum width specified in paragraph 401-4.12.

401-4.6 Rollers. The number, type, and weight of rollers shall be sufficient to compact the asphalt to the required density while it is still in a workable condition without crushing of the aggregate, depressions or other damage to the pavement surface. Rollers shall be in good condition, clean, and capable of operating at slow speeds to avoid displacement of the asphalt. All rollers shall be specifically designed and suitable for compacting asphalt 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.

401-4.7 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 supply a qualified technician during all paving operations to calibrate the gauge and obtain accurate density readings for all new asphalt. These densities shall be supplied to the RPR upon request at any time during construction. No separate payment will be made for supplying the density gauge and technician.

401-4.8 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 when added to the aggregate. The temperature of modified asphalt binder shall be no more than 350°F when added to the aggregate.

401-4.9 Preparation of mineral aggregate. The aggregate for the asphalt 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 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.

401-4.10 Preparation of Asphalt mixture. The aggregates and the asphalt binder shall be weighed or metered and mixed 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 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 asphalt upon discharge shall not exceed 0.5%.

401-4.11 Application of Prime and Tack Coat. Immediately before placing the asphalt mixture, the underlying course shall be cleaned of all dust and debris.

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A prime coat in accordance with Item P-602 shall be applied to aggregate base prior to placing the asphalt mixture.

A tack coat shall be applied in accordance with Item P-603 to all vertical and horizontal asphalt and concrete surfaces prior to placement of the first and each subsequent lift of asphalt mixture.

401-4.12 Laydown plan, transporting, placing, and finishing. Prior to the placement of the asphalt, the Contractor shall prepare a laydown plan with the sequence of paving lanes and width to minimize the number of cold joints; the location of any temporary ramps; laydown temperature; and estimated time of completion for each portion of the work (milling, paving, rolling, cooling, etc.). The laydown plan and any modifications shall be approved by the RPR.

Deliveries shall be scheduled so that placing and compacting of asphalt 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 approximately ambient temperature. The Contractor, at their expense, shall be responsible for repair of any damage to the pavement caused by hauling operations.

Contractor shall survey each lift of asphalt surface course and certify to RPR that every lot of each lift meets the grade tolerances of paragraph 401-6.2d before the next lift can be placed.

Edges of existing asphalt pavement abutting the new work shall be saw cut and the cut off material and laitance removed. Apply a tack coat in accordance with P-603 before new asphalt material is placed against it.

The speed of the paver shall be regulated to eliminate pulling and tearing of the asphalt mat. Placement of the asphalt mix shall begin along the centerline of a crowned section or on the high side of areas with a one way slope unless shown otherwise on the laydown plan as accepted by the RPR. The asphalt mix shall be placed in consecutive adjacent lanes having a minimum width of **15** feet except where edge lanes require less width to complete the area. Additional screed sections attached to widen the paver to meet the minimum lane width requirements must include additional auger sections to move the asphalt mixture uniformly along the screed extension.

The longitudinal joint in one course shall offset the longitudinal joint in the course immediately below by at least one 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 asphalt may be spread and luted by hand tools.

The RPR may at any time, reject any batch of asphalt, on the truck or placed in the mat, which is rendered unfit for use due to contamination, segregation, incomplete coating of aggregate, or overheated asphalt mixture. 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 RPR, and if it can be demonstrated in the laboratory, in the presence of the RPR, that such material was erroneously rejected, payment will be made for the material at the contract unit price.

Areas of segregation in the surface course, as determined by the RPR, shall be removed and replaced at the Contractor's expense. The area shall be removed by saw cutting and milling a minimum of the construction lift thickness as specified in paragraph 401-3.3, Table 2 for the approved mix design. The area to be removed and replaced shall be a minimum width of the paver and a minimum of 10 feet (3 m) long.

401-4.13 Compaction of asphalt mixture. After placing, the asphalt mixture shall be thoroughly and uniformly compacted by self-propelled rollers. The surface shall be compacted as soon as possible when the asphalt 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 surface defects and/or displacement occurring as a result of the roller, or from any other cause, shall be corrected at the Contractor's expense.

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 asphalt to the roller, the wheels shall be equipped with a scraper and kept moistened with water as necessary.

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

Any asphalt 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.

401-4.14 Joints. The formation of all joints shall be made 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 asphalt 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 asphalt 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 with a cutting wheel or pavement saw a maximum of 3 inches (75 mm) to expose a clean, sound, uniform vertical surface for the full depth of the course. All cutback material and any laitance produced from cutting joints shall be removed from the project. Asphalt tack coat in accordance with P-603 shall be applied to the clean, dry joint prior to placing any additional fresh asphalt against the joint. The cost of this work shall be considered incidental to the cost of the asphalt.

401-4.15 Saw-cut grooving. Not used.

401-4.16 Diamond grinding. Diamond grinding shall be completed prior to pavement grooving. Diamond grinding shall be accomplished by sawing with saw blades impregnated with industrial diamond abrasive.

Diamond grinding shall be performed with a machine designed specifically for diamond grinding capable of cutting a path at least 3 feet (0.9 m) wide. The saw blades shall be 1/8-inch (3-mm) wide with a sufficient number of blades to create grooves between 0.090 and 0.130 inches (2 and 3.5 mm) wide; and peaks and ridges approximately 1/32 inch (1 mm) higher than the bottom of the grinding cut. The actual number of blades will be determined by the Contractor and depend on the hardness of the aggregate. Equipment or grinding procedures that cause ravels, aggregate fractures, spalls or disturbance to the pavement will not be permitted. Contractor shall demonstrate to the RPR that the grinding equipment will produce satisfactory results prior to making corrections to surfaces.Grinding will be tapered in all directions to provide smooth transitions to areas not requiring grinding. The slurry resulting from the grinding operation shall be continuously removed and the pavement left in a clean condition. The Contractor shall apply a surface treatment per P-608 to all areas that have been subject to grinding.

401-4.17 Nighttime paving requirements. The Contractor shall provide adequate lighting during any nighttime construction. A lighting plan shall be submitted by the Contractor and approved by the RPR prior to the start of any nighttime work. All work shall be in accordance with the approved CSPP and lighting plan.

CONTRACTOR QUALITY CONTROL (CQC)

401-5.1 General. The Contractor shall develop a Contractor Quality Control Program (CQCP) in accordance with Item C-100. No partial payment will be made for materials without an approved CQCP.

401-5.2 Contractor quality control (QC) facilities. The Contractor shall provide (if qualified) or contract for testing facilities in accordance with Item C-100. The RPR shall be permitted unrestricted access to inspect the Contractor's QC facilities and witness QC activities. The RPR will advise the Contractor in writing of any noted deficiencies concerning the QC 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.

401-5.3 Contractor QC testing. The Contractor shall perform all QC tests necessary to control the production and construction processes applicable to these specifications and as set forth in the approved CQCP. 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 QC Testing Plan shall be developed as part of the CQCP.

a. Asphalt content. A minimum of two tests shall be performed per day in accordance with ASTM D6307 or ASTM D2172 for determination of asphalt content. When using ASTM D6307, the correction factor shall be determined as part of the first test performed at the beginning of plant production; and as part of every tenth test performed thereafter. The asphalt content for the day will be determined by averaging the test results.

b. Gradation. Aggregate gradations shall be determined a minimum of twice per day 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 day in accordance with ASTM C566.

d. Moisture content of asphalt. The moisture content shall be determined once per day in accordance with AASHTO T329 or ASTM D1461.

e. Temperatures. Temperatures shall be checked, at least four times per day, at necessary locations to determine the temperatures of the dryer, the asphalt binder in the storage tank, the asphalt at the plant, and the asphalt 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. Smoothness for Contractor Quality Control.

The Contractor shall perform smoothness testing in transverse and longitudinal directions daily to verify that the construction processes are producing pavement with variances less than ¹/₄ inch in 12 feet, identifying areas that may pond water which could lead to hydroplaning of aircraft. If the smoothness criteria is not met, appropriate changes and corrections to the construction process shall be made by the Contractor before construction continues

The Contractor may use a 12-foot (3.7 m) straightedge or a rolling inclinometer meeting the requirements of ASTM E2133. Straight-edge testing shall start 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. Testing shall be continuous across all joints. The 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 the two high points. If the rolling

inclinometer is used, the data may be evaluated using the FAA profile program, ProFAA, using the 12-foot straightedge simulation function.

Smoothness readings shall not be made across grade changes or cross slope transitions. The transition between new and existing pavement shall be evaluated separately for conformance with the plans.

(1) **Transverse measurements.** Transverse measurements shall be taken for each day's production placed. Transverse measurements shall be taken perpendicular to the pavement centerline each 50 feet (15 m) or more often as determined by the RPR. The joint between lanes shall be tested separately to facilitate smoothness between lanes.

(2) Longitudinal measurements. Longitudinal measurements shall be taken for each day's production placed. Longitudinal tests shall be parallel to the centerline of paving; at the center of paving lanes when widths of paving lanes are less than 20 feet (6 m); and at the third points of paving lanes when widths of paving lanes are 20 ft (6 m) or greater.

Deviations on the final surface course in either the transverse or longitudinal direction that will trap water greater than 1/4 inch (6 mm) shall be corrected with diamond grinding per paragraph 401-4.16 or by removing and replacing the surface course to full depth. Grinding shall be tapered in all directions to provide smooth transitions to areas not requiring grinding. All areas in which diamond grinding has been performed shall be subject to the final pavement thickness tolerances specified in paragraph 401-6.1d(3). Areas that have been ground shall be sealed with a surface treatment in accordance with Item P-608. To avoid the surface treatment creating any conflict with runway or taxiway markings, it may be necessary to seal a larger area.

Control charts shall be kept to show area of each day's placement and the percentage of corrective grinding required. Corrections to production and placement shall be initiated when corrective grinding is required. If the Contractor's machines and/or methods produce significant areas that need corrective actions in excess of 10 percent of a day's production, production shall be stopped until corrective measures are implemented by the Contractor.

h. Grade. Grade shall be evaluated daily to allow adjustments to paving operations when grade measurements do not meet specifications. As a minimum, grade shall be evaluated prior to and after the placement of the first lift and after placement of the surface lift.

Measurements will be taken at appropriate gradelines (as a minimum at center and edges of paving lane) and longitudinal spacing as shown on cross-sections and plans. The final surface of the pavement will not vary from the gradeline elevations and cross-sections shown on the plans by more than 1/2 inch (12 mm) vertically and 0.1 feet (30 mm) laterally. The documentation will be provided by the Contractor to the RPR within 24 hours.

Areas with humps or depressions that exceed grade or smoothness criteria and that retain water on the surface must be ground off provided the course thickness after grinding is not more than 1/2 inch (12 mm) less than the thickness specified on the plans. Grinding shall be in accordance with paragraph 401-4.16.

The Contractor shall repair low areas or areas that cannot be corrected by grinding by removal of deficient areas to the depth of the final course plus $\frac{1}{2}$ inch and replacing with new material. Skin patching is not allowed.

401-5.4 Sampling. When directed by the RPR, 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.

401-5.5 Control charts. The Contractor shall maintain linear control charts for both individual measurements and range (i.e. difference between highest and lowest measurements) for aggregate

gradation, asphalt content, and VMA. The VMA for each day will be calculated and monitored by the QC laboratory.

Control charts shall be posted in a location satisfactory to the RPR and 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 RPR 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:

Sieve	Action Limit	Suspension Limit
3/4 inch (19.0 mm)	±6%	±9%
1/2 inch (12.5 mm)	±6%	±9%
3/8 inch (9.5 mm)	±6%	±9%
No. 4 (4.75 mm)	±6%	±9%
No. 16 (1.18 mm)	±5%	±7.5%
No. 50 (300 µm)	±3%	±4.5%
No. 200 (75 µm)	±2%	±3%
Asphalt Content	±0.45%	±0.70%
Minimum VMA	-0.5%	-1.0%

Control Chart Limits for Individual Measurements

b. Range. Control charts shall be established to control gradation process variability. The range shall be plotted 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	
Sieve	Suspension Li

Sieve	Suspension Limit
1/2 inch (12.5 mm)	11%
3/8 inch (9.5 mm)	11%
No. 4 (4.75 mm)	11%
No. 16 (1.18 mm)	9%
No. 50 (300 µm)	6%
No. 200 (75 μm)	3.5%
Asphalt Content	0.8%

c. Corrective Action. The CQCP shall indicate that appropriate action shall be taken when the process is believed to be out of tolerance. The Plan shall contain 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.

401-5.6 QC reports. The Contractor shall maintain records and shall submit reports of QC activities daily in accordance with Item C-100.

MATERIAL ACCEPTANCE

401-6.1 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 RPR at no cost to the Contractor except that coring as required in this section shall be completed and paid for by the Contractor.

a. Quality assurance (QA) testing laboratory. The QA testing laboratory performing these acceptance tests will be accredited in accordance with ASTM D3666. The QA laboratory accreditation will be current and listed on the accrediting authority's website. All test methods required for acceptance sampling and testing will be listed on the lab accreditation.

b. Lot size. A standard lot will be equal to one day's production divided into approximately equal sublots of between 400 to 600 tons. When only one or two sublots are produced in a day's production, the sublots will be combined with the production lot from the previous or next day.

Where more than one plant is simultaneously producing asphalt for the job, the lot sizes will apply separately for each plant.

c. Asphalt air voids. Plant-produced asphalt will be tested for air voids on a sublot basis.

(1) Sampling. Material from each sublot shall be sampled in accordance with ASTM D3665. Samples shall be taken from material deposited into trucks at the plant or at the job site in accordance with ASTM D979. The sample of asphalt 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 maintain the material at or above the compaction temperature as specified in the JMF.

(2) Testing. Air voids will be determined for each sublot in accordance with ASTM D3203 for a set of compacted specimens prepared in accordance with ASTM D6925.

d. In-place asphalt mat and joint density. Each sublot will be tested for in-place mat and joint density as a percentage of the theoretical maximum density (TMD).

(1) Sampling. The Contractor will cut minimum 5 inch (125 mm) diameter samples in accordance with ASTM D5361. The Contractor shall furnish all tools, labor, and materials for cleaning, and filling the cored pavement. Laitance produced by the coring operation shall be removed immediately after coring, and core holes shall be filled within one day after sampling in a manner acceptable to the RPR.

(2) Bond. Each lift of asphalt shall be bonded to the underlying layer. If cores reveal that the surface is not bonded, additional cores shall be taken as directed by the RPR to determine the extent of unbonded areas. Unbonded areas shall be removed by milling and replaced at no additional cost as directed by the RPR.

(3) Thickness. Thickness of each lift of surface course will be evaluated by the RPR for compliance to the requirements shown on the plans after any necessary corrections for grade. Measurements of thickness will be made using the cores extracted for each sublot for density measurement. The maximum allowable deficiency at any point will not be more than 1/4 inch (6 mm) less than the thickness indicated for the lift. Average thickness of lift, or combined lifts, will 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 RPR to circumscribe the deficient area.

(4) Mat density. One core shall be taken from each sublot. Core locations will be determined by the RPR in accordance with ASTM D3665. Cores for mat density shall not be taken closer than one foot (30 cm) from a transverse or longitudinal joint. The bulk specific gravity of each cored sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each sublot sample by the TMD for that sublot.

(5) Joint density. One core centered over the longitudinal joint shall be taken for each sublot that has a longitudinal joint. Core locations will be determined by the RPR in accordance with ASTM D3665. The bulk specific gravity of each core sample will be determined in accordance with ASTM D2726. The percent compaction (density) of each sample will be determined by dividing the bulk specific gravity of each joint density sample by the average TMD for the lot. The TMD used to determine the joint density at joints formed between lots will be the lower of the average TMD values from the adjacent lots.

401-6.2 Acceptance criteria.

a. General. Acceptance will be based on the implementation of the Contractor Quality Control Program (CQCP) and the following characteristics of the asphalt and completed pavements: air voids, mat density, joint density, grade.

b. Air Voids and Mat density. Acceptance of each lot of plant produced material for mat density and air voids will be based on the percentage of material within specification limits (PWL). If the PWL of the lot equals or exceeds 90%, the lot will be acceptable. Acceptance and payment will be determined in accordance with paragraph 401-8.1.

c. Joint density. Acceptance of each lot of plant produced asphalt for joint density will be based on the PWL. If the PWL of the lot is equal to or exceeds 90%, the lot will 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 will be reduced by five (5) percentage points. This lot pay factor reduction will be incorporated and evaluated in accordance with paragraph 401-8.1.

d. Grade. The final finished surface of the pavement shall be surveyed to verify that the grade elevations and cross-sections shown on the plans do not deviate more than 1/2 inch (12 mm) vertically or 0.1 feet (30 mm) laterally.

Cross-sections of the pavement shall be taken at a minimum 50-foot longitudinal spacing and at all longitudinal grade breaks. Minimum cross-section grade points shall include grade at centerline, \pm 15 feet of centerline, \pm 30 feet of centerline (for Runway) and edge of taxiway pavement.

The survey and documentation shall be stamped and signed by a licensed surveyor. Payment for sublots that do not meet grade for over 25% of the sublot shall not be more than 95%.

e. Profilograph roughness for QA Acceptance. Not used.

401-6.3 Percentage of material within specification limits (PWL). The PWL will be determined in accordance with procedures specified in Item C-110. The specification tolerance limits (L) for lower and (U) for upper are contained in Table 5.

Test Property	Pavements Specification Tolerance Limits	
	L	U
Air Voids Total Mix (%)	2.0	5.0
Surface Course Mat Density (%)	92.8	-
Base Course Mat Density (%)	91.8	-
Joint density (%)	90.5	

Table 5. Acceptance Limits for Air Voids and Density

a. Outliers. All individual tests for mat density and air voids will be checked for outliers (test criterion) in accordance with ASTM E178, at a significance level of 5%. Outliers will be discarded, and the PWL will 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 (%), 1.20; Base Course Mat Density (%), 1.55; Joint Density (%), 1.8.

The Contractor should note that (1) 90 PWL is achieved when consistently producing a surface course with an average mat density of at least 94% with 1.20% or less variability, (2) 90 PWL is achieved when consistently producing a base course with an average mat density of at least 93.5% with 1.8% or less variability, and (3) 90 PWL is achieved when consistently producing joints with an average joint density of at least 91% with 1.8% or less variability.

401-6.4 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 RPR. A retest will consist of all the sampling and testing procedures contained in paragraphs 401-6.1d and 401-6.2b. Only one resampling per lot will be permitted.

(1) A redefined PWL will be calculated for the resampled lot. The number of tests used to calculate the redefined PWL will 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 will 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%.

401-6.5 Leveling course. Not Used.

METHOD OF MEASUREMENT

401-7.1 Measurement. Asphalt shall be measured by the number of tons of asphalt used in the accepted work. 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 asphalt meeting all acceptance criteria as specified in paragraph 401-6.2 shall be made based on results of tests for mat density and air voids. Payment for acceptable lots shall be adjusted according to paragraph 401-8.1c for mat density and air voids; and paragraph 401-6.2c for joint density, subject to the limitation that:

a. The total project payment for plant mix asphalt pavement shall not exceed **100** percent of the product of the contract unit price and the total number of tons (kg) of asphalt used in the accepted work.

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% 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 401-8.1a. Payment in excess of 100% for accepted lots of asphalt shall be used to offset payment for accepted lots of asphalt pavement that achieve a lot pay factor less than 100%.

Payment for sublots which do not meet grade in accordance with paragraph 401-6.2d after correction for over 25% of the sublot shall be reduced by 5%.

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

Table 6. Price adjustment schedule¹

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 401-8.1a.

 2 The lot shall be removed and replaced. However, the RPR may decide to allow the rejected lot to remain. In that case, if the RPR 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 Roughness. Not used.

401-8.2 Payment. Payment for temporary ramps shall be compensation for furnishing all materials, for all preparation, mixing, and placing and removal of these materials, and for all labor, equipment, tools, and incidentals necessary to complete the item.

Payment will be made under:

Item P-401-8.1 Asphalt Mix Pavement Surface Course – per ton

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

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 C142	Standard Test Method for Clay Lumps and Friable Particles in Aggregates
ASTM C566	Standard Test Method for Total Evaporable Moisture Content of Aggregate by Drying
ASTM D75	Standard Practice for Sampling Aggregates
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 D979	Standard Practice for Sampling Asphalt Paving Mixtures
ASTM D1073	Standard Specification for Fine Aggregate for Asphalt Paving Mixtures
ASTM D1188	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
ASTM D2172	Standard Test Method for Quantitative Extraction of Bitumen from Asphalt Paving Mixtures
ASTM D1461	Standard Test Method for Moisture or Volatile Distillates in Asphalt 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

TAXIWAY C OFA REHABILITATION HAGERSTOWN REGIONAL AIRPORT AIG 3-24-0019-070-2024 (DESIGN/CONSTRUCTION)

ASTM D3203	Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures
ASTM D3381	Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction
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 D4552	Standard Practice for Classifying Hot-Mix Recycling Agents
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 D5361	Standard Practice for Sampling Compacted Asphalt Mixtures for Laboratory Testing
ASTM D5444	Standard Test Method for Mechanical Size Analysis of Extracted Aggregate
ASTM D5821	Standard Test Method for Determining the Percentage of Fractured Particles in Coarse 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 D6373	Standard Specification for Performance Graded Asphalt Binder
ASTM D6752	Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Automatic Vacuum Sealing Method
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 D6926	Standard Practice for Preparation of Bituminous Specimens Using Marshall Apparatus
ASTM D6927	Standard Test Method for Marshall Stability and Flow of Bituminous Mixtures
ASTM D6995	Standard Test Method for Determining Field VMA based on the Maximum Specific Gravity of the Mix (Gmm)
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
ASTM E950	Standard Test Method for Measuring the Longitudinal Profile of Traveled Surfaces with an Accelerometer Established Inertial Profiling Reference
ASTM E2133	Standard Test Method for Using a Rolling Inclinometer to Measure Longitudinal and Transverse Profiles of a Traveled Surface

TAXIWAY C OFA REHABILITATION HAGERSTOWN REGIONAL AIRPORT AIG 3-24-0019-070-2024 (DESIGN/CONSTRUCTION)

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO T329Standard Method of Test for Moisture Content of Hot Mix Asphalt (HMA) by Oven MethodAASHTO T324Standard Method of Test for Hamburg Wheel-Track Testing of Compacted Asphalt MixturesAASHTO T 340Standard Method of Test for Determining the Rutting Susceptibility of Hot Mix Asphalt (APA) Using the Asphalt Pavement Analyzer (APA)Asphalt Institute (AI)Asphalt Institute Handbook MS-26, Asphalt BinderAsphalt Institute MS-2Mix Design Manual, 7th EditionAI State Binder Specification DatabaseFederal Highway Administration (FHWA)Long Term Pavement Performance Binder ProgramAdvisory Circulars (AC)AC 150/5320-6Airport Pavement Design and EvaluationFAA Orders5300.1Modifications to Agency Airport Design, Construction, and Equipment StandardsSoftwareFAARFIELD	AASHTO M156	Standard Specification for Requirements for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.	
Asphalt MixturesAASHTO T 340Standard Method of Test for Determining the Rutting Susceptibility of Hot Mix Asphalt (APA) Using the Asphalt Pavement Analyzer (APA)Asphalt Institute (AI)Asphalt Institute Handbook MS-26, Asphalt BinderAsphalt Institute MS-2Mix Design Manual, 7th EditionAI State Binder Specification DatabaseFederal Highway Administration (FHWA)Long Term Pavement Performance Binder ProgramAdvisory Circulars (AC)AC 150/5320-6Airport Pavement Design and EvaluationFAA Orders5300.1Modifications to Agency Airport Design, Construction, and Equipment Standards	AASHTO T329		
Asphalt (APA) Using the Asphalt Pavement Analyzer (APA) Asphalt Institute (AI) Asphalt Institute Handbook MS-26, Asphalt Binder Asphalt Institute MS-2 Mix Design Manual, 7th Edition AI State Binder Specification Database Federal Highway Admistration (FHWA) Long Term Pavement Performance Binder Program Advisory Circulars (AC) AC 150/5320-6 Airport Pavement Design and Evaluation FAA Orders 5300.1 Modifications to Agency Airport Design, Construction, and Equipment Standards Software	AASHTO T324		
Asphalt Institute Handbook MS-26, Asphalt Binder Asphalt Institute MS-2 Mix Design Manual, 7th Edition AI State Binder Specification Database Federal Highway Administration (FHWA) Long Term Pavement Performance Binder Program Advisory Circulars (AC) AC 150/5320-6 Airport Pavement Design and Evaluation FAA Orders 5300.1 Modifications to Agency Airport Design, Construction, and Equipment Standards Software	AASHTO T 340		
Asphalt Institute MS-2 Mix Design Manual, 7th Edition AI State Binder Specification Database Federal Highway Administration (FHWA) Long Term Pavement Performance Binder Program Advisory Circulars (AC) AC 150/5320-6 Airport Pavement Design and Evaluation FAA Orders 5300.1 Modifications to Agency Airport Design, Construction, and Equipment Standards Software	Asphalt Institute (AI)		
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5300.1 Modifications to Agency Airport Design, Construction, and Equipment Standards Software	AC 150/5320-6	Airport Pavement Design and Evaluation	
Software	FAA Orders		
	5300.1	Modifications to Agency Airport Design, Construction, and Equipment Standards	
FAARFIELD	Software		
	FAARFIELD		

END OF ITEM P-401

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Item P-603 Emulsified Asphalt Tack Coat

DESCRIPTION

603-1.1 This item shall consist of preparing and treating an asphalt or concrete surface with asphalt material in accordance with these specifications and in reasonably close conformity to the lines shown on the plans.

MATERIALS

603-2.1 Asphalt materials. The asphalt material shall be an emulsified asphalt as specified in ASTM D3628 as an asphalt application for tack coat appropriate to local conditions. The emulsified asphalt shall not be diluted. The Contractor shall provide a copy of the manufacturer's Certificate of Analysis (COA) for the asphalt material to the Resident Project Representative (RPR) before the asphalt material is applied for review and acceptance. The furnishing of COA for the asphalt material shall not be interpreted as a basis for final acceptance. The manufacturer's COA may be subject to verification by testing the material delivered for use on the project.

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 or above; the temperature has not been below 35°F 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 RPR.

603-3.2 Equipment. The Contractor shall provide equipment for heating and applying the emulsified asphalt material. The emulsion shall be applied with a manufacturer-approved computer rate-controlled asphalt distributor. The equipment shall be in good working order and contain no contaminants or diluents in the tank. Spray bar tips must be clean, free of burrs, and of a size to maintain an even distribution of the emulsion. Any type of tip or pressure source is suitable that will maintain predetermined flow rates and constant pressure during the application process with application speeds under eight (8) miles per hour or seven (7) feet per minute.

The equipment will be tested under pressure for leaks and to ensure proper set-up before use to verify truck set-up (via a test-shot area), including but not limited to, nozzle tip size appropriate for application, spraybar height and pressure and pump speed, evidence of triple-overlap spray pattern, lack of leaks, and any other factors relevant to ensure the truck is in good working order before use.

The distributor truck shall be equipped with a minimum 12-foot spreader spray bar with individual nozzle control with computer-controlled application rates. The distributor truck shall have an easily accessible thermometer that constantly monitors the temperature of the emulsion, and have an operable mechanical tank gauge that can be used to cross-check the computer accuracy. If the distributor is not equipped with an operable quick shutoff valve, the prime operations shall be started and stopped on building paper.

The distributor truck shall be equipped to effectively heat and mix the material to the required temperature prior to application as required. Heating and mixing shall be done in accordance with the manufacturer's recommendations. Do not overheat or over mix the material.

The distributor shall be equipped with a hand sprayer.

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Asphalt distributors must be calibrated annually in accordance with ASTM D2995. The Contractor must furnish a current calibration certification for the asphalt distributor truck from any State or other agency as approved by the RPR.

A power broom and/or power blower suitable for cleaning the surfaces to which the asphalt tack coat is to be applied shall be provided.

603-3.3 Application of emulsified asphalt material. The emulsified asphalt shall not be diluted. Immediately before applying the emulsified asphalt 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.

The emulsified asphalt material shall be uniformly applied with an asphalt distributor at the rates appropriate for the conditions and surface specified in the table below. The type of asphalt material and application rate shall be approved by the RPR prior to application.

Surface Type	Residual Rate, gal/Sy	Emulsion Application Bar Rate, gal/SY
New asphalt	0.02-0.05	0.03-0.07
Existing asphalt	0.04-0.07	0.06-0.11
Milled Surface	0.04-0.08	0.06-0.12

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 RPR. The Contractor shall protect the tack coat and maintain the surface until the next course has been placed. When the tack coat has been disturbed by the Contractor, tack coat shall be reapplied at the Contractor's expense.

603-3.4 Freight and waybills The Contractor shall submit waybills and delivery tickets, during progress of the work. Before the final statement is allowed, file with the RPR certified waybills and certified delivery tickets for all emulsified asphalt materials used in the construction of the pavement covered by the contract. Do not remove emulsified asphalt 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 emulsified asphalt material for tack coat shall be measured by the gallon. Volume shall be corrected to the volume at 60°F in accordance with ASTM D1250. The emulsified asphalt 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 emulsified asphalt 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 emulsified asphalt 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 emulsified asphalt 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.

TAXIWAY C OFA REHABILITATION HAGERSTOWN REGIONAL AIRPORT AIG 3-24-0019-070-2024 (DESIGN/CONSTRUCTION)

Payment will be made under:

Item P-603-5.1 Emulsified Asphalt Tack Coat – per gallon

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D1250	Standard Guide for Use of the Petroleum Measurement Tables
ASTM D2995	Standard Practice for Estimating Application Rate and Residual Application Rate of Bituminous Distributors
ASTM D3628	Standard Practice for Selection and Use of Emulsified Asphalts

END OF ITEM P-603

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Item P-605 Joint Sealants for 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 in pavement; joints between different types of pavements; and cracks in existing pavement.

MATERIALS

605-2.1 Joint sealants. Joint sealant materials shall meet the requirements of ASTM D5893 or ASTM D 6690, Type IV.

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 in accordance with ASTM D5249. The backer-rod material shall be $25\% \pm 5\%$ larger in diameter than the nominal width of the joint.

605-2.3 Bond breaking tapes. Provide a bond breaking tape or separating material that is a flexible, nonshrinkable, non-absorbing, non-staining, and non-reacting 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.

For installation of light cans, backup materials shall not be used between Items P-605 and P-606.

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.

When used with Item P-606, such as light can installation, Item P-605 shall not be applied until the P-606 has fully cured.

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, 15 days prior to use on the project.

a. Hand tools. Hand tools may be used, when approved, for removing defective sealant from a crack and repairing or cleaning the crack faces. Hand tools should be carefully evaluated for potential spalling effects prior to approval for use.

b. 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. Pavement joints for application of material in this specification must be dry, clean of all scale, dirt, dust, curing compound, and other foreign matter. The Contractor shall demonstrate, in the presence of the RPR, that the method cleans the joint and does not damage the joint.

a. Sawing. Not used.

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. The joint faces shall be surface dry when the seal is applied.

c. Backer Rod. 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 backer rod in accordance with paragraph 605-2.2 to prevent the entrance of the sealant below the specified depth. Take care to ensure that the backer rod 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-separating tape breaker in accordance with paragraph 605-2.3 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 RPR 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 $\pm 1/16$ inch below the top of pavement surface; or bottom of groove for grooved pavement. 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 RPR. 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 measured by the linear foot of sealant in place, completed, and accepted.

BASIS OF PAYMENT

605-5.1 Payment for joint sealing material shall be made at the contract unit price per linear foot. 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.

Payment will be made under:

Item P-605-5.1 Joint Sealing Filler, per linear foot

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D789	Standard Test Method for Determination of Relative Viscosity of Polyamide (PA)
ASTM D5249	Standard Specification for Backer Material for Use with Cold- and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
ASTM D6690	Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt]
Advisory Circulars (AC	
AC 150/5340-3	0 Design and Installation Details for Airport Visual Aids

END OF ITEM P-605

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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 Resident Project Representative (RPR). 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. This certification along with a copy of the paint manufacturer's surface preparation; marking materials, including adhesion, flow promoting and/or floatation additive; and application requirements must be submitted and approved by the Resident Project Representative (RPR) prior to the initial application of markings. The reports can be used for material acceptance or the RPR may perform verification testing. The reports shall not be interpreted as a basis for payment. The Contractor shall notify the RPR upon arrival of a shipment of materials to the site. All material shall arrive in sealed containers that are easily quantifiable for inspection by the RPR.

		Glass E	Beads ²		
Туре	Color	Fed Std. 595 Number	Application Rate Maximum	Туре	Application Rate Minimum
II	White	37925	115 SF/gal	III	10 lb/gal
II	Red	31136	115 SF/gal	I, Gradation A	7 lb/gal
II	Yellow	33538 or 33655	115 SF/gal	III	10 lb/gal
II	Black	37038	115 SF/gal	N/A	N/A

Table 1. Marking Materials

¹See paragraph 620-2.2a

² See paragraph 620-2.2b

a. Paint. Paint shall be waterborne and preformed thermoplastic in accordance with the requirements of this paragraph. Paint colors shall comply with Federal Standard No. 595.

Waterborne. Paint shall meet the requirements of Federal Specification TT-P-1952F, 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.

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Preformed Thermoplastic Airport Pavement Markings. Markings must be composed of ester modified resins in conjunction with aggregates, pigments, and binders that have been factory produced as a finished product. The material must be impervious to degradation by aviation fuels, motor fuels, and lubricants.

(1) The markings must be able to be applied in temperatures as low as 35°F without any special storage, preheating, or treatment of the material before application.

(a) The markings must be supplied with an integral, non-reflectorized black border.

(2) Graded glass beads.

(a) The material must contain a minimum of 30% intermixed graded glass beads by weight. The intermixed beads shall conform to Federal Specification TT-B-1325D, Type I, gradation A and Federal Specification TT-B-1325D, Type IV.

(b) The material must have factory applied coated surface beads in addition to the intermixed beads at a rate of one (1) lb (0.45 kg) ($\pm 10\%$) per 10 square feet (1 sq m). These factory-applied coated surface beads shall have a minimum of 90% true spheres, minimum refractive index of 1.50, and meet the following gradation.

Size Grada	tion		Passing, %	
U.S. Mesh	μm	Retained, %		
12	1700	0 - 2	98 - 100	
14	1400	0 - 3.5	96.5 - 100	
16	1180	2 - 25	75 - 98	
18	1000	28 - 63	37 - 72	
20	850	63 - 72	28 - 37	
30	600	67 - 77	23 - 33	
50	300	89 - 95	5 - 11	
80	200	97 - 100	0 - 3	

Preformed Thermoplastic Bead Gradation

(3) Heating indicators. The material manufacturer shall provide a method to indicate that the material has achieved satisfactory adhesion and proper bead embedment during application and that the installation procedures have been followed.

(4) **Pigments**. Percent by weight.

(a) White:

- Titanium Dioxide, ASTM D476, type II shall be 10% minimum.
- (b) Yellow and Colors:
 - Titanium Dioxide, ASTM D476, type II shall be 1% minimum.
 - Organic yellow, other colors, and tinting as required to meet color standard.

(5) Prohibited materials. The manufacturer shall certify that the product does not contain mercury, lead, hexavalent chromium, halogenated solvents, nor any carcinogen as defined in 29 CFR 1910.1200 in amounts exceeding permissible limits as specified in relevant federal regulations.

(6) Daylight directional reflectance.

(a) White: The daylight directional reflectance of the white paint shall not be less than 75% (relative to magnesium oxide), when tested in accordance with ASTM E2302.

TAXIWAY C OFA REHABILITATION HAGERSTOWN REGIONAL AIRPORT AIG 3-24-0019-070-2024 (DESIGN/CONSTRUCTION)

(b) Yellow: The daylight directional reflectance of the yellow paint shall not be less than 45% (relative to magnesium oxide), when tested in accordance with ASTM E2302. The x and y values shall be consistent with the federal Hegman yellow color standard chart for traffic yellow standard 33538, or shall be consistent with the tolerance listed below:

х	.462	х	.470	х	.479	х	.501
у	.438	у	.455	у	.428	у	.452

(7) Skid resistance. The surface, with properly applied and embedded surface beads, must provide a minimum resistance value of 45 BPN when tested according to ASTM E303.

(8) Thickness. The material must be supplied at a nominal thickness of 65 mil (1.7 mm).

(9) Environmental resistance. The material must be resistant to deterioration due to exposure to sunlight, water, salt, or adverse weather conditions and impervious to aviation fuels, gasoline, and oil.

(10) Retroreflectivity. The material, when applied in accordance with manufacturer's guidelines, must demonstrate a uniform level of nighttime retroreflection when tested in accordance to ASTM E1710.

(11) Packaging. Packaging shall protect the material from environmental conditions until installation.

(12) Preformed thermoplastic airport pavement marking requirements.

(a) The markings must be a resilient thermoplastic product with uniformly distributed glass beads throughout the entire cross-sectional area. The markings must be resistant to the detrimental effects of aviation fuels, motor fuels and lubricants, hydraulic fluids, deicers, anti-icers, protective coatings, etc. Lines, legends, and symbols must be capable of being affixed to asphalt and/or Portland cement concrete pavements by the use of a large radiant heater. Colors shall be available as required.

(b) The markings must be capable of conforming to pavement contours, breaks, and faults through the action of airport traffic at normal pavement temperatures. The markings must be capable of fully conforming to grooved pavements, including pavement grooving per advisory circular (AC) 150/5320-12, current version. The markings shall have resealing characteristics, such that it is capable of fusing with itself and previously applied thermoplastics when heated with a heat source per manufacturer's recommendation.

(c) Multicolored markings must consist of interconnected individual pieces of preformed thermoplastic pavement marking material, which through a variety of colors and patterns, make up the desired design. The individual pieces in each large marking segment (typically more than 20 feet (6 m) long) must be factory assembled with a compatible material and interconnected so that in the field it is not necessary to assemble the individual pieces within a marking segment. Obtaining multicolored effect by overlaying materials of different colors is not acceptable due to resulting inconsistent marking thickness and inconsistent application temperature in the marking/substrate interface.

(d) The marking material must set up rapidly, permitting the access route to be re-opened to traffic after application.

(e) The marking material shall have an integral color throughout the thickness of the marking material.

b. Reflective media. Glass beads for white and yellow paint shall meet the requirements for Federal Specification TT-B-1325D Type III.

Glass beads for red and pink paint shall meet the requirements for Type I, Gradation A.

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.

Glass beads shall not be used in black and green paint.

Type III glass beads shall not be used in red and pink paint.

CONSTRUCTION METHODS

620-3.1 Weather limitations. Painting shall only be performed when the surface is dry, and the ambient temperature and the pavement surface temperature meet the manufacturer's recommendations in accordance with paragraph 620-2.1. Painting operations shall be discontinued when the ambient or surface temperatures does not meet the manufacturer's recommendations. Markings shall not be applied when the wind speed exceeds 10 mph unless windscreens are used to shroud the material guns. Markings shall not be applied when weather conditions are forecasts to not be within the manufacturers' recommendations for application and dry time.

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 with automatic glass bead dispensers suitable for application of traffic paint. It shall produce an even and uniform film thickness and appearance of both paint and glass beads at the required coverage and shall apply markings of uniform cross-sections and clear-cut edges without running or spattering and without over spray. The marking equipment for both paint and beads shall be calibrated daily.

620-3.3 Preparation of surfaces. Immediately before application of the paint, the surface shall be dry and free from dirt, grease, oil, laitance, or other contaminates that would reduce the bond between the paint and the pavement. Use of any chemicals or impact abrasives during surface preparation shall be approved in advance by the RPR. 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.

a. Preparation of new pavement surfaces. The area to be painted shall be cleaned by broom, blower, water blasting, or by other methods approved by the RPR to remove all contaminants, including PCC curing compounds, minimizing damage to the pavement surface.

b. Preparation of pavement to remove existing markings. Existing pavement markings shall be removed by rotary grinding, water blasting, or by other methods approved by the RPR minimizing damage to the pavement surface. The removal area may need to be larger than the area of the markings to eliminate ghost markings. After removal of markings on asphalt pavements, apply a fog seal or seal coat to 'block out' the removal area to eliminate 'ghost' markings.

c. Preparation of pavement markings prior to remarking. Prior to remarking existing markings, loose existing markings must be removed minimizing damage to the pavement surface, with a method approved by the RPR. After removal, the surface shall be cleaned of all residue or debris.

Prior to the application of markings, the Contractor shall certify in writing that the surface is dry and free from dirt, grease, oil, laitance, or other foreign material that would prevent the bond of the paint to the pavement or existing markings. This certification along with a copy of the paint manufactures application and surface preparation requirements must be submitted to the RPR 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. The locations of markings to receive glass beads shall be shown on the plans.

620-3.5 Application. A period of 30 days shall elapse between placement of surface course or seal coat and application of the permanent paint markings. 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 RPR.

The edges of the markings shall not vary from a straight line more than 1/2 inch in 50 feet, and marking dimensions and spacing shall be within the following tolerances:

Dimension and Spacing	Tolerance
36 inch or less	$\pm 1/2$ inch
greater than 36 inch to 6 feet	±1 inch
greater than 6 feet to 60 feet	±2 inch
greater than 60 feet	±3 inch

Marking Dimensions and Spacing Tolerance

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.

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 and distribution should be performed.

620-3.6 Application--preformed thermoplastic airport pavement markings. 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 $35^{\circ}F$ (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.

620-3.7 Control strip. Prior to the full application of airfield markings, the Contractor shall prepare a control strip in the presence of the RPR. The Contractor shall demonstrate the surface preparation method and all striping equipment to be used on the project. The marking equipment must achieve the prescribed application rate of paint and population of glass beads (per Table 1) that are properly embedded and evenly distributed across the full width of the marking. Prior to acceptance of the control strip, markings must be evaluated during darkness to ensure a uniform appearance.

620-3.8 Retro-reflectance. Reflectance shall be measured with a portable retro-reflectometer meeting ASTM E1710 (or equivalent). A total of 6 reading shall be taken over a 6 square foot area with 3 readings taken from each direction. The average shall be equal to or above the minimum levels of all readings which are within 30% of each other.

Material	Retro-reflectance mcd/m²/lux			
	White	Yellow	Red	
Initial Type I	N/A	N/A	35	
Initial Type III	600	300	N/A	
All materials, remark when less than ¹	100	75	10	

Minimum Retro-Reflectance Values

¹ 'Prior to remarking determine if removal of contaminants on markings will restore retroreflectance.

620-3.9 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 reflective media, and by-products generated by the surface preparation and application operations to the satisfaction of the RPR. 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 marking removal shall be measured by the number of square feet of marking that is removed.

620-4.2 The quantity of permanent pavement markings shall be measured by the number of square feet of runway and taxiway marking.

620-4.3 The quantity of temporary pavement markings shall be measured by the number of square feet of runway and taxiway marking.

620-4.4 The quantity of preformed markings shall be measured by the number of square feet of preformed marking.

BASIS OF PAYMENT

620-5.1 This price shall be full compensation for furnishing all materials and for all labor, equipment, tools, and incidentals necessary to complete the item complete in place and accepted by the RPR in accordance with these specifications.

Payment will be made under:

Item P-620-5.1	Pavement Marking Removal - per square foot
Item P-620-5.2	Permanent Pavement Marking - Waterborne - per square foot
Item P-620-5.3	Temporary Pavement Marking – Waterborne - per square foot
Item P-620-5.4	Thermoplastic Pavement Marking (Non-AIP Eligible) - per square foot

REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

ASTM International (ASTM)

ASTM D476	Standard Classification for Dry Pigmentary Titanium Dioxide Products		
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 E303	Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester		
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		
Code of Federal Regula	tions (CFR)		
40 CFR Part 60, Appen	dix 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			
Federal Specifications (FED SPEC)			
FED SPEC TT-B-1325	D Beads (Glass Spheres) Retro-Reflective		

FED SPEC TT-P-1952F Paint, Traffic and Airfield Marking, Waterborne

FED STD 595 Colors used in Government Procurement

Commercial Item Description

A-A-2886B Paint, Traffic, Solvent Based

Advisory Circulars (AC)

- AC 150/5340-1 Standards for Airport Markings
- AC 150/5320-12 Measurement, Construction, and Maintenance of Skid Resistant Airport Pavement Surfaces

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APPENDIX A – CONSTRUCTION SAFETY AND PHASING PLAN (CSPP)

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Taxiway C OFA Rehabilitation

Construction Safety and Phasing Plan (CSPP)







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Appendices

Appendix A.	Safety and Phasing Plan Checklist
Appendix B.	Construction Safety and Phasing Drawings
Appendix C.	Sample Contractor's Safety Plan Compliance Document (SPCD)
Appendix D.	Construction Project Daily Safety Inspection Checklist

Taxiway C OFA Rehabilitation

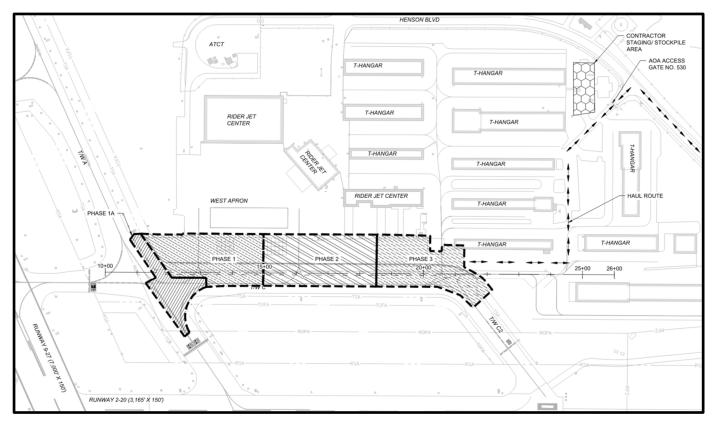
AIG-3-24-0019-070-2024 (Design/Construction) Hagerstown Regional Airport (HGR) Hagerstown, Maryland

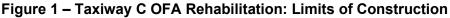
0. Project Overview

The Taxiway C OFA Rehabilitation scope includes a 3" mill and 3" asphalt pavement overlay of the paved area outside the Object Free Area (OFA) of the portion of Taxiway C between Taxiway A and Taxiway C2. The rehabilitation will be bound to the east by the limits of the recently constructed Taxiway C Rehabilitation project (2016). A small portion of work will impact the Taxiway A Taxiway Safety Area (TSA), and this work shall be night work to limit the impact on airport operations. The remaining work of this project will be day work. The major work components include:

- 3" Mill and 3" Asphalt Pavement Overlay
- Pavement Marking Removal
- Pavement Marking Application
- Construction Area Control and Safety Features
- Coordination with HGR Operations/Management to Schedule Taxiway Closures and Coordinate with Airport Tenants

This narrative discusses the elements of the Construction Safety and Phasing Plan for the Taxiway C OFA Rehabilitation project. **Figure 1** shows the limits of construction for the project.





1. Coordination

On behalf of the Board of County Commissioners for Washington County MD, the airport sponsor, HGR will host pre-bid and pre-construction coordination meetings to ensure the sponsor, the Construction Manager, the Designer, the Contractor, the FAA, tenants, and all other interested parties are aware of design, safety, and construction requirements and have an understanding of their individual responsibilities, as well as the technical and legal requirements of the contract.

1.1 **Pre-Bid Meeting:**

The pre-bid coordination meeting will include discussion of the project's scope of work, construction phasing, schedule, unique construction items, bid forms to be submitted, Disadvantaged Business Enterprise (DBE) requirements, and question and answer session. The meeting will clarify and explain project construction methods, procedures, and safety measures. The Construction Safety and Phasing Plan (CSPP) will be reviewed and discussed with key attendees.

•	Key Attendees:	HGR Operations/Management Washington County Commissioners	(Owne (Owne
		Resident Project Representative (RPR)	(Owne
		ADCI	(Desig
		Bidding Contractors	(Conti

Owner) Owner) Owner's Representative) Designer) Contractor)

1.2 Pre-Construction Meeting

The pre-construction coordination meeting will include discussion of project scope, staging, phasing, operational safety, security, environmental factors, DBE compliance and other project-specific issues. The CSPP and Safety Plan Compliance Document (SPCD) will be reviewed and discussed.

 Key Attendees: HGR Airport Director HGR Access Control and Security HGR Maintenance HGR Operations FAA Airports District Office (Washington) FAA Air Traffic Control Tower (ATCT) RPR ADCI - Designers Testing Laboratory representative Contractor and Subcontractor representative(s) Tenants Airlines Federal, State, and local agencies affected by the proposed construction

1.3 Weekly Progress Meetings

Throughout the duration of the project, weekly progress meetings will be held. Construction phasing and operational safety will be a standing agenda item at the weekly progress meeting.

•	Key Attendees:	HGR Airport Director HGR Access Control and Security HGR Maintenance ARFF Representative RPR ADCI - Designers Superintendent and Foreman of Prime Contractor Project foreman for each subcontractor with work occurring during current period Contractor Safety Officer Contractor Security Officer
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The General Contractor is responsible to host Daily Safety Meetings prior to the start of each construction day with all workers to review and discuss daily project scope and appropriate safety equipment and measures.

At the end of each construction day, the General Contractor is responsible to maintain a clean and safe construction site. The General Contractor is responsible for daily monitoring and routine maintenance of safety devices and equipment. The Contractor is responsible for immediately repairing malfunctioning safety devices and equipment to the satisfaction of the Airport.

1.5 Scope or Schedule Changes

Changes in project scope or schedule may require revisions to the CSPP. Changes to the CSPP would need to be reviewed and approved by HGR Operations/Management and the FAA. The approved changes shall also be reflected in the SPCD.

1.6 FAA ATO Coordination

Coordination with FAA ATO has occurred throughout the design process. Closures of taxiways and issuing NOTAMS will be closely coordinated with the FAA ATCT. Construction activity was modeled by ADCI to determine any impacts or restrictions during construction.

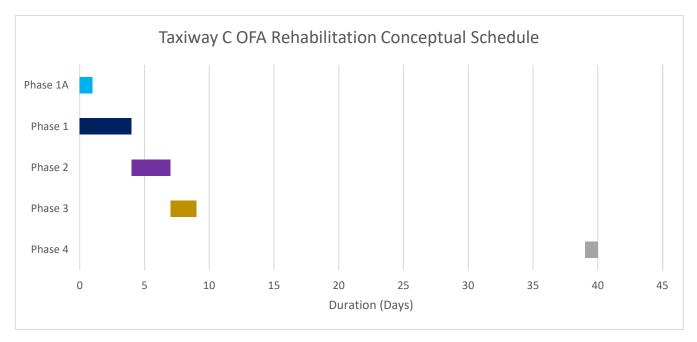
The Contractor will provide a two-week look ahead schedule at every weekly progress meeting. HGR Operations/Management will maintain coordination with the FAA ATCT and inform the FAA ATCT of any changes to the project scope or schedule.

2. Phasing

The construction phasing has been developed to minimize the impact of construction operations on the airport and its tenants while promoting construction efficiency and overall safety. The project is broken into four (4) phases. Phase 1 includes a concurrent subphase area with additional restrictions due to its impact on Taxiway A. Phase 4 will consist of permanent pavement markings scheduled 30 days after completion of paving. A conceptual construction schedule is included below for reference.

Estimated Start Date: Summer 2024

Estimated Completion Date: Summer 2024



2.1 Mobilization Phase

- May overlap with the start of construction if determined by Contractor's Schedule to be feasible and if approved by the RPR.
- Establish site access, haul routes, and Contractor staging area.
- Access: Gate 530 located on Henson Blvd.
- Haul Route: Off Airport Air Park Road to Henson Blvd. to Gate 530.
- Staging Area: Northeast of Taxiway C, as shown on the plans.
- Submittals, Shop Drawings and approval of Asphalt Mix Designs.
- Requests for Information (RFI).
- Ordering of Materials.
- Trailer/Temporary Construction Setup (if Required by Contractor).
- Construction Schedule development and approval.
- Coordination with HGR Operations to schedule taxiway closures.
- Contractor will not impact any part of the airfield as part of the Mobilization phase unless otherwise authorized by the RPR.

2.2 Phase 1 (5 days)

The scope of work for Phase 1 includes but is not limited to:

- 3" Pavement Milling
- 3" Asphalt Pavement Overlay
- Pavement Marking Removal
- Pavement Marking Application

Phase 1 consists of pavement rehabilitation and pavement markings from Taxiway A to STA. 15+00. Work within Taxiway A TSA will be a concurrent subphase, Phase 1A, and will be completed in one night.

Airfield Impacts:

- Closure of Taxiway C from Taxiway A to STA. 15+50 for the duration of Phase 1
- Closure of Taxiway A from Taxiway D to Runway 2-20 for the duration of Phase 1A
- Access to Rider Jet Center and T-Hangar Complex will require taxi on Runway 2-20
- For work in TOFA, Contractor must adhere to the restrictions listed in Detail 4 on Sheet C500

Phase 1A will be completed as night work (10 PM - 6 AM), and the remainder of Phase 1 will be day work.

2.3 Phase 2 (4 days)

The scope of work for Phase 2 includes but is not limited to:

- 3" Pavement Milling
- 3" Asphalt Pavement Overlay
- Pavement Marking Removal
- Pavement Marking Application

Phase 2 includes the mill and overlay of the Taxiway C OFA pavement from STA 15+00 to STA 18+50.

Airfield Impacts:

- Partial Closure of Taxiway C from STA 14+50 to STA 19+00
- For work in TOFA, Contractor must adhere to the restrictions listed in Detail 4 on Sheet C500

Phase 2 will be completed as day work with no time restrictions.

2.4 Phase 3 (3 days)

The scope of work for Phase 3 includes but is not limited to:

- 3" Pavement Milling
- 3" Asphalt Pavement Overlay

- Pavement Marking Removal
- Pavement Marking Application

Phase 3 includes the mill and overlay of Taxiway C from STA 18+50 to STA 21+15.

Airfield Impacts:

- Partial Closure of Taxiway C from STA 18+20 to Taxiway C2
- Closure of Taxiway C2
- For work in TOFA, Contractor must adhere to the restrictions listed in Detail 4 on Sheet C500

Phase 3 will be completed as day work with no time restrictions.

2.5 Phase 4 (1 day)

The scope of work for Phase 4 includes but is not limited to:

Permanent Pavement Marking

Phase 4 includes permanent pavement marking for all the markings applied on new asphalt.

Major airfield impacts during Phase 4 will include the following:

- Closure of Taxiway A for work within TSA
- Closure of Taxiway C between Taxiway A and Taxiway C2
- Closure of Taxiway C2

Phase 4 will be completed as night work (10 PM - 6 AM) and occur 30 days after the completion of paving.

3. Areas and Operations Affected by Construction

The area of the airport that will be affected by the Taxiway C OFA Rehabilitation project includes approximately 1,200 feet of pavement rehabilitation along Taxiway C between Taxiway A and Taxiway C2.

Closures of Taxiways C & C2, as well as a single night closure of Taxiway A from Taxiway D to Runway 2-20 for work within the Taxiway A safety area. No runway or taxiway closures will be permitted without advanced approval from HGR Operations.

The Contractor will not enter into any safety area of any active runway without an appropriately badged escort and approval from the ATCT. In addition, there will be no construction activities, placement of stockpiles, storage of materials, or fueling in the approach protection area of any active runway.

3.1 Runway Safety Areas

The Contractor will not enter the safety area of any active Runway without an appropriately badged escort. **Table 3-1** shows Runway Safety Area dimensions in the project work areas

Runway	Aircraft Approach Category	Airplane Design Group	Runway Safety Area Width Divided by 2
09-27	С	III	250 feet
02-20	В	II	75 feet

Table 3-1. Runway Safety Areas

Contractor shall place low-profile barricades at limits of TSA to delineate these areas during construction.

3.2 Runway Approach Protection Areas

Unless otherwise shown, the Contractor will not enter, conduct fueling, place stockpiles, or store materials in the approach protection area of any active Runway. **Table 3-2** shows Runway Approach Protection Areas.

Runway End	Aircraft Approach Category	Airplane Design Group	Safety Area Prior to Threshold	Minimum Distance to Threshold on Approach Slope			
9	С	=	1,000 feet	200 feet	34:1		
27	С	Ш	1,000 feet	200 feet	50:1		
2	В	II	300 feet	N/A	20:1		
20	В	Π	300 feet	N/A	20:1		

Table 3-2	. Runway	Approach	Protection	Areas
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4. Navigational Aid (NAVAID) Protection

Aircraft navigational aids (NAVAIDS) provide visual and electronic information which are used by pilots who operate and land aircraft at the airport. Construction activities may have negative impacts on the functionality and serviceability of NAVAIDS. The Contractor must coordinate their work effort and limit their operations in NAVAID critical areas to minimize NAVAID impacts.

The Contractor will be required to restrict and limit operations so that material, equipment, and personnel do not enter NAVAID critical areas or disturb power to NAVAID facilities without prior coordination with HGR Operations and FAA Tech Ops personnel. All construction activity has been modeled by ADCI to determine any impacts or restrictions during construction. It is anticipated that there will be no impacts or restrictions to NAVAID facilities during this project.

The Contractor is required to provide notice to HGR Operations and FAA Tech Ops personnel at least 72 hours prior to disturbing power supply or removing a NAVAID from service. FAA Tech Ops Office – (410) 859-7936.

No impacts to NAVAIDs are anticipated during construction.

5. Contractor Access

5.1 Location of Stockpiled Construction Material

No stockpiled materials or staged equipment may be placed outside of the designated staging areas unless approved by the RPR. There will be no stockpiles or staged equipment within the ROFA.

• *Height restrictions*: Stockpiles shall not exceed the heights shown on the Contract Drawings and will not be located within any area (TOFA, TLOFA, TSA, RSA, ROFA, RPZ, etc.) that is required for the operation of the aircraft.

- Wildlife attractant: Contractor to manage stockpiles so that they do not attract wildlife. Refer to ٠ Section 6 of this document.
- ٠ Foreign Object Debris (FOD): Contractor to manage material stockpiles and trash so that they do not create FOD. Refer to Section 7 of this document.
- Marking and Lighting of Stockpiles: Contractor shall be required to mark or light material ٠ stockpiles as directed by the RPR.

5.2 Vehicle and Pedestrian Operations

5.2.1 Access to AOA

The airport operations area is defined by the perimeter fence surrounding the airfield. Access onto the AOA is through any number of gates along the fence or doors through buildings. Contractor access onto the AOA is limited to the gates shown on the CSPP drawings. No person shall enter the AOA, or any other restricted area, except authorized personnel assigned to duty therein escorted by an appropriately badged escort.

Contractor access will be through Gate 530 as shown in the Contract Drawings, and/or approved by the RPR. Gate 530 is located on Henson Blvd. near the T-Hangar complex.

Mechanisms to Prevent Improper Movement

Contractor operations within the AOA are limited to the areas shown on the CSPP. A visual boundary will be installed by the Contractor around all areas of work, consisting of low-profile barricades on pavement surfaces as well as grassed areas. The project phasing plans show locations of work area and sub-area boundaries. Construction vehicles and personnel must not cross boundaries at any time without an appropriately badged escort and approval from the ATCT, if required.

The Contractor shall provide enclosures, fences, barricades, or other devices where necessary to prevent access to the site or danger to the public, as approved by the RPR.

5.2.3 Parking Areas for Personal Vehicles and Equipment

Contractor employee personal vehicles may not be parked or driven in the AOA. Personal vehicles instead must be parked outside the AOA.

5.2.4 Haul Routes

The G300 series drawings illustrate the proposed access points, haul routes, and staging area. The Contractor will not be permitted to use any access or haul roads other than those designated on the Contract Drawings and will be required to submit a detailed Staging Area and Haul Route Plan prior to the start of construction.

Contractor access and hauling operations are strictly limited to the haul routes shown. Contractor is responsible for any improvements and maintenance to haul routes as needed to efficiently perform construction activities.

5.2.5 Airport Rules for Ground Vehicle Operations

Rules for vehicular and equipment travel on the airport are located on G200. These rules must be followed at all times when driving on the airport.

5.2.6 Contractor Vehicle Marking and Lighting Only Contractor licensed vehicles will be permitted to enter the AOA. Each Contractor licensed vehicle must display a company logo on both sides of the vehicle, as well as a yellow/amber rotating beacon affixed to the uppermost part of the vehicle that is visible from any direction, day and night. Contractor vehicle marking and lighting is the sole responsibility of the Contractor; the Airport will not provide marking or lights. Marking and lighting of vehicles must comply with AC 150/5210-5, latest edition, Painting, Marking and Lighting of Vehicles Used on an Airport. Additional vehicle marking and signage guidelines can also be found on Sheet G500.

5.2.7 Contractor Construction Equipment Parking

Any unused equipment shall not be parked any closer than 85.5 feet from the centerline of an active taxiway and no closer than 250 feet from an active runway unless noted or shown otherwise on the phasing plans. The ROFA for Runway 2-20 is 500 feet, and the ROFA for Runway 9-27 is 800 feet.

5.3 Radio Communications

5.3.1 Two-way Radios

Contractors may utilize two-way radios on the project provided that they do not interfere with existing Airport, FAA, or military communication equipment and frequencies.

5.3.2 Air Traffic Control Tower (ATCT) Radio Communications

Vehicle operations on the movement area require contact with the ATCT. The Contractor will not communicate directly with the ATCT unless trained by HGR Operations. If no Contractor personnel are trained by HGR Operations, the Contractor must contact HGR Operations for an escort onto any movement area.

5.3.3 Personnel Required to Communicate with ATCT All communications with the ATCT will be made by persons trained and approved by HGR Operations.

5.3.4 Training

All training of Contractor personnel for communication with the ATCT will be completed by HGR Operations.

5.3.5 Procedure for Communicating Radio types: Airband radios capable of transmitting and receiving on frequencies used by the ATCT. Light signals: not applicable.

5.4 Airport Security

Hagerstown Regional Airport maintains an active security program, which is of primary importance. The project will take place within the Airport's Security Identification Display Area (SIDA), which requires specific security protocol be followed. General project security requirements include the following:

- The project plans show the entry point(s), barricades, Contractor's staging area, and work area. The Contractor shall provide security for these areas. The Contractor is to provide to the Airport, for review and approval, all security measures, barricades, and other means to be taken to secure scheduled openings between the secure and non-secure areas, prior to creating the opening.
- No Contractor employee may tamper or interfere with, compromise, modify, attempt to circumvent, or cause a person to tamper or interfere with, compromise, modify, or attempt to circumvent any security system, measure, or procedure implemented at the Airport.
- Each Contractor employee must immediately notify the Airport when security-related facilities and equipment within the Contractor's area are malfunctioning or no longer adequate to perform the control function.
- No Contractor employee may enter or be present within a secured area, SIDA, AOA, or Sterile Area without complying with the systems, measures, or procedures being applied in such areas.
- The project will require AOA badges for all Contractor personnel, and the Contractor will be required to maintain a list of all badged employees and badged subcontractor employees.

Additional details about the Airport's security procedures can be found on Sheets G200-G201.

6. Wildlife Management

6.1 Trash

Food scraps must be collected from construction personnel activity.

6.2 Standing Water

Any activity taking place that creates a standing body of water must be resolved immediately. Standing water will not be permitted and must drain within 48 hours.

6.3 **Poorly Maintained Fencing and Gates**

Periodic perimeter fence inspections are conducted by HGR Security to ensure the fence is secured. These inspections also include identifying any animal digs that are located under the fence and ensuring that perimeter gates and drainage grates are tightly secured to prevent animal access. In addition, HGR Operations will take appropriate actions to reduce any other observed wildlife activity.

The Contractor should also be vigilant in observing the security fence for areas that may not be secured and report any problems immediately to HGR Operations.

6.4 Disruption of Existing Wildlife Habitat

Contractor personnel should immediately notify HGR Operations of a wildlife sighting.

7. Foreign Object Debris (FOD) Management

Foreign object debris at airports includes any object found in an inappropriate location that can damage aircraft, equipment, or airport personnel. Foreign object debris on construction sites is typically comprised of things such as loose gravel, blowing sand, wire bristles from sweeper heads, food wrappers, and material packaging. The presence of FOD on an airport's air operations area (AOA) poses a significant threat to the safety of air travel. FOD has the potential to damage aircraft during critical phases of flight, which can lead to catastrophic loss of life and airframe, and at the very least increased maintenance and operating costs. As such, FOD shall not be allowed near active aircraft movement areas, and FOD shall be continuously removed by the Contractor during the construction project. The construction area shall be kept clean at all times of debris that may blow onto the airfield.

7.2 Methods of FOD Control

- *Sweeper Equipment*: The Contractor shall have a sweeping machine and operator on site at all times. The sweeper will operate full time to keep haul routes and work areas clean at all times.
- *Dust Control Equipment*: The Contractor shall maintain a water truck on site for dust control purposes.
- *Training*: Contractor shall provide training to all employees working within the AOA on effective FOD management. Training shall include description and consequences of FOD, FOD awareness, and housekeeping procedures.
- *Housekeeping*: Preventing FOD from occurring is the most effective form of FOD management. Contractor must monitor construction activities and proactively develop a plan to prevent FOD from occurring. Typical FOD prevention measures include the use of covered trash containers, covered loads, zero tolerance of littering, and tying down items which may be easily windblown.
- Ground Vehicle Tire Inspections: Prior to crossing active airfield pavement the Contractor must perform a vehicle tire check for any loose rocks that may be in the tread. Tires covered in mud must be cleaned prior to crossing active pavement in order to prevent tracking of dirt.
- Pavement Sweeps: Prior to opening sections of pavement within a work area to aircraft traffic, the Contractor will be required to sweep the entire pavement surface (including shoulders). Metal

bristled brooms are known to create FOD, and the Contractor will be required to clean all bristles from the pavement. Compressed air and vacuums can be used to clean pavement surfaces as well.

• FOD Inspections: Refer to Section 10 of this document for FOD inspection requirements.

8. Hazardous Material (HAZMAT) Management

HAZMAT procedures to be developed by the Contractor prior to the issuance of the notice to proceed include, but are not limited to:

- Fuel Storage Locations and Handling Procedures
- Spill Response Procedures
- Safety Data Sheets (SDS)

The Contractor shall not introduce explosives or any other hazardous materials or equipment without the prior written consent of the RPR.

9. Notification of Construction Activities

9.1 List of Responsible Representatives

Persons who have questions concerning policies, procedures, or requirements of the Airport Security Program, should contact HGR Security. Persons who observe a security violation, suspicious act or any serious act that may endanger persons or property, should immediately contact HGR Security, HGR Operations, Police, and Fire Departments. For this project, all communications with the ATCT will be made by persons trained and approved by HGR Operations. Important telephone numbers are listed below:

- Police Department (301) 790-3700 (Dispatch)
- Fire Department (301) 790-2476 (Watch Desk)
- Airport Communication Center (240) 313-2200
- FAA Tech Ops Office (410) 859-7636
- FAA TRACON (410) 859-7252/7255
- FAA ATCT Manager Coordinate with RPR

9.2 Notices to Air Missions (NOTAMs)

Contractor shall coordinate with the RPR and HGR Operations personnel 7 days in advance for the issuance of all NOTAMs related to the project construction. HGR Operations will generate and issue NOTAMs based on Contractor construction schedule and facility impacts.

9.3 Emergency Notification Procedures

In the case of a life-threatening situation, dial 911 and the Airport's Emergency Number (240-313-2777) immediately thereafter. HGR Operations will coordinate any emergency response.

9.4 Coordination with ARFF

Weekly construction progress meetings will be held throughout the duration of the project and prior to commencement of phasing changes. During these weekly meetings, ARFF will be notified of re-routing, blocking, and restoration of emergency access routes. Contractor is required to adjust haul routes and hauling activities as necessary to accommodate ARFF operations.

9.5 Notification to the FAA

If the Contractor needs use of cranes, equipment, or other items on or near the airport, the Contractor must submit a new 7460-1 to the FAA for airspace review and approval. FAA approval could take up to ninety (90) calendar days.

10. Inspection Requirements

10.1 FOD Inspection

The Contractor shall keep the project site and vehicles clean, employing a "clean as you go" approach throughout the project.

10.2 Airport Operations Daily Inspection

Airport staff and HGR Operations personnel conduct daily airfield inspections. These inspections include an inspection of all open/active airfield-paved areas and safety areas to ensure compliance with FAR Part 139.327.

10.3 Contractor Inspection

Prior to opening work areas and pavement to aircraft traffic, the Contractor must coordinate with the RPR and HGR Operations for inspection of the work area. Pavements must be free of all dirt, sand, gravel, wire bristles, or any other objects that could cause damage to aircraft. All turf/soil areas must be free of dirt clods, ruts, or surface irregularities that could damage an aircraft should it leave the pavement. Daily inspections must be completed to assure all traffic control devices are in proper location and in working order.

10.4 Final Inspection

The Contractor will be required to coordinate with the RPR and Airport to schedule a final inspection.

11. Underground Utilities

It is not expected that there are any FAA utilities in the project vicinity. The location of the underground utilities and FAA cables shown on the plans has been obtained from available records and field checks and are believed to be correct. Locations of existing and proposed underground utilities and facilities shown on the Contract Drawings have been developed from available information. Completeness and accuracy of the location and depth of utilities and facilities cannot be guaranteed.

Prior to beginning any excavating operations, the Contractor is to use hand excavation, as required, to verify the depth and location of all utilities and facilities and clear them. Any underground utilities located which do not appear on the plans shall be brought to the attention of the RPR and shown on the Contractor mark-ups.

If FAA cables are damaged during construction, repairs shall be done from point to point in accordance with FAA requirements and in the presence of a FAA Representative. Maintenance and protection of underground utilities and infrastructure shall be the responsibility of the Contractor. If the Contractor damages any existing utilities during construction, he/she shall immediately repair the damaged item to the RPR's satisfaction, at the sole expense of the Contractor.

12. Penalties

The following penalties will be administered by the Airport, FAA and TSA as allowed per the requirements of the Construction Safety and Phasing Plan and HGR, FAA and TSA Rules and Regulations. If a fine is levied upon the Airport for a Contractor's violation, the fine amount will be paid by the Airport and deducted from the Contractor's monthly payment.

If a discrepancy or violation occurs, the Owner will allow construction work to resume only when the discrepancy is corrected to the Owner's satisfaction. The Owner may permanently prohibit any Consultant or Contractor Employee acting in violation with airport rules and regulations from entering or working on airport property.

12.1 Vehicle Operations

Stiff penalties exist to punish those who violate airport driving regulations. Prosecution can be a fine, imprisonment, lease violation, or impoundment of vehicle.

12.2 Security Violations

Individuals who violate Airport Security rules may be subject to prosecution. Penalties may be a fine, imprisonment, lease violation or impoundment of vehicle. The TSA can levy fines of up to \$11,000 per security incident. In addition to these penalties, the Airport reserves the right to remove or eject from the airport premises and suspend the contract of any person who violates any Airport Security rules or regulations. These violations include entering the AOA outside of the designated work area and the unescorted operation of a vehicle on any active AOA surface.

12.3 FOD

The airport has a zero-tolerance approach to FOD, and the Contractor may be subject to fines from the Airport, FAA, or other agencies for failure to properly manage FOD during construction activities.

13. Special Conditions

The Contractor may be required to halt construction activities during periods of low visibility conditions, snow removal, emergency situations, or VIP movements. In all cases the Contractor shall follow instructions from HGR Operations. See Section 5 of this document for airport safety and security measures and radio communications procedures. See Section 9 of this document for emergency notification procedures.

14. Runway and Taxiway Visual Aids

14.1 General

All lighting and signs that are located within an Object Free Area will be frangible.

14.2 Markings

Markings must be in compliance with the standards of AC 150/5340-1M, Standards for Airport Markings.

The existing taxiway markings will be removed during milling operations and then permanently remarked. Temporary taxiway pavement markings will be constructed upon completion of the new pavement. Permanent taxiway pavement markings will be constructed 30 days after completion of the pavement.

14.3 Lighting and Visual NAVAIDs

Lighting shall conform to the requirements in AC 150/5340-30, *Design and Installation Details for Airport Visual Aids*; AC 150/5345-50, *Specification for Portable Runway and Taxiway Lights;* and AC 150/5345-53, *Airport Lighting Certification Program*. There is no lighting and visual NAVAID work within this project.

14.4 Signs

There is no signage work within this project.

15. Markings and Signs for Access Routes

The pavement markings and signs for construction personnel conform to AC 150/5340-18F, and to the extent practicable, with Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD). Signs placed adjacent to areas used by aircraft must comply with the frangibility requirements of AC 150/5220-23. Access routes for Contractor are shown in the CSPP drawings.

16. Hazard Marking and Lighting

Low-profile barricades with flashing red lights will be used for all pavement closures. Cones may be utilized to establish limits of construction haul routes. Barricades will be placed end to end with no space in between except to allow ARFF access or as directed by the RPR. A Contractor's representative will be on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades.

Hazard marking and lighting of excavation areas are to be in accordance with the Occupational Safety and Health Organization (OSHA) requirements. Open trenches, excavations, open manholes, small

areas under repair, stockpiled material, and waste areas shall be prominently marked with barricades and orange flags and illuminated by flashing red light units during hours of restricted visibility and darkness, as directed by the RPR.

For work that is scheduled to be conducted at night, the contractor will provide lighting units to complete this work. The contractor will coordinate with the RPR for the location and aiming. Lights will not be aimed towards the ATCT or toward active taxiways/runways.

17. Work Zone Lighting for Nighttime Construction.

All Construction lighting shall be directed away from the approach of any active runway and/or any aircraft operators and the Air Traffic Control Tower. The Contractor shall provide a proposed lighting plan for approval by the RPR. During construction, the Contractor shall relocate, re-position or shield any construction lighting that interferes with the operation of the airport as directed by the RPR.

18. Protection of Areas, Zones, and Surfaces

All Safety Areas, Object Free Areas, and Obstacle Free Zones will be protected from construction activity. Open trenches and excavations are not permitted within the RSA or TSA while the Runway or Taxiway is open. All trenches and excavations within an RSA or TSA must be backfilled prior to opening a runway or taxiway for aircraft use. Any pavement construction related drop-offs shall be covered by at least one lift of asphalt prior to opening adjacent pavements to aircraft use. Pavement shall be brought up to RSA/TSA grading standards as defined by FAA AC 150/5300-13B. No non-frangible obstructions or drop-offs greater than three inches in height will be permitted within active runway or taxiway object free areas. If a runway or taxiway must be opened before excavations are backfilled, they must be covered appropriately, as approved by the RPR.

For work on and adjacent to active taxiways, runways, and aprons, the following conditions apply:

- *Runway Safety Area (RSA):* An area within 200 feet of the Runway 9-27 centerline, and an area within 75 feet of the Runway 2-20 centerline.
- *Runway Object Free Area (ROFA):* An area within 400 feet of the Runway 9-27 centerline, and an area within 250 feet of the Runway 2-20 centerline. Any equipment that is not in use (no operator available to move equipment for more than 15 minutes) must be completely removed from the ROFA.
- *Taxiway Safety Area (TSA):* an area within 59 feet of ADG III taxiway centerlines, unless otherwise noted on the plans.
- *Taxiway Object Free Area (TOFA)*: an area within 85.5 feet of ADG III taxiway centerlines, unless otherwise noted on the plans.
- Obstacle Free Zone (OFZ): Personnel, Construction equipment and stockpiles shall not penetrate the OFZ when the runway is open.

All construction activity within the RSA will require an applicable NOTAM and the closure of that runway. All construction activity within a TSA or TOFA will require an applicable NOTAM and the closure of that taxiway, or a designated portion thereof, or a restriction to the aircraft which will be permitted to use that taxiway during construction. The Contractor shall request through the RPR a NOTAM for the closure or restriction of the required portion of the taxiway or runway. The request shall include the times requested and the Contractor's proposed detailed schedule of this operation within the area utilizing only the requested closure times. NOTAMs require a 7 day notice and are subject to Airport approval.

If RSA or TSA dimension is adjusted, the airport operator will coordinate the change with the ATCT and the appropriate FAA Airports Regional or District Office and issue a local NOTAM.

19. Other Limits of Construction

Certain work areas and sub-areas may be made available to the Contractor with advanced notice and coordination with the RPR and HGR Operations. The specific sequence of work within each phase will be determined by the Contractor. Additional limitations include but are not limited to:

- Runways 9-27 and 2-20 shall not be closed at any time without advance approval from HGR Operations.
- The Contractor will be required to halt construction activities when required by emergency crews at the airport.
- The Contractor may be required to halt construction activities in the event of VIP movements on the airport.
- The Contractor shall not use tall equipment (cranes, concrete pumps, etc.) unless a 7460-1 determination letter is issued for such equipment.
- Blasting and the use of electrical blasting caps is prohibited on this project.
- The use of flare pots is prohibited within the AOA.
- Open flame, welding, or torch-cutting operations are prohibited.
- No debris burning will be allowed unless authorized by the RPR.

20. Safety Plan Compliance Document (SPCD) – Contractor's Responsibility

Contractor shall be responsible for meeting all of the requirements contained in this CSPP including the requirements shown in the Safety and Phasing drawings. In addition, the Contractor will be required to submit a Safety Plan Compliance Document (SPCD) to the RPR and Airport for review in time for an approval prior to Notice to Proceed. The requirements for the SPCD are stated in AC 150/5370-2G. A sample SPCD is included in Appendix C.

No work may commence until the schedule and SPCD is approved. The SPCD shall include but not be limited to:

- A plan for controlling construction equipment, personnel and vehicular movements in the AOA. The plan must include material haul routes. The plan shall detail the general requirements contained in the CSPP.
- The SPCD shall complete any details and discuss any deviations or topics that could not be addressed during the preparation of the CSPP. Should the SPCD include substantive changes to the CSPP requested by the Contractor, the SPCD must be submitted 45 days prior to the start of work in order for the Airport to obtain approval of such changes from the FAA.
- The SPCD shall include a general statement by the construction Contractor that he/she has read
 and will abide by the CSPP, the approval date of the CSPP, and a reference to any supplemental
 information (that is, "I [*Name of Contractor*], have read the [*Title of Project*] CSPP, approved
 on [*Date*], and will abide by it as written and with the following additions as noted:"). The
 supplemental information in the SPCD should be written to match the format of the CSPP
 indicating each subject by corresponding CSPP subject number and title. If no supplemental
 information is necessary for any specific subject, the statement, "No supplemental information,"
 should be written after the corresponding subject title.

Appendix A. Safety and Phasing Plan Checklist

APPENDIX A. SAFETY AND PHASING PLAN CHECKLIST

AC 150/5370-2G (12/13/2017)

This appendix is keyed to <u>Chapter 2</u>. In the electronic version of this AC, clicking on the paragraph designation in the Reference column will access the applicable paragraph. There may be instances where the CSPP requires provisions that are not covered by the list in this appendix.

This checklist is intended as an aid, not a required submittal.

Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	
Ge	neral Considerati	ons	1	1	
Requirements for predesign, pre-bid, and preconstruction conferences to introduce the subject of airport operational safety during construction are specified.	<u>2.5</u>	X			Pages 4 & 5 Sections 1.1, 1.2, 1.3, and 1.4
Operational safety is a standing agenda item for construction progress meetings.	<u>2.5</u>	X			Page 4 Section 1.3
Scheduling of the construction phases is properly addressed.	<u>2.5.3</u>	X			Pages 5-7 Section 2
Any formal agreements are established.	<u>2.6</u>			X	No Formal Agreements
Areas and Operation	ons Affected by C	onstruction Ac	ctivity		
Drawings showing affected areas are included.	<u>2.7.1</u>	X			Plan Sheets G202, G300- G303
Closed or partially closed runways, taxiways, and aprons are depicted on drawings.	<u>2.7.1.1</u>	X			Plan Sheets G300-G303
Access routes used by ARFF vehicles affected by the project are addressed.	<u>2.7.1.2</u>	X			To be addressed at Weekly Construction Progress Meeting
Access routes used by airport and airline support vehicles affected by the project are addressed.	<u>2.7.1.3</u>	X			To be addressed at Weekly Construction Progress Meeting
Underground utilities, including water supplies for firefighting and drainage.	<u>2.7.1.4</u>	X			Page 13, Section 11

Table C-1. CSPP Checklist

Safety and Phasing Plan Checklist

Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	-
Approach/departure surfaces affected by heights of temporary objects are addressed.	<u>2.7.1</u>	X			Plan Sheet G204 Maximum Equipment Height Table
Construction areas, storage areas, and access routes near runways, taxiways, aprons, or helipads are properly depicted on drawings.	<u>2.7.1.5</u>	X			General Project Layout G202
Temporary changes to taxi operations are addressed.	<u>2.7.2.1</u>	X			Closed Taxiways are depicted and noted on Sheets G301-G303
Detours for ARFF and other airport vehicles are identified.	<u>2.7.2.2</u>	X			To be addressed at Weekly Construction Progress Meeting
Maintenance of essential utilities and underground infrastructure is addressed.	<u>2.7.2.3</u>	X			Page 13 Section 11
Temporary changes to air traffic control procedures are addressed.	<u>2.7.2.4</u>			x	No Changes to air traffic control procedures are expected
	NAVAIDs		•		
Critical areas for NAVAIDs are depicted on drawings.	<u>2.8</u>			X	NAVAID critical areas are not near project area, and are not within construction document viewports.
Effects of construction activity on the performance of NAVAIDS, including unanticipated power outages, are addressed.	<u>2.8</u>			X	Construction activity will not impact NAVAIDS
Protection of NAVAID facilities is addressed.	<u>2.8</u>			x	Construction activity will not impact NAVAIDS
The required distance and direction from each NAVAID to any construction activity is depicted on drawings.	<u>2.8</u>			X	Construction activity will not impact NAVAIDS
Procedures for coordination with FAA ATO/Technical Operations, including identification of points of contact, are included.	<u>2.8, 2.13.1,</u> <u>2.13.5.3.1,</u> <u>2.18.1</u>			X	Construction activity will not impact NAVAIDS
	Contractor Acces	8			
The CSPP addresses areas to which contractor will have access and how The area will be accessed.	<u>2.9</u>	X			Page 9 Section 5

Safety and Phasing Plan Checklist

Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	
The application of 49 CFR Part 1542 Airport Security, where appropriate, is addressed.	<u>2.9</u>	X			Page 10 Section 5.4
The location of stockpiled construction materials is depicted on drawings.	<u>2.9.1</u>	X			Sheets G300- G303
The requirement for stockpiles in the ROFA to be approved by FAA is included.	<u>2.9.1</u>			x	There will be no stockpiles within the ROFA
Requirements for proper stockpiling of materials are included.	<u>2.9.1</u>	X			Page 8 Section 5.1
Construction site parking is addressed.	<u>2.9.2.1</u>	X			Page 9 Section 5.2.3
Construction equipment parking is addressed.	<u>2.9.2.2</u>	X			Page 9 Section 5.2.7
Access and haul roads are addressed.	2.9.2.3	X			Page 9 Section 5.2
A requirement for marking and lighting of vehicles to comply with <u>AC</u> <u>150/5210-5</u> , <i>Painting, Marking and</i> <i>Lighting of Vehicles Used on an</i> <i>Airport</i> , is included.	<u>2.9.2.4</u>	X			Page 9 Section 5.2.6
Proper vehicle operations, including requirements for escorts, are described.	<u>2.9.2.5, 2.9.2.6</u>	X			Plan Sheet G200 Contractor Safety Requirements Note D
Training requirements for vehicle drivers are addressed.	<u>2.9.2.7</u>	X			Plan Sheet G200 Contractor Safety Requirements Note D
Two-way radio communications procedures are described.	<u>2.9.2.9</u>	X			Page 10 Section 5.3.1
Maintenance of the secured area of the airport is addressed.	<u>2.9.2.10</u>	X			Page 10 Section 5.4
W	ildlife Managemo	ent	I		-
The airport operator's wildlife management procedures are addressed.	<u>2.10</u>	X			Page 10 Section 6

Coordination	Reference	Addre	Addressed?		
		Yes	No	NA	
Foreign	Object Debris Ma	anagement			
The airport operator's FOD management procedures are addressed.	<u>2.11</u>	X			Page 11 Section 7
Hazard	ous Materials Ma	nagement			
The airport operator's hazardous materials management procedures are addressed.	<u>2.12</u>	X			Page 12 Section 8
Notificati	on of Constructio	on Activities			·
Procedures for the immediate notification of airport user and local FAA of any conditions adversely affecting the operational safety of the airport are detailed.	<u>2.13</u>	X			Page 12 Section 9
Maintenance of a list by the airport operator of the responsible representatives/points of contact for all involved parties and procedures for contacting them 24 hours a day, seven days a week is specified.	<u>2.13.1</u>	X			Page 12 Section 9.1
A list of local ATO/Technical Operations personnel is included.	<u>2.13.1</u>			X	OPS to coordinate with ATCT
A list of ATCT managers on duty is included.	<u>2.13.1</u>			X	Contractor to coordinate with RPR
A list of authorized representatives to the OCC is included.	2.13.2			X	Contractor to coordinate with RPR
Procedures for coordinating, issuing, maintaining and cancelling by the airport operator of NOTAMS about airport conditions resulting from construction are included.	<u>2.8, 2.13.2,</u> <u>2.18.3.3.9</u>	X			Page 12 Section 9.2
Provision of information on closed or hazardous conditions on airport movement areas by the airport operator to the OCC is specified.	<u>2.13.2</u>			X	No hazardous conditions will occur in airport movement areas
Emergency notification procedures for medical, firefighting, and police responses are addressed.	<u>2.13.3</u>	X			Page 12 Section 9.1 and Section 9.3

Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	-
Coordination with ARFF personnel for non-emergency issues is addressed.	<u>2.13.4</u>	x			Page 12 Section 9.4
Notification to the FAA under 14 CFR parts 77 and 157 is addressed.	<u>2.13.5</u>	x			Page 12 Section 9.5
Reimbursable agreements for flight checks and/or design and construction for FAA owned NAVAIDs are addressed.	<u>2.13.5.3.2</u>			X	No NAVAID impacts are expected
Ins	pection Requirem	ients		1	
Daily and interim inspections by both the airport operator and contractor are specified.	<u>2.14.1, 2.14.2</u>	x			Pages 12-13 Section 10.1-10.3
Final inspections at certificated airports are specified when required.	2.14.3	X			Page 13 Section 10.4
U	nderground Utilit	ties			
Procedures for protecting existing underground facilities in excavation areas are described.	<u>2.15</u>	X			Page 13 Section 11
	Penalties				
Penalty provisions for noncompliance with airport rules and regulations and the safety plans are detailed.	<u>2.16</u>	X			Page 13 Section 12
	Special Condition	IS			
Any special conditions that affect the operation of the airport or require the activation of any special procedures are addressed.	<u>2.17</u>	X			Page 14 Section 13
Runway and Taxiway Visual Aid	ls - Marking, Ligl	hting, Signs, ai	nd Vis	ualNA	VAIDs
The proper securing of temporary airport markings, lighting, signs, and visual NAVAIDs is addressed.	<u>2.18.1</u>	X			Page 14 Section 14.1-14.4
Frangibility of airport markings, lighting, signs, and visual NAVAIDs is specified.	<u>2.18.1</u> , <u>2.18.3</u> , <u>2.18.4.2</u> , <u>2.20.2.4</u>	X			Page 14 Section 14.1

Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	
The requirement for markings to be in compliance with <u>AC 150/5340-1M</u> , <i>Standards for Airport Markings</i> , is specified.	<u>2.18.2</u>	x			Page 14 Section 14.2
Detailed specifications for materials and methods for temporary markings are provided.	<u>2.18.2</u>	x			Page 14 Section 14.2
The requirement for lighting to conform to <u>AC 150/5340-30</u> , <i>Design and</i> <i>Installation Details for Airport Visual</i> <i>Aids;</i> <u>AC 150/5345-50</u> , <i>Specification</i> <i>for Portable Runway and Taxiway</i> <i>Lights;</i> and <u>AC 150/5345-53</u> , <i>Airport</i> <i>Lighting Certification Program</i> , is specified.	<u>2.18.3</u>	X			Page 14 Section 14.3
The use of a lighted X is specified where appropriate.	<u>2.18.2.1.2,</u> <u>2.18.3.2</u>			x	No Runway closures within this project
The requirement for signs to conform to AC 150/5345-44, Specification for Runway and Taxiway Signs; AC 50/5340-18, Standards for Airport Sign Systems; and AC 150/5345-53, Airport Lighting Certification Program, is specified.	<u>2.18.4</u>	X			Page 14 Section 14.4
Marking	and Signs for Ac	cess Routes			
The CSPP specifies that pavement markings and signs intended for construction personnel should conform to <u>AC 150/5340-18</u> and, to the extent practicable, with the MUTCD and/or State highway specifications.	<u>2.18.4.2</u>	X			Page 14 Section 15
Hazar	d Marking and L	ighting			
Prominent, comprehensible warning indicators for any area affected by construction that is normally accessible to aircraft, personnel, or vehicles are specified.	<u>2.20.1</u>	X			Page 14 Section 16

Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	
Hazard marking and lighting are specified to identify open manholes, small areas under repair, stockpiled material, and waste areas.	<u>2.20.1</u>	X			Page 14 Section 16
The CSPP considers less obvious construction-related hazards.	<u>2.20.1</u>	X			Page 14 Section 16
Equipment that poses the least danger to aircraft but is sturdy enough to remain in place when subjected to typical winds, prop wash and jet blast is specified.	<u>2.20.2.1</u>	X			Page 14 Section 16
The spacing of barricades is specified such that a breach is physically prevented barring a deliberate act.	<u>2.20.2.1</u>	X			Page 14 Section 16
Red lights meeting the luminance requirements of the State Highway Department are specified.	<u>2.20.2.2</u>	x			Page 14 Section 16
Barricades, temporary markers, and other objects placed and left in areas adjacent to any open runway, taxiway, taxi lane, or apron are specified to be as low as possible to the ground, and no more than 18 inch high.	<u>2.20.2.3</u>	X			Sheet G500 Detail 5
Barricades are specified to indicate construction locations in which no part of an aircraft may enter.	<u>2.20.2.3</u>	x			Page 14 Section 16
Highly reflective barriers with lights are specified to barricade taxiways leading to closed runways.	<u>2.20.2.5</u>	x			Page 14 Section 16
Markings for temporary closures are specified.	<u>2.20.2.5</u>			x	No temporary closure markings are proposed.
The provision of a contractor's representative on call 24 hours a day for emergency maintenance of airport hazard lighting and barricades is specified.	<u>2.20.2.7</u>	X			Page 14 Section 16

Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	
Work Zone Lig	hting for Nighttin	ne Constructi	on		
If work is to be conducted at night, the CSPP identifies construction lighting units and their general locations and aiming in relationship to the ATCT and active runways and taxiways.	<u>2.21</u>	X			Page 15 Section 17 Contractor to provide lighting plan for RPR approval.
Protection of R	unway and Taxiv	vay Safety Are	eas		
The CSPP clearly states that no construction may occur within a safety area while the associated runway or taxiway is open for aircraft operations.	<u>2.22.1.1,</u> <u>2.22.3.1</u>	X			Page 15 Section 18
The CSPP specifies that the airport operator coordinates the adjustment of RSA or TSA dimensions with the ATCT and the appropriate FAA Airports Regional or District Office and issues a local NOTAM.	<u>2.22.1.2</u> , <u>2.22.3.2</u>	X			Page 15 Section 18
Procedures for ensuring adequate distance for protection from blasting operations, if required by operational considerations, are detailed.	<u>2.22.3.3</u>			x	Blasting is not permitted
The CSPP specifies that open trenches or excavations are not permitted within a safety area while the associated runway or taxiway is open, subject to approved exceptions.	<u>2.22.1.4</u>	X			Page 15 Section 18
Appropriate covering of excavations in the RSA or TSA that cannot be backfilled before the associated runway or taxiway is open is detailed.	<u>2.22.1.4</u>	X			Page 15 Section 18
The CSPP includes provisions for prominent marking of open trenches and excavations at the construction site.	<u>2.22.1.4</u>	X			Page 15 Section 18
Grading and soil erosion control to maintain RSA/TSA standards are addressed.	<u>2.22.3.5</u>	X			Page 15 Section 18

Safety and Phasing Plan Checklist

Coordination	Reference	Addressed?		Remarks	
		Yes	No	NA	
The CSPP specifies that equipment is to be removed from the ROFA when not in use.	<u>2.22.2</u>	X			Page 15 Section 18
The CSPP clearly states that no construction may occur within a taxiway safety area while the taxiway is open for aircraft operations.	<u>2.22.3</u>	X			Page 15 Section 18
Appropriate details are specified for any construction work to be accomplished in a taxiway object free area.	<u>2.22.4</u>	X			Page 15 Section 18
Measures to ensure that personnel, material, and/or equipment do not penetrate the OFZ or threshold siting surfaces while the runway is open for aircraft operations are included.	<u>2.22.4.3.6</u>	X			Page 15 Section 18
Provisions for protection of runway approach/departure areas and clearways are included.	<u>2.22.6</u>	x			Page 15 Section 18
Other Li	imitations on Con	struction			
The CSPP prohibits the use of open flame welding or torches unless adequate fire safety precautions are provided, and the airport operator has approved their use.	<u>2.23.1.2</u>	X			Page 15 Section 19
The CSPP prohibits the use of electrical blasting caps on or within 1,000 ft. (300m) of the airport property.	<u>2.23.1.3</u>	X			Page 15 Section 19

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Appendix B. Construction Safety and Phasing Drawings *

- 1. G200_General Construction & Safety Notes 1
- 2. G201_General Construction & Safety Notes 2
- 3. G202_General Project Layout
- 4. G204_Maximum Equipment Height Plan
- 5. G300_Overall Construction and Phasing Plan
- 6. G301_Construction Safety and Phasing Plan Phase 1
- 7. G302_Construction Safety and Phasing Plan Phase 2
- 8. G303_Construction Safety and Phasing Plan Phase 3
- 9. G500_Construction Safety Phasing Notes and Details
- * Construction Safety and Phasing Drawings provided in this CSPP are for CSPP submittal to FAA only. In the event of any discrepancy between these drawings and the bid set of plans, the bid set of plans shall govern.

GENERAL CONSTRUCTION NOTES:

- 1. THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS AND ANY RULES. REGULATIONS. STANDARDS OR SPECIFICATIONS REFERENCED THEREIN. THE PROJECT IS SUBJECT TO INSPECTION BY REPRESENTATIVES OF WASHINGTON COUNTY (THE AIRPORT SPONSOR), THEIR AUTHORIZED REPRESENTATIVES, THE FEDERAL AVIATION ADMINISTRATION (FAA), AND OTHER GOVERNING AGENCIES.
- 2. THE PROJECT IS TO BE COMPLETED IN CLOSE CONFORMANCE WITH THE CONSTRUCTION PLANS AND CONTRACT SPECIFICATIONS AND SHALL BE CONSTRUCTED IN A TIMELY MANNER IN ACCORDANCE WITH THE CONTRACTOR'S APPROVED PROJECT SCHEDULE. THE SCHEDULE SHALL PROVIDE FOR COMPLETION OF THE PHASES AS SHOWN ON THE PLANS AND DESCRIBED IN THE CONTRACT SPECIFICATIONS.
- 3. THE CONTRACTOR IS EXPECTED TO COMPLETE THE ENTIRE PROJECT ON TIME. THE IMPORTANCE OF THIS IS STRESSED BY THE INCLUSION OF LIQUIDATED DAMAGES IN THE SPECIFICATIONS.
- HAGERSTOWN REGIONAL AIRPORT WILL BE IN OPERATION DURING THE CONSTRUCTION OF THIS PROJECT COORDINATION OF WORK WITH THE AIRPORT AND AIRLINES (THROUGH THE AIRPORT DIRECTOR) IS MANDATORY SO AS TO MINIMIZE IMPACTS ON AIRPORT OPERATIONS.
- 5. CONSTRUCTION AND MAINTENANCE OPERATIONS BY OTHERS WILL OCCUR CONCURRENTLY AND AT TIMES IN THE VICINITY OF CONSTRUCTION ASSOCIATED WITH THIS PROJECT. THE CONTRACTOR SHALL COORDINATE HIS OPERATIONS AND COOPERATE WITH MAINTENANCE CREWS AND OTHER CONTRACTORS WORKING ON THE AIRPORT. COORDINATION WITH APPROPRIATE GOVERNMENT AND UTILITY AGENCIES IS ALSO REQUIRED.
- 6. ACCESS TO THE SITE THE CONTRACTOR'S ACCESS POINTS TO THE SITE ARE SHOWN ON THE GENERAL PROJECT LAYOUT PLAN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL VEHICLES AND PERSONNEL WHO ENTER THE AIRPORT PROPERTY. THE CONTRACTOR SHALL CONSULT WITH THE MAINTENANCE DEPARTMENT AT THE BEGINNING AND ENDING OF EACH WORK PERIOD.
- 7. HAUL ROUTES THE CONTRACTOR'S ON-AIRPORT HAUL ROUTES ARE SHOWN ON THE GENERAL PROJECT LAYOUT ANY DEBRIS (WHETHER CAUSED BY THE CONTRACTOR OR NOT) SHALL BE REMOVED IMMEDIATELY.

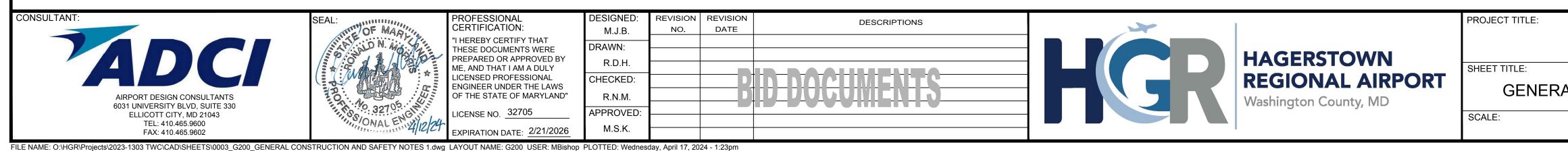
IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE OFF-SITE HAUL ROUTES (STATE HIGHWAYS, COUNTY ROADS. OR CITY STREETS) WITH THE APPROPRIATE OWNER WHO HAS JURISDICTION OVER THE AFFECTED ROUTE. ON-SITE PAVEMENTS USED AS HAUL ROUTES SHALL BE MAINTAINED BY THE CONTRACTOR AND SHALL BE RESTORED AT THE CONTRACTOR'S EXPENSE TO THEIR PRE-CONSTRUCTION CONDITION UPON COMPLETION OF BEING USED AS A HAUL ROUTE. THE BEFORE AND AFTER CONDITION OF ON-SITE HAUL ROUTES SHALL BE JOINTLY INSPECTED AND DETERMINED BY THE CONTRACTOR AND THE RESIDENT PROJECT REPRESENTATIVE(RPR).

FENCING, DRAINAGE, GRADING AND OTHER MISCELLANEOUS CONSTRUCTION REQUIRED TO CONSTRUCT TEMPORARY HAUL ROUTES OR ACCESS POINTS ON THE AIRPORT WILL BE THE CONTRACTOR'S TOTAL RESPONSIBILITY AND SHALL BE APPROVED BY THE RPR PRIOR TO COMMENCING THE WORK. THIS WORK IS CONSIDERED INCIDENTAL TO WORK AND NO SEPARATE PAYMENT WILL BE MADE. ALL ON-SITE ACCESS TO AIRPORT FACILITIES SHALL REMAIN OPEN AND MAINTAINED AT ALL TIMES.

- CONTRACTOR'S STAGING AREAS AREAS ARE AVAILABLE FOR CONTRACTOR'S MOBILIZATION AND STORAGE. THESE AREAS ARE SHOWN ON THE GENERAL PROJECT LAYOUT AND PHASING PLANS. THE CONTRACTOR'S STAGING AREAS SHALL BE GRADED, TOPSOILED, SEEDED, AND MULCHED UPON COMPLETION OF USE.
- DISPOSAL AREA ALL MATERIALS THAT ARE SALVAGEABLE INCLUDING PAVEMENT MILLINGS. AND ARE DESIRED BY AIRPORT MAINTENANCE SHALL BE TURNED OVER TO THE AIRPORT. THE AIRPORT WILL ACCEPT A MAXIMUM OF 10 TRUCKLOADS OF PAVEMENT MILLINGS. A DISPOSAL AREA FOR THE NONSALVAGEABLE MATERIAL WILL NOT BE AVAILABLE ON AIRPORT PROPERTY. THE CONTRACTOR'S WASTE MATERIALS, SHALL BE DISPOSED OF OFF AIRPORT PROPERTY. WASTE MATERIALS INCLUDE THOSE ITEMS WHICH ARE A DIRECT RESULT OF CONSTRUCTION. TRASH (I.E. CUPS, CANS, ETC.) SHALL BE DISPOSED OF THROUGH

PROPER SANITARY METHODS.

- 10. SAFETY THE CONTRACTOR SHALL CONDUCT HIS ACTIVITIES IN A SAFE MANNER AS SPECIFIED IN THE SECTION TITLED, "CONTRACTORS SAFETY REQUIREMENTS DURING CONSTRUCTION" ON THIS SHEET.
- 11. PROTECTION OF AND REPAIR TO EXISTING CABLES -LOCATIONS OF KNOWN EXISTING AIRPORT UNDERGROUND CABLES ARE SHOWN ON THE PLANS AND MUST BE VERIFIED BY THE CONTRACTOR. REPAIR OF DAMAGED CABLES MUST BE STARTED IMMEDIATELY AND CONTINUED UNTIL COMPLETED. ALL SUCH REPAIRS SHALL BE IN ACCORDANCE WITH THE SPECIFICATIONS AND SHALL BE AT THE CONTRACTOR'S EXPENSE. IF FAA CABLES ARE DAMAGED. REPAIRS SHALL BE DONE IN ACCORDANCE WITH FAA REQUIREMENTS AND IN THE PRESENCE OF AN FAA REPRESENTATIVE. THE FAA MAY ELECT TO HAVE THE REPAIR PERFORMED BY OTHERS IN WHICH CASE THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYING THE INCURRED COSTS OF REPAIRS.
- 12. ALL CONSTRUCTION EQUIPMENT IS LIMITED TO A MAXIMUM HEIGHT OF 25 FEET. IF ANY EQUIPMENT IS GOING TO BE HIGHER THAN 25', CONTRACTOR MUST COORDINATE WITH RPR.
- 13. CONSTRUCTION LIMITS ALL CONTRACTOR VEHICLES AND TRAFFIC (UNLESS OTHERWISE AUTHORIZED) SHALL REMAIN WITHIN THE DESIGNATED CONSTRUCTION LIMITS OR HAUL ROUTES. CONSTRUCTION, STORAGE AND STOCKPILING LIMITS ARE FURTHER DEFINED IN THE SECTION TITLED. "CONTRACTORS SAFETY REQUIREMENTS DURING CONSTRUCTION" ON THIS SHEET.
- 14. THE CONTRACTOR SHALL OBTAIN ALL THE PERMITS AND LICENSES REQUIRED FOR THE PROJECT WORK AT HIS OWN EXPENSE.
- 15. BASE MAPPING FOR THIS PROJECT IS BASED ON HISTORICAL MAPPING PROVIDED BY THE AIRPORT.
- 16. EXISTING AND PROPOSED GRADES EXISTING GRADES SHOWN ON THE DRAWINGS ARE BELIEVED TO BE ACCURATE, BUT THE SPONSOR, OR RPR ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THESE GRADES. IF THE CONTRACTOR DOES NOT CONCUR WITH THE ELEVATIONS GIVEN ON THE DRAWINGS, HE SHALL NOTIFY THE RPR IN WRITING PRIOR TO INITIATING ANY CONSTRUCTION ACTIVITIES. START OF WORK BY THE CONTRACTOR WITHOUT SUCH NOTIFICATION WILL BE INTERPRETED AS AN AGREEMENT BY THE CONTRACTOR WITH THE ACCURACY OF THE GRADES SHOWN ON THE PLANS.
- 17. PERMITS THE CONTRACTOR MUST OBTAIN APPROPRIATE PERMITS FROM THE PROPER GOVERNMENT AGENCIES FOR ACCESS TO, AND TO USE THEIR ROADS FOR DELIVERY OF MATERIALS AND EQUIPMENT TO THE SITE. ANY DAMAGE TO OFF-SITE OR ON-SITE ROADS SHALL BE REPAIRED BY THE CONTRACTOR AT HIS EXPENSE. IF BLASTING IS REQUIRED TO FACILITATE EXCAVATION PROPER PERMITS MUST BE OBTAINED.
- 18. IF BLASTING IS BEING PROPOSED BY THE CONTRACTOR, THE CONTRACTOR WILL BE REQUIRED TO SUBMIT A BLASTING PLAN. THE CONTRACTOR OR SUBCONTRACTOR PERFORMING THE BLASTING IS REQUIRED TO BE LICENSED IN THE STATE OF MARYLAND IN ACCORDANCE WITH THE MARYLAND PUBLIC SAFETY CODE, TITLE 11, EXPLOSIVES. THE CONTRACTOR SHALL OBTAIN A BLASTER'S PERMIT FROM THE STATE OF MARYLAND. DEPARTMENT OF STATE POLICE. OFFICE OF THE STATE FIRE MARSHALL FOR GENERAL ABOVE GROUND CONSTRUCTION. THE COST FOR OBTAINING SUCH LICENSES AND PERMITS SHALL BE INCIDENTAL TO THE PROJECT.



CONTRACTORS SAFETY REQUIREMENTS DURING CONSTRUCTION:

FEDERAL AVIATION ADMINISTRATION (FAA) ADVISORY CIRCULARS (AC), ORDERS AND FEDERAL AVIATION REGULATIONS (F A R).

FOLLOWING PUBLICATIONS CONTAIN THE DEFINITIONS/DESCRIPTIONS OF CRITICAL AIRPORT OPERATING AREAS. THE AREAS DEFINED BELOW PERTAIN TO AIRFIELD SAFETY REQUIREMENTS AND ARE REFERENCED THROUGHOUT THE CONTRACT DOCUMENTS. COPIES OF THESE PUBLICATIONS ARE AVAILABLE THROUGH THE FAA AND CAN BE REVIEWED AT THE OFFICES OF THE HAGERSTOWN REGIONAL AIRPORT.

- 1. AC 150/5370-2G, "OPERATIONAL SAFETY ON AIRPORTS DURING CONSTRUCTION", CURRENT EDITION, SETS FORTH GUIDELINES TO ASSIST AIRPORT OPERATORS IN COMPLYING WITH F A R PART 139. "CERTIFICATION AND OPERATION: LAND AIRPORTS SERVING CERTAIN AIR CARRIERS" AND WITH THE REQUIREMENTS OF FEDERALLY FUNDED CONSTRUCTION PROJECTS.
- 2. F A R PART 77 "OBJECTS AFFECTING NAVIGABLE AIRSPACE, CURRENT EDITION:
 - (A) ESTABLISHES STANDARDS FOR DETERMINING OBSTRUCTIONS TO NAVIGABLE AIRSPACE. CIVIL AIRPORT IMAGINARY SURFACES ARE DEFINED IN THE PUBLICATION AND ARE SHOWN ON THE SAFETY/PHASING NOTES AND DETAILS.
 - (B) SETS FORTH REQUIREMENTS FOR NOTICE OF CERTAIN PROPOSED CONSTRUCTION OR ALTERATION. NOTICE OF CONSTRUCTION PROVIDES A BASIS FOR RECOMMENDATIONS FOR IDENTIFYING THE CONSTRUCTION OR ALTERATION IN ACCORDANCE WITH AC 70/7460-1L "OBSTRUCTION MARKING AND LIGHTING," CURRENT EDITION.
- 3. AC 150/5300-13B. "AIRPORT DESIGN", CURRENT EDITION. ESTABLISHES DESIGN, OPERATIONAL, AND MAINTENANCE STANDARDS FOR AIRPORTS. STANDARD TERMS DEFINED IN THIS AC AND USED IN THE CONTRACT PLANS AND SPECIFICATIONS ARE DEFINED BELOW:
 - (A) OBSTACLE FREE ZONE (OFZ) A VOLUME OF SPACE WHICH IS FREE OF ALL FIXED OBJECTS AND CLEAR OF VEHICLES IN THE PROXIMITY OF AN AIRPLANE CONDUCTING AN APPROACH, MISSED APPROACH, LANDING, TAKEOFF, OR DEPARTURE. AN OFZ TYPICAL SECTION IS SHOWN ON THE SAFETY/PHASING NOTES AND DETAILS SHEET.
 - (B) RUNWAY PROTECTION ZONE (RPZ): A TRAPEZOIDAL AREA CENTERED ON THE RUNWAY BEGINNING AT A POINT 200 FEET BEYOND THE END OF THE AREA USABLE FOR TAKEOFF OR LANDING. THE RPZ IS SHOWN ON THE GENERAL PROJECT LAYOUT PLAN.
 - (C) OBJECT FREE AREA (OFA): A TWO DIMENSIONAL GROUND AREA SURROUNDING RUNWAYS, TAXIWAYS, AND TAXILANES WHICH IS CLEAR OF OBJECTS EXCEPT FOR OBJECTS WHOSE LOCATION IS FIXED BY FUNCTION.
 - (D) SAFETY AREA THE SURFACE ADJACENT TO RUNWAYS. TAXIWAYS, AND TAXILANES OVER WHICH AIRCRAFT SHOULD, IN DRY WEATHER, BE ABLE TO CROSS AT NORMAL SPEEDS WITHOUT INCURRING SIGNIFICANT DAMAGE. A SAFETY AREA IS GRADED, DRAINED AND COMPACTED. IT IS FREE OF ANY HOLES, TRENCHES BUMPS OR OTHER SIGNIFICANT SURFACE VARIATIONS OR OBJECTS OTHER THAN THOSE WHICH MUST BE THERE BECAUSE OF THEIR ESSENTIAL AERONAUTICAL FUNCTION. THE SAFETY AREA REQUIRES THE CAPABILITY OF SUPPORTING MAINTENANCE VEHICLES AND AIRCRAFT RESCUE AND FIRE FIGHTING VEHICLES UNDER NORMAL (DRY) CONDITIONS.
- B GENERAL SAFETY REQUIREMENTS
 - 1. THE CONTRACTOR SHALL ACQUAINT HIS SUPERVISORS AND EMPLOYEES WITH THE AIRPORT ACTIVITY AND OPERATIONS THAT ARE INHERENT TO HAGERSTOWN REGIONAL AIRPORT AND SHALL CONDUCT HIS CONSTRUCTION ACTIVITIES TO CONFORM TO ALL ROUTINE AND EMERGENCY AIR TRAFFIC REQUIREMENTS AND GUIDELINES FOR SAFETY SPECIFIED HEREIN. THF CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL SAFETY DEVICES AS REQUIRED FOR THE PROTECTION OF HIS PERSONNEL.
 - 2. PROTECTION OF ALL PERSONS SHALL BE PROVIDED THROUGHOUT THE PROGRESS OF THE WORK. THE WORK SHALL PROCEED IN SUCH A MANNER AS TO PROVIDE SAFE CONDITIONS FOR ALL WORKERS AND GOVERNMENT PERSONNEL. THE SEQUENCE OF OPERATION SHALL BE SUCH THAT MAXIMUM PROTECTION IS AFFORDED TO INSURE THAT PERSONNEL AND WORKERS IN THE WORK AREA ARE NOT SUBJECT TO ANY DANGEROUS CONDITIONS. THE CONTRACTOR MUST PROVIDE SAFETY MEASURES TO GUARD AGAINST INJURY.

- 3. DURING PERFORMANCE OF THIS CONTRACT, THE AIRPOF RUNWAYS, TAXIWAYS, AND AIRCRAFT PARKING APRONS SHAI REMAIN IN USE BY AIRCRAFT TO THE MAXIMUM EXTEN POSSIBLE. ALL AIRCRAFT TRAFFIC ON THESE AREAS SHA HAVE PRIORITY OVER CONTRACTOR'S TRAFFIC. THE OWNE RESERVES THE RIGHT TO ORDER THE CONTRACTOR AT AN TIME TO VACATE ANY AREA NECESSARY TO MAINTAIN SAF AIRCRAFT OPERATIONS. USE OF AREAS NEAR TH CONTRACTOR'S WORK WILL BE CONTROLLED TO MINIMIZ DISTURBANCE TO THE CONTRACTOR'S OPERATION. TH CONTRACTOR SHALL NOT ALLOW EMPLOYEE SUBCONTRACTORS, SUPPLIERS, OR ANY OTHE UNAUTHORIZED PERSON TO ENTER OR REMAIN IN AN AIRPORT AREA WHICH WOULD BE HAZARDOUS TO PERSONS C TO AIRCRAFT OPERATIONS.
- CONSTRUCTION AND FACILITIES MAINTENANCE С
 - 1. THE CONTRACTOR SHALL BE AWARE OF AND PREVENT THE FOLLOWING TYPES OF SAFETY PROBLEMS AND/OR HAZARDS:
 - (A) TRENCHES, HOLES, OR EXCAVATION ON OR ADJACENT ANY OPEN RUNWAY OR IN SAFETY AREAS.
 - (B) UNMARKED/UNLIGHTED HOLES OR EXCAVATION IN AN APRON, OPEN TAXIWAY, OPEN TAXILANE, OR RELATE SAFETY AREA.
 - (C) MOUNDS OR PILES OF EARTH. CONSTRUCTION MATERIAL TEMPORARY STRUCTURES. OR OTHER OBJECTS IN TH VICINITY OF THE OPEN RUNWAY, TAXIWAYS, TAXILANES, (
 - IN A RELATED SAFETY APPROACH OR DEPARTURE AREA. (D) VEHICLES OR EQUIPMENT. WHETHER OPERATING OR IDL ON ANY OPEN RUNWAY, TAXIWAY, TAXILANE, OR IN AN RELATED SAFETY APPROACH OR DEPARTURE AREA.
 - (E) VEHICLES, EQUIPMENT, EXCAVATION, STOCKPILES, OTHER MATERIALS WHICH COULD DEGRADE OTHERWISE INTERFERE WITH ELECTRONIC SIGNALS FRO RADIOS OR ELECTRONIC NAVIGATIONAL AIDS (NAVAIDS).
 - (F) PAVEMENT DROP-OFFS OR PAVEMENT TURF-LIPS (EITHE PERMANENT OR TEMPORARY) WHICH COULD CAUS DAMAGE TO AIRCRAFT IF CROSSED AT NORMA OPERATING SPEEDS. THE NORMAL MAXIMUM DROP-O OR LIP IS 1-1/2 INCHES.
 - (G) UNMARKED UTILITY, NAVAID, WEATHER SERVICE, RUNWA LIGHTING, OR OTHER POWER OR SIGNAL CABLES THA COULD BE DAMAGED DURING CONSTRUCTION.
 - (H) OBJECTS, WHETHER OR NOT MARKED OR FLAGGED, C ACTIVITIES ANYWHERE ON OR IN THE VICINITY OF AIRPOR WHICH COULD BE DISTRACTING, CONFUSING, O ALARMING TO PILOTS DURING AIRCRAFT OPERATIONS.
 - UNFLAGGED/UNLIGHTED LOW VISIBILITY ITEMS SUCH A (1) TALL CRANES, DRILLS, AND THE LIKE ANYWHERE IN TH VICINITY OF ACTIVE RUNWAYS, OR IN ANY APPROACH O DEPARTURE AREAS.
 - (J) MISLEADING OR MALFUNCTIONING OBSTRUCTION LIGHT OR UNLIGHTED/UNMARKED OBSTRUCTIONS IN TH APPROACH TO ANY ACTIVE RUNWAY.
 - (K) INADEQUATE APPROACH/DEPARTURE SURFACES (THES SURFACES ARE NEEDED TO ASSURE ADEQUAT LANDING/TAKEOFF CLEARANCE OVER OBSTRUCTIONS. OF WORK OR STORAGE AREAS).
 - (L) INADEQUATE, CONFUSING OR MISLEADING (TO USE PILOTS) MARKING/LIGHTING OF RUNWAYS, TAXIWAYS, OF TAXILANES (INCLUDING DISPLACED OR RELOCATE THRESHOLDS).
 - (M) WATER, SNOW, DIRT, DEBRIS, OR OTHER TRANSIEN ACCUMULATION WHICH TEMPORARILY OBSCURE PAVEMENT MARKINGS OR PAVEMENT EDGES, OR REDUCE
 - VISIBILITY OF RUNWAY/TAXIWAY MARKINGS OR LIGHTING. (N) INADEQUATE OR IMPROPER METHODS OF MARKING BARRICADING, AND LIGHTING OF TEMPORARILY CLOSE PORTIONS OF THE AIRPORT OPERATIONS AREA.
 - (O) TRASH OR OTHER MATERIALS WITH FOREIGN OBJEC DAMAGE (FOD) POTENTIAL; WHETHER ON RUNWAYS TAXIWAYS. OR APRONS: OR IN RELATED SAFETY AREAS.
 - (P) INADEQUATE BARRICADING OR OTHER MARKING WHICH PLACED TO SEPARATE CONSTRUCTION OR MAINTENANCI AREAS FROM OPEN AIRCRAFT OPERATING AREAS.
 - (Q) FAILURE TO CONTROL UNAUTHORIZED VEHICLE AN HUMAN ACCESS FROM ACTIVE AIRCRAFT OPERATING AREAS.
 - (R) FAILURE TO MAINTAIN RADIO COMMUNICATION BETWEE CONSTRUCTION/MAINTENANCE VEHICLES AND AIR TRAFFI CONTROL TOWER.
 - (S) CONSTRUCTION/MAINTENANCE ACTIVITIES OR MATERIAL WHICH COULD HAMPER THE RESPONSE OF AIRCRAF RESCUE AND FIRE FIGHTING (ARFF) OR OTHE EMERGENCY EQUIPMENT FROM REACHING AIRCRAFT. AL OR ANY PART OF THE RUNWAY/TAXIWAY SYSTEM, RUNWAY APPROACH AND DEPARTURE AREAS AND TO AIRCRAF PARKING LOCATIONS.
 - (T) BIRD ATTRACTANTS ON AIRPORT SUCH AS: EDIBLES (FOOL SCRAPS, ETC.), MISCELLANEOUS TRASH, OR PONDE WATER

RT ALL NT ALL ER NY		2. THE CONTRACTOR SHALL CONDUCT ACTIVITIES SO AS NOT TO VIOLATE ANY SAFETY STANDARDS CONTAINED HEREIN. THE CONTRACTOR SHALL INSPECT ALL CONSTRUCTION AND STORAGE AREAS AS OFTEN AS NECESSARY AND PROMPTLY TAKE ALL STEPS NECESSARY TO PREVENT/REMEDY ANY UNSAFE OR
NFE HE IZE ES, ER NY OR		POTENTIALLY UNSAFE CONDITIONS OR ACTIVITIES DISCOVERED. 3. BEFORE ACTUAL COMMENCEMENT OF CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL NOTIFY, IN WRITING, AT LEAST 48 HOURS IN ADVANCE, THE AIRPORT DIRECTOR OF HIS INTENTIONS OF CONSTRUCTION, STATING THE PROPOSED TIME, DATE, AND AREA OF WHICH COMMENCEMENT IS TO OCCUR.
ТО		UPON COMPLETION OF WORK AND RETURN OF ALL RELATED AREAS TO STANDARD CONDITIONS, THE CONTRACTOR SHALL AGAIN NOTIFY THE AIRPORT DIRECTOR, IN WRITING, AND DESCRIBE THE AREA THAT IS COMPLETE AND AVAILABLE FOR NORMAL AIRPORT OPERATIONS.
NY FED NLS, FHE OR DLE, NY OR OR		THE ISSUANCE OF NOTAMS SHALL BE REQUIRED FOR ALL AIRFIELD IMPACTS (I.E. RUNWAY CLOSURES, TAXIWAY CLOSURES, NAVAID IMPACTS, BLASTING, ETC.). THE CONTRACTOR SHALL COORDINATE THE NECESSARY NOTAMS FOR ALL AIRFIELD IMPACTS WITH THE RESIDENT PROJECT REPRESENTATIVE (RPR) AND THE OWNER A MINIMUM OF 72 HOURS IN ADVANCE OF THE DESIRED CLOSURE. IN ACCORDANCE WITH THE CONTRACTORS ACCEPTED SCHEDULE, THE CONTRACTOR SHALL ALSO PROVIDE A MINIMUM OF TWO (2) WEEKS PRIOR WRITTEN NOTIFICATION, TO THE RPR, OF ANTICIPATED AIRFIELD IMPACTS
OM IER JSE JAL DFF	D	THE AIRPORT DIRECTOR WILL BE RESPONSIBLE FOR ISSUING APPROPRIATE NOTICE TO AIR MISSIONS (NOTAM) CONCERNING CONSTRUCTION ACTIVITY ON THE AIRFIELD. MOTORIZED VEHICLES
AY AT OR RT OR AS HE OR TS		THIS PROJECT INCLUDES WORK WITHIN THE AIRFIELD OPERATIONS AREA (AOA) (I.E.), THE SECURE PORTION OF THE AIRPORT. ALL PERMITTED VEHICLES SHALL DISPLAY IN FULL VIEW ABOVE THE VEHICLE A 3-FOOT X 3-FOOT OR LARGER, ORANGE AND WHITE CHECKERBOARD, PLASTIC FLAG. EACH CHECKERBOARD COLOR SHALL BE ONE FOOT SQUARE. IN LIEU OF FLAGS, VEHICLES MAY DISPLAY A FLASHING AMBER (YELLOW) DOME-TYPE LIGHT, MOUNTED ON TOP OF THE VEHICLE AND OF SUCH INTENSITY TO CONFORM TO LOCAL CODES FOR MAINTENANCE AND EMERGENCY VEHICLES. THESE LIGHTS SHALL REMAIN FLASHING AT ALL TIMES WHEN THE VEHICLE IS IN THE AOA, EVEN IF PARKED.
HE SE TE DR ER DR ED		ANY VEHICLE OPERATING IN THE AOA DURING THE HOURS OF DARKNESS SHALL BE EQUIPPED WITH A FLASHING AMBER (YELLOW) DOME-TYPE LIGHT, MOUNTED ON TOP OF THE VEHICLE AND OF SUCH INTENSITY TO CONFORM TO LOCAL CODES FOR MAINTENANCE AND EMERGENCY VEHICLES. DARKNESS SHALL BE DEFINED AS ONE HOUR BEFORE OFFICIAL SUNSET UNTIL ONE HOUR AFTER SUNRISE.
NT ES ES IG, ED		ALL VEHICLES OPERATING WITHIN THE AIRFIELD BOUNDARY SHALL BE IDENTIFIED WITH A SIGN ON EACH SIDE OF THE VEHICLE BEARING THE CONTRACTOR'S NAME. THE MINIMUM SIZE FOR LETTERING ON THE VEHICLE SIGNS IS 12 INCHES. IN ADDITION ALL CONSTRUCTION VEHICLES OPERATING IN THE AIRFIELD MUST BE ISSUED AND DISPLAY AN AIRPORT VEHICLE ID TAG.
CT /S, IS CE		VEHICLES MAKING ONLY OCCASIONAL VISITS TO THE JOB SITE ARE EXEMPT FROM THE IDENTIFICATION REQUIREMENTS CONTAINED HEREIN PROVIDED THAT THEY ARE ESCORTED INTO, THROUGH, AND OUT OF THE AOA BY A PROPERLY IDENTIFIED VEHICLE.
ND NG EN FIC LS FT ER LL AY FT DD ED	E	RADIO COMMUNICATIONS RADIO COMMUNICATIONS MAY BE REQUIRED BETWEEN THE CONTRACTOR'S REPRESENTATIVE AND THE AIR TRAFFIC CONTROL TOWER (ATCT). RADIO CONTACT IS REQUIRED AT ALL TIMES WHILE THE CONTRACTOR HAS PERSONNEL AND EQUIPMENT ON THE PROJECT SITE AND WHILE THEY ARE IN AN ACTIVE AIRFIELD OPERATIONS AREA (AOA) OF THE AIRPORT. RADIOS SHALL BE FURNISHED BY THE CONTRACTOR AND SHALL BE CAPABLE OF TRANSMITTING AND RECEIVING AT A GROUND CONTROL FREQUENCY OF 120.8 MHZ. THIS FREQUENCY IS TO BE UTILIZED WHEN CROSSING ACTIVE FACILITIES. SUFFICIENT RADIOS SHALL BE ON SITE AND OPERATING AT ALL TIMES SO THAT INSTRUCTIONS OR COMMUNICATIONS MAY BE DISPATCHED TO ALL CREWS AND/OR EQUIPMENT WORKING IN AN ACTIVE AOA IMMEDIATELY AFTER RECEIPT FROM THE ATCT. HAGERSTOWN REGIONAL AIRPORT IS SERVED BY PART-TIME ATCT. DURING CERTAIN PHASES OF CONSTRUCTION, THE ATCT MAY BE CLOSED. DURING THOSE PERIODS WHEN THE ATCT IS CLOSED, THE CONTRACTOR SHALL MAINTAIN CONTACT WITH AIRCRAFT USING THE AIRPORT BY MONITORING THE CTAF FREQUENCY OF 120.3 MHZ AND UNICOM FREQUENCY OF 122.95 MHZ.

TAXIWAY C OFA REHABILITATION

FAA AIG No .: 3-24-0019-070-2024 (DESIGN/CONSTRUCTION) Bid No.: PUR-1674

GENERAL CONSTRUCTION AND SAFETY NOTES 1

N.A.

DATE:

APRIL 2024

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SHEET NO .:

F DEBRIS

DEBRIS, WASTE, AND LOOSE MATERIAL (INCLUDING DUST AND DIRT) CAPABLE OF CAUSING DAMAGE TO AIRCRAFT LANDING GEAR OR PROPELLERS, OR BEING INGESTED IN JET ENGINES, SHALL NOT BE ALLOWED ON ACTIVE AIRCRAFT MOVEMENT AREAS OR ADJACENT GRASSED AREAS. MATERIALS OBSERVED TO BE WITHIN THESE AREAS SHALL BE REMOVED IMMEDIATELY AND/OR CONTINUOUSLY BY THE CONTRACTOR. THE CONTRACTOR SHALL HAVE A SWEEPING MACHINE AND OPERATOR ON SITE AND READY AT ALL TIMES DURING CONSTRUCTION ACTIVITY WHERE TRAVEL ON OR ACROSS RUNWAYS, RAMP AREAS, TAXIWAYS, OR AIRCRAFT APRONS IS REQUIRED THE CONTRACTOR SHALL PROVIDE ADEQUATE PERSONNEL AND EQUIPMENT TO KEEP SUCH SURFACES CLEAR OF DEBRIS. THE CONTRACTOR SHALL ALSO MAINTAIN A WATER TRUCK ON SITE FOR DUST CONTROL PURPOSES.

G FLAGMEN

IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, FURNISH FLAGMEN AS NECESSARY TO CONTROL HIS TRAFFIC (UNLESS OTHERWISE DIRECTED BY THE RPR)

ALL CONTRACTOR VEHICLES THAT ARE REQUIRED TO CROSS ACTIVE RUNWAYS, TAXIWAYS AND APRONS SHALL DO SO UNDER THE DIRECT CONTROL OF A COMPETENT FLAGMAN WHO IS IN DIRECT RADIO CONTACT WITH GROUND CONTROL. ALL AIRCRAFT TRAFFIC ON RUNWAYS, TAXIWAYS, AND APRONS SHALL HAVE PRIORITY OVER CONTRACTOR'S TRAFFIC. AT NO TIME SHALL THE CONTRACTOR'S VEHICLES OR PERSONNEL BE ALLOWED TO ENTER OR CROSS ACTIVE RUNWAYS, TAXIWAYS, SAFETY AREAS, OBJECT FREE AREAS, OR RUNWAY PROTECTION ZONES WITHOUT PROPER AUTHORIZATION OBTAINED THROUGH GROUND CONTROL.

- H MISCELLANEOUS
 - OPEN FLAME, WELDING OR TORCH CUTTING OPERATIONS ARE PROHIBITED UNLESS ADEQUATE FIRE AND SAFETY PRECAUTIONS HAVE BEEN TAKEN AND THE PROCEDURE PREVIOUSLY APPROVED BY THE RPR
 - EQUIPMENT AND STOCKPILED MATERIAL SHALL BE CONSTRAINED IN A MANNER TO PREVENT MOVEMENT RESULTING FROM AIRCRAFT JET BLAST OR WIND CONDITIONS IN EXCESS OF 10 KNOTS.
 - THE CONTRACTOR SHALL PROVIDE POLYETHYLENE CONSTRUCTION BARRIERS WITH FLASHING RED LIGHTS AS SHOWN ON THE DRAWINGS TO DELINEATE THE WORK AREAS WHEN CLOSED TO AIRPORT TRAFFIC. OPEN TRENCHES, EXCAVATIONS AND STOCKPILED MATERIAL LOCATED IN THE AOA SHALL BE PROMINENTLY MARKED WITH ORANGE FLAGS AND LIGHTED BY APPROVED LIGHT UNITS DURING HOURS OF LIMITED VISIBILITY AND DARKNESS.
 - ALL MATERIALS AND EQUIPMENT WHEN NOT IN USE SHALL BE PLACED IN APPROVED AREAS WHERE THEY WILL NOT CONSTITUTE A HAZARD TO AIRCRAFT OPERATIONS AND NOT PENETRATE CLEARANCE SURFACES DEFINED PREVIOUSLY AND SHOWN ON THE CONSTRUCTION SAFETY AND PHASING NOTES AND DETAILS SHEET. EQUIPMENT SHALL BE PARKED AT THE STAGING AREA WHEN NOT IN USE.
 - 5. UPON COMPLETION OF ANY STAGE/PHASE OF WORK. THE RPR WILL ARRANGE A PHYSICAL INSPECTION OF THE AREA WITH AIRPORT OPERATIONS PERSONNEL PRIOR TO OPENING ANY PORTION OR WHOLE RUNWAY. TAXIWAY, OR RAMP AREA THAT HAS BEEN CLOSED FOR WORK OR USED FOR A CROSSING POINT OR HAUL ROUTE BY THE CONTRACTOR.
 - ENTRANCE TO THE AIRFIELD IS SUBJECT TO STRICT SECURITY REGULATIONS. ALL PERSONNEL ENTERING THE AIRFIELD MAY BE SUBJECT TO A BACKGROUND CHECK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ASSURING THAT ALL OF HIS EMPLOYEES WHO NEED TO HAVE ACCESS TO THE AIRFIELD, HAVE INFORMATION AVAILABLE FOR A BACKGROUND CHECK TO BE PERFORMED, DATING BACK TEN (10) YEARS VERIFYING REPRESENTATIONS MADE BY THE EMPLOYEE RELATING TO EMPLOYMENT.
 - THE CONTRACTOR SHALL PROVIDE THE RPR AND AIRPORT DIRECTOR A CURRENT LIST OF ALL EMPLOYEES WORKING ON THE AIRPORT. THE LIST SHALL BE MAINTAINED CURRENT BY THE CONTRACTOR AND APPLIES TO BOTH THE CONTRACTOR AND SUBCONTRACTORS.
 - THE CONTRACTOR SHALL FAMILIARIZE HIS PERSONNEL WITH CLEARANCES NEEDED TO PROVIDE FOR THE SAFE OPERATION OF RUNWAYS AND TAXIWAYS AS SHOWN IN THE PLANS.
 - EXCEPT FOR EMERGENCIES, ALL CONTACT WITH AIRPORT PERSONNEL SHALL BE MADE THROUGH THE FOR EMERGENCIES INVOLVING SAFETY RPR. (INJURIES, FIRES, SECURITY BREACHES, ETC.) THE CONTRACTOR SHALL MAKE DIRECT CONTACT WITH AIRPORT OPERATIONS MANAGER FOLLOWED BY NOTIFICATION TO THE RPR AS SOON AS POSSIBLE.

- 10. THE CONTRACTOR SHALL PROVIDE THE PHONE NUMBERS OF THREE PERSONNEL, INCLUDING THE PROJECT SUPERINTENDENT, WHO MAY BE CONTACTED IN AN EMERGENCY. PERSONNEL SHALL BE ON CALL 24 HOURS PER DAY FOR MAINTAINING AIRPORT HAZARD LIGHTING AND BARRICADES.
- 11. IN ACCORDANCE WITH THE SPECIFICATIONS, FEDERAL WAGE RATES SHALL BE POSTED OUTSIDE THE SITE FIELD OFFICE(S) IN A WEATHERPROOF ENCLOSURE.
- UTILITIES
- 1. UNDERGROUND UTILITIES: THE LOCATIONS OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE CONSIDERED TO BE ONLY APPROXIMATE LOCATIONS. ALL UTILITY LOCATIONS SHALL BE FIELD VERIFIED BY CONTRACTOR PRIOR TO COMMENCING CONSTRUCTION. IN THE EVENT ANY UTILITY IS DAMAGED, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PAYING FOR INCURRED COSTS OF REPAIRS.
- 2. THE CONTRACTOR SHALL ALSO NOTIFY "MISS UTILITY" AT 1-800-257-7777. THE COST ASSOCIATED WITH CONTACTING MISS UTILITY SHALL BE BORNE BY THE CONTRACTOR. ANY COSTS ASSOCIATED WITH DAMAGE TO UTILITIES SHALL BE BORNE BY THE CONTRACTOR.
- UTILITIES NOTIFICATION: AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING CONSTRUCTION OPERATIONS IN AN AREA WHICH MAY INVOLVE UNDERGROUND UTILITY FACILITIES, THE CONTRACTOR SHALL NOTIFY THE RPR AND THE OWNER OF EACH UNDERGROUND UTILITY FACILITY AFFECTED.

SECURITY

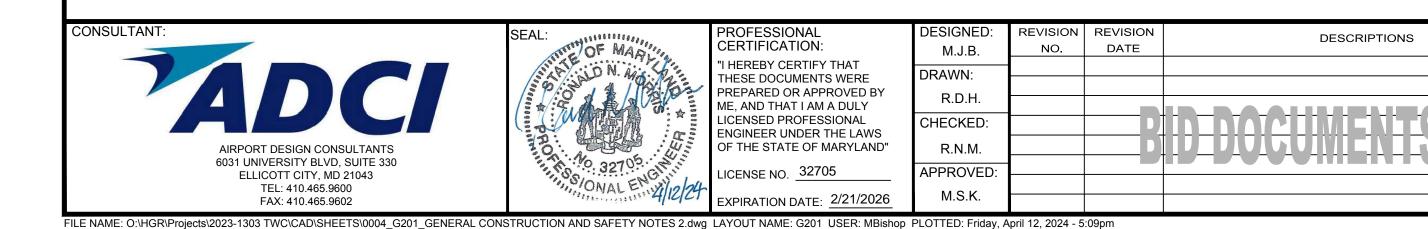
- 1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FAMILIARIZE HIMSELF/HERSELF WITH THE VARIOUS ASPECTS OF TRANSPORTATION SECURITY ADMINISTRATION (TSA) SECTION 1542 "AIRPORT SECURITY". ANY VIOLATION OF TSA SECTION 1542 BY THE CONTRACTOR AND ANY SUBSEQUENT FINES IMPOSED DUE TO THE VIOLATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 2. ALL VEHICLES TO BE USED ON THE AIRPORT SHALL BE REGISTERED WITH THE AIRPORT OPERATIONS MANAGER. REGISTRATION CONSISTS OF LICENSE PLATE NUMBER AND OWNER. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT VEHICLES ARE REGISTERED IN A TIMELY MANNER SO AS NOT TO DELAY THE PROJECT. VISITING VEHICLES ARE EXEMPT FROM THE REGISTRATION REQUIREMENTS SO LONG AS THEY ARE ESCORTED BY A REGISTERED VEHICLE AT ALL TIMES WHEN ON THE AOA.
- 3. THE AIRPORT WILL NOT PROVIDE AIRFIELD OPERATIONS AREA ESCORTS. THE CONTRACTOR MUST PROVIDE HIS OWN RADIO, ACQUAINT HIMSELF AND ANY OTHER PERSONNEL THAT ARE ANTICIPATED TO USE THE RADIO WITH THE PROPER PROCEDURES IN COMMUNICATING WITH GROUND CONTROL (FREQUENCY 121.9 MHZ). THE CONTRACTOR WILL NEED TO ATTEND SECURITY/GROUND VEHICLE OPS TRAINING.
- 4. THE PROJECT SUPERVISORS SHALL HAVE WITH THEM AT ALL TIMES THE TELEPHONE NUMBERS FOR THE FOLLOWING PERSONS. IN THE EVENT OF AN EMERGENCY THESE PERSONNEL SHOULD BE CONTACTED IN DESCENDING ORDER:

MR. NEIL DORAN, AIRPORT DIRECTOR

MR. TERRY STOUFFER, AIRPORT MAINTENANCE SUPERVISOR

MR. GENE BOLANOWSKI, OPERATIONS MANAGER MR DANNY SHIRLEY, AIRPORT FIRE CHIEF

TELEPHONE NUMBERS WILL BE PROVIDED TO THE CONTRACTOR AT THE PRE-CONSTRUCTION MEETING. ADDITIONAL CONTACTS MAY BE PROVIDED TO THE CONTRACTOR AT THAT TIME.



5.

DESCRIPTIONS

WHEN CONSTRUCTION ACTIVITY IS CONDUCTED IN THE AOA. KEY PROJECT SITE SUPERVISORY PERSONNEL OF THE CONTRACTOR AND ITS SUBCONTRACTORS (INCLUDING CONSTRUCTION GATE GUARD PERSONNEL) SHALL BE ISSUED AIRPORT IDENTIFICATION (ID) BADGES. ALL INDIVIDUALS WHO RECEIVE AN AIRPORT BADGE ARE REQUIRED TO ATTEND A SECURITY TRAINING CLASS PROVIDED BY THE AIRPORT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN APPLICATIONS AND MAKE ALL NECESSARY ARRANGEMENTS TO ENABLE ITS PERSONNEL TO OBTAIN ID BADGES. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ENSURING THAT IT HAS SUFFICIENT SUPERVISORY AND CONSTRUCTION GATE PERSONNEL ON THE PROJECT SITE WHENEVER WORK IS OCCURRING TO FULFILL THE RESPONSIBILITIES.

PROJECT SITE SUPERVISORY PERSONNEL ARE SUBJECT TO FEDERAL CRIMINAL RECORDS CHECKS AND MUST PROVIDE EMPLOYMENT VERIFICATION FORMS THAT COVER THE LAST TEN (10) YEARS OF EMPLOYMENT AND EDUCATION. INFORMATION ON THESE FORMS WILL BE VERIFIED BY THE AIRPORT.

APPLICATIONS AND FORMS CAN BE OBTAINED FROM THE AIRPORT BY CALLING MR. GENE BOLANOWSKI, 240-313-2769. ALL APPLICATIONS AND FORMS ARE TO BE SUBMITTED TO THE AIRPORT AT LEAST TWO (2) WEEKS PRIOR TO THE PROJECT START DATE IN ORDER TO ALLOW TIME TO PERFORM THE EMPLOYMENT AND BACKGROUND CHECKS. THERE IS A REFUNDABLE DEPOSIT OF ONE HUNDRED DOLLARS (\$100.00) FOR EACH PHOTO ID BADGE ISSUED. PAYMENT MUST ACCOMPANY THE APPLICATION. APPLICATIONS. ACCESS INVESTIGATION FORMS AND EMPLOYMENT VERIFICATION FORMS MUST BE FILLED OUT COMPLETELY BEFORE AN APPLICATION WILL BE PROCESSED. NON-REFUNDABLE CONTRACTOR BADGE FEES WILL NOT BE RETURNED TO THE CONTRACTOR IF AN APPLICATION CANNOT BE PROCESSED BECAUSE IT IS INCOMPLETE. COST FOR SECURITY SHALL BE INCLUDED IN CONTRACTORS BID PRICE FOR MOBILIZATION/DEMOBILIZATION.

PHOTO ID BADGES MUST BE RETURNED TO THE AIRPORT ID PROCESSING OFFICE NO LATER THAN FIVE (5) DAYS AFTER COMPLETION OF THE CONTRACT TO RECEIVE A REFUND OF THE DEPOSIT AND MUST BE RETURNED BEFORE THE FINAL PAY ESTIMATE WILL BE PROCESSED. IN ADDITION TO THE LOSS OF THE BADGE SECURITY DEPOSIT, HOLDERS OF BADGES WHICH ARE LOST WILL BE ASSESSED A BADGE REPLACEMENT FEE OF FIFTY DOLLARS (\$50.00). THE AIRPORT MUST BE NOTIFIED IMMEDIATELY IF A BADGE IS LOST OR STOLEN OR IF ITS HOLDER TERMINATES EMPLOYMENT OR IS REASSIGNED.

PHOTO ID BADGES SHALL BE DISPLAYED ON THE OUTERMOST GARMENT ABOVE THE WAIST SO THEY CAN BE SEEN BY FAA, POLICE AND OTHER AIRPORT PERSONNEL.



PROJECT TITLE:

SHEET TITLE:

TAXIWAY C OFA REHABILITATION

N.A.

DATE:

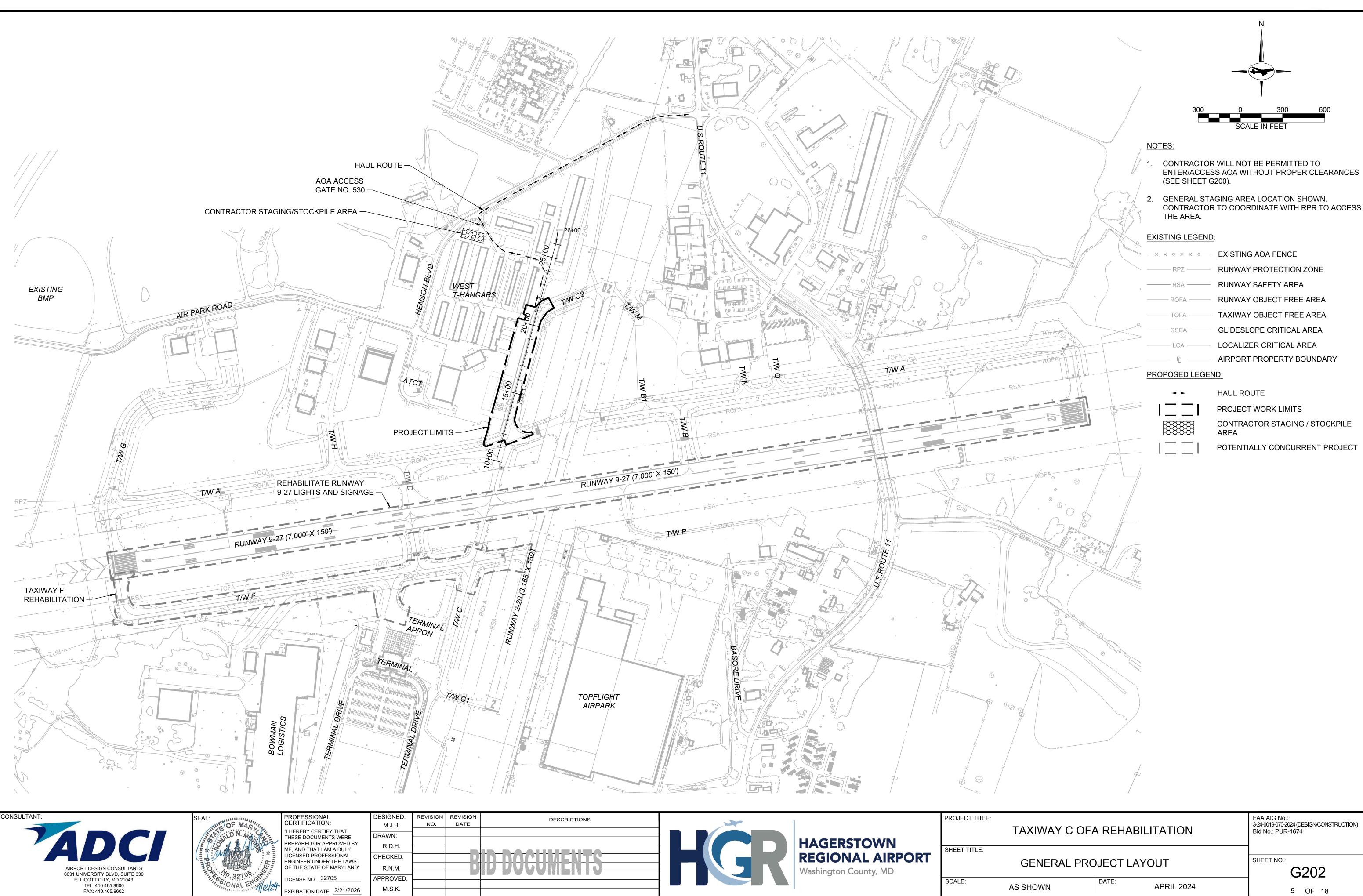
APRIL 2024

SHEET NO .: G201

FAA AIG No.: 3-24-0019-070-2024 (DESIGN/CONSTRUCTION) Bid No.: PUR-1674

GENERAL CONSTRUCTION AND SAFETY NOTES 2

4 OF 18

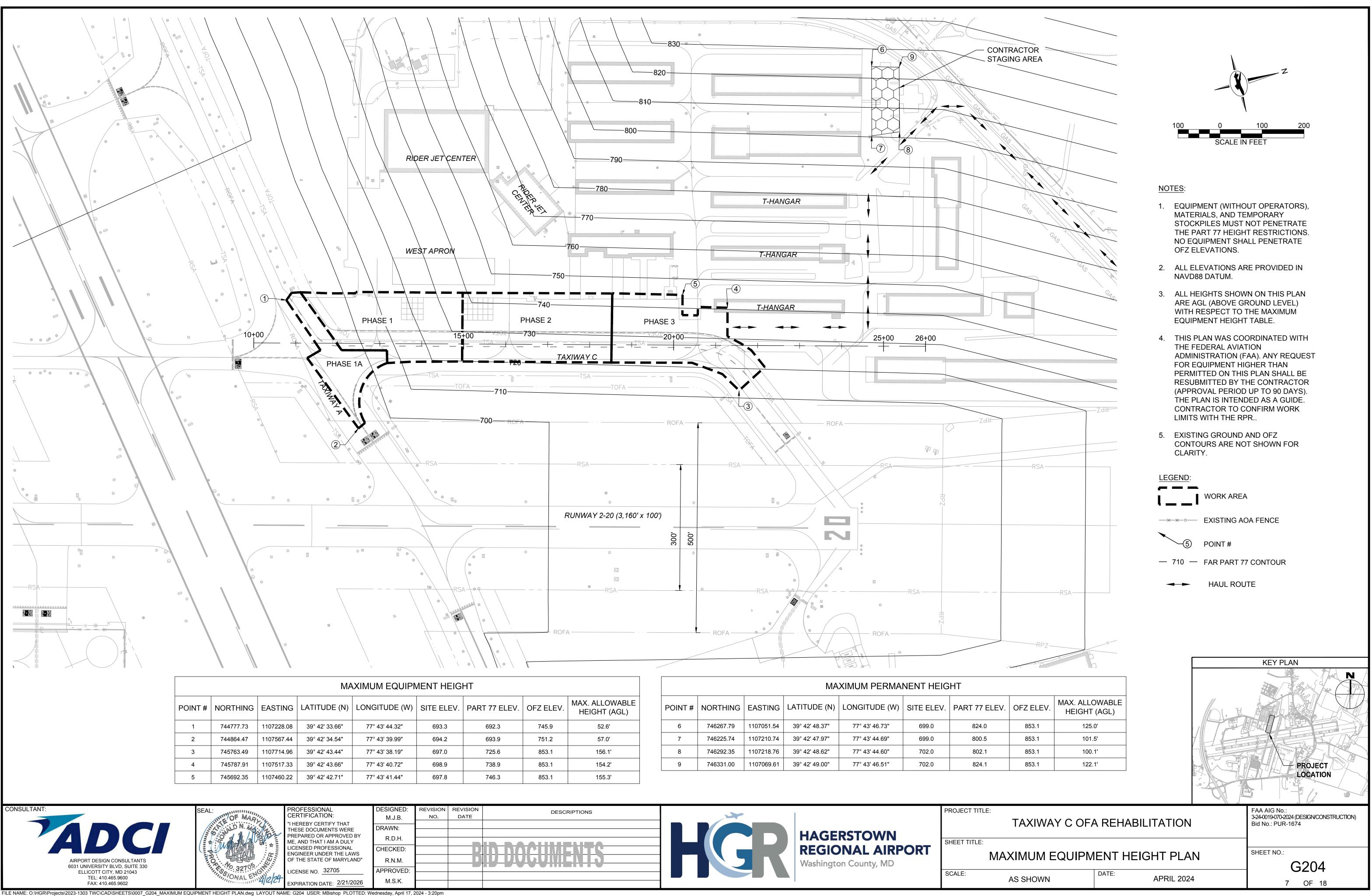


EXPIRATION DATE: 2/21/2026

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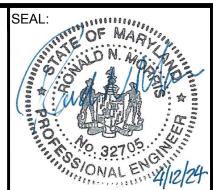
APRIL 2024

5 OF 18



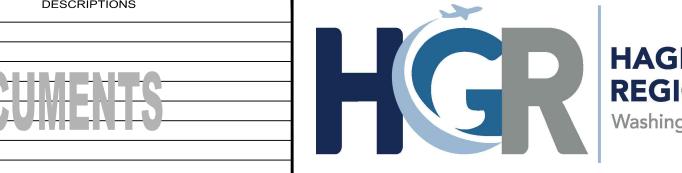
POINT #	NORTHING	EASTING	LATITUDE (N)	LONGITUDE (W)	SITE ELEV.	PART 77 ELEV.	OFZ ELEV.	MAX. ALLOWABLE HEIGHT (AGL)
1	744777.73	1107228.08	39° 42' 33.66"	77° 43' 44.32"	693.3	692.3	745.9	52.6'
2	744864.47	1107567.44	39° 42' 34.54"	77° 43' 39.99"	694.2	693.9	751.2	57.0'
3	745763.49	1107714.96	39° 42' 43.44"	77° 43' 38.19"	697.0	725.6	853.1	156.1'
4	745787.91	1107517.33	39° 42' 43.66"	77° 43' 40.72"	698.9	738.9	853.1	154.2'
5	745692.35	1107460.22	39° 42' 42.71"	77° 43' 41.44"	697.8	746.3	853.1	155.3'

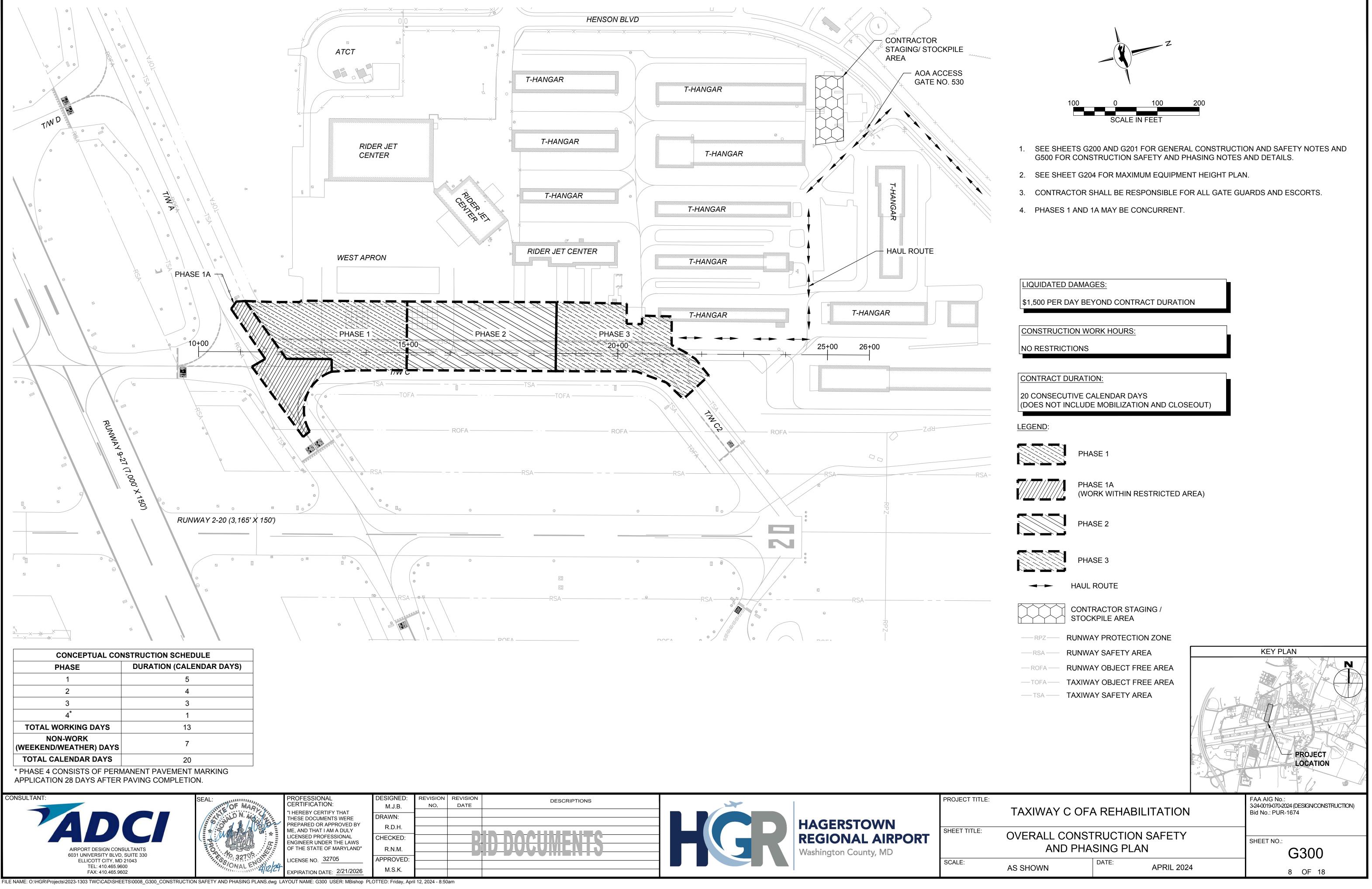




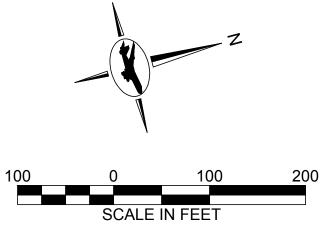
	DESIGNED:	REVISION	REVISION	
	M.J.B.	NO.	DATE	
	DRAWN:			
<i>'</i>	R.D.H.			
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	ONEONED.		K-	
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	APPROVED:			
6	M.S.K.			
ED: We	ednesday, April 17, 2	2024 - 3:20pm		

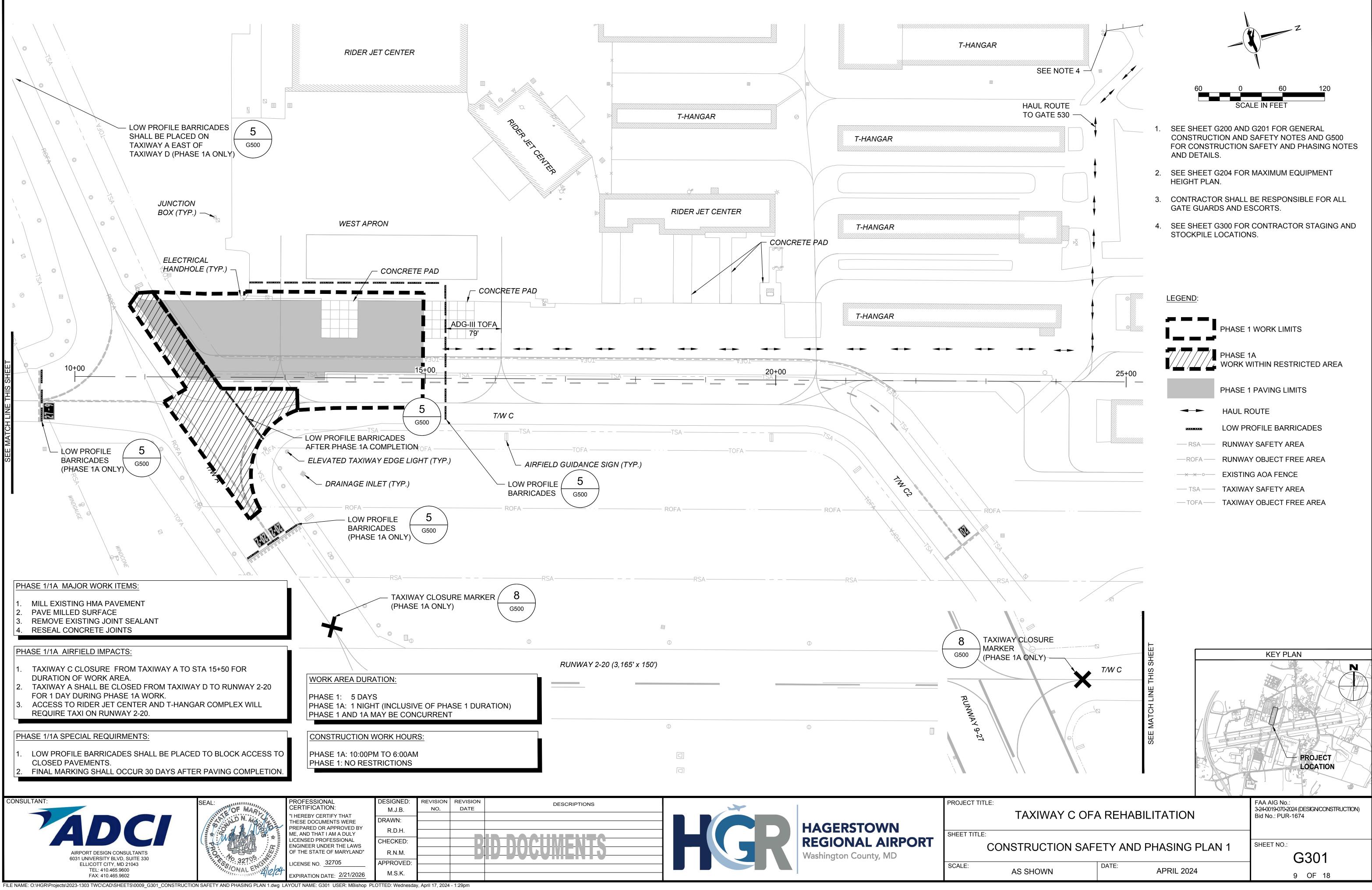
	MAXIMUM PERMANENT HEIGHT						
POINT #	NORTHING	EASTING	LATITUDE (N)	LONGITUDE (W)	SITE ELEV.	PART 77 ELEV.	
6	746267.79	1107051.54	39° 42' 48.37"	77° 43' 46.73"	699.0	824.0	
7	746225.74	1107210.74	39° 42' 47.97"	77° 43' 44.69"	699.0	800.5	
8	746292.35	1107218.76	39° 42' 48.62"	77° 43' 44.60"	702.0	802.1	
9	746331.00	1107069.61	39° 42' 49.00"	77° 43' 46.51"	702.0	824.1	

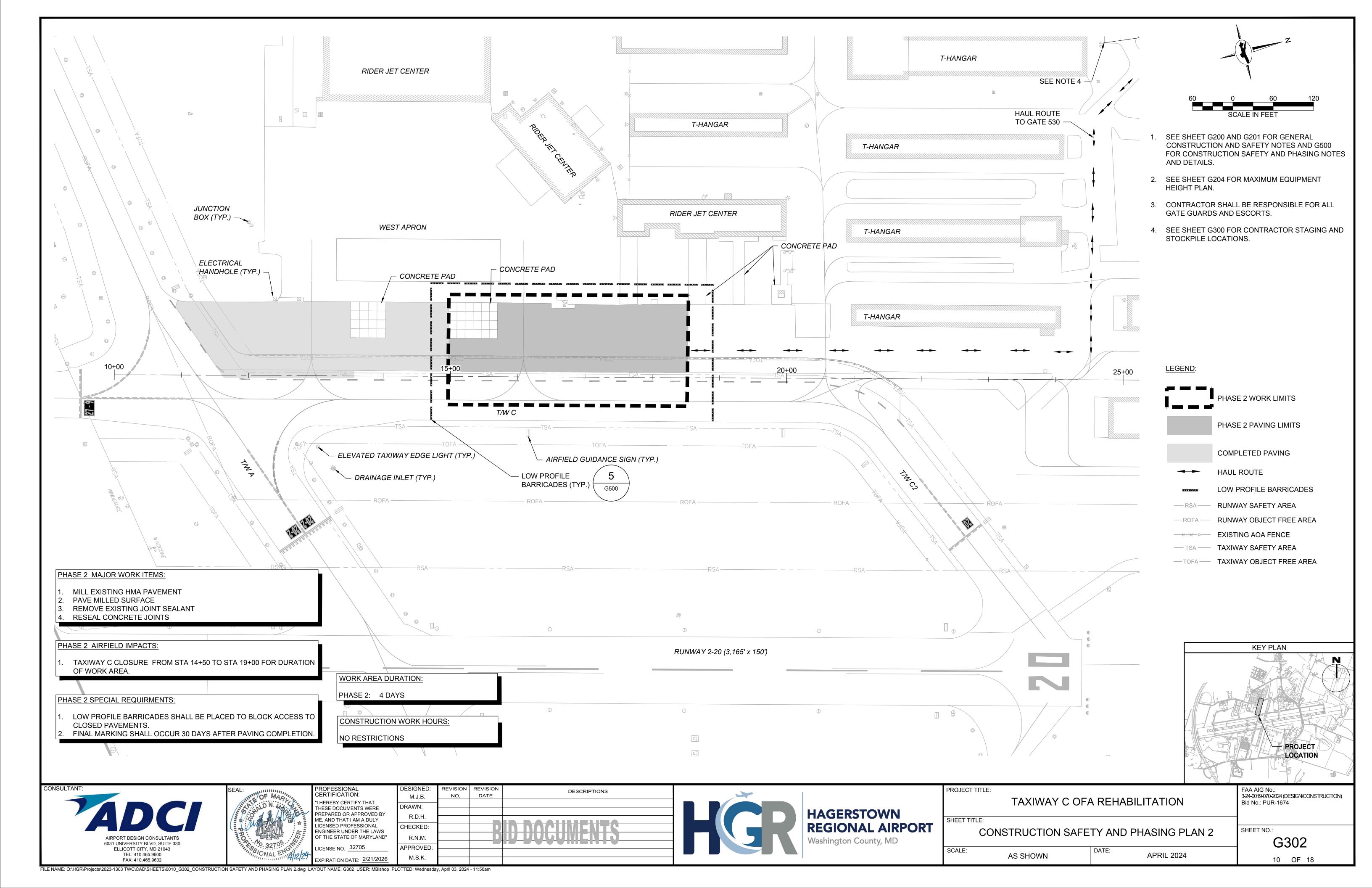


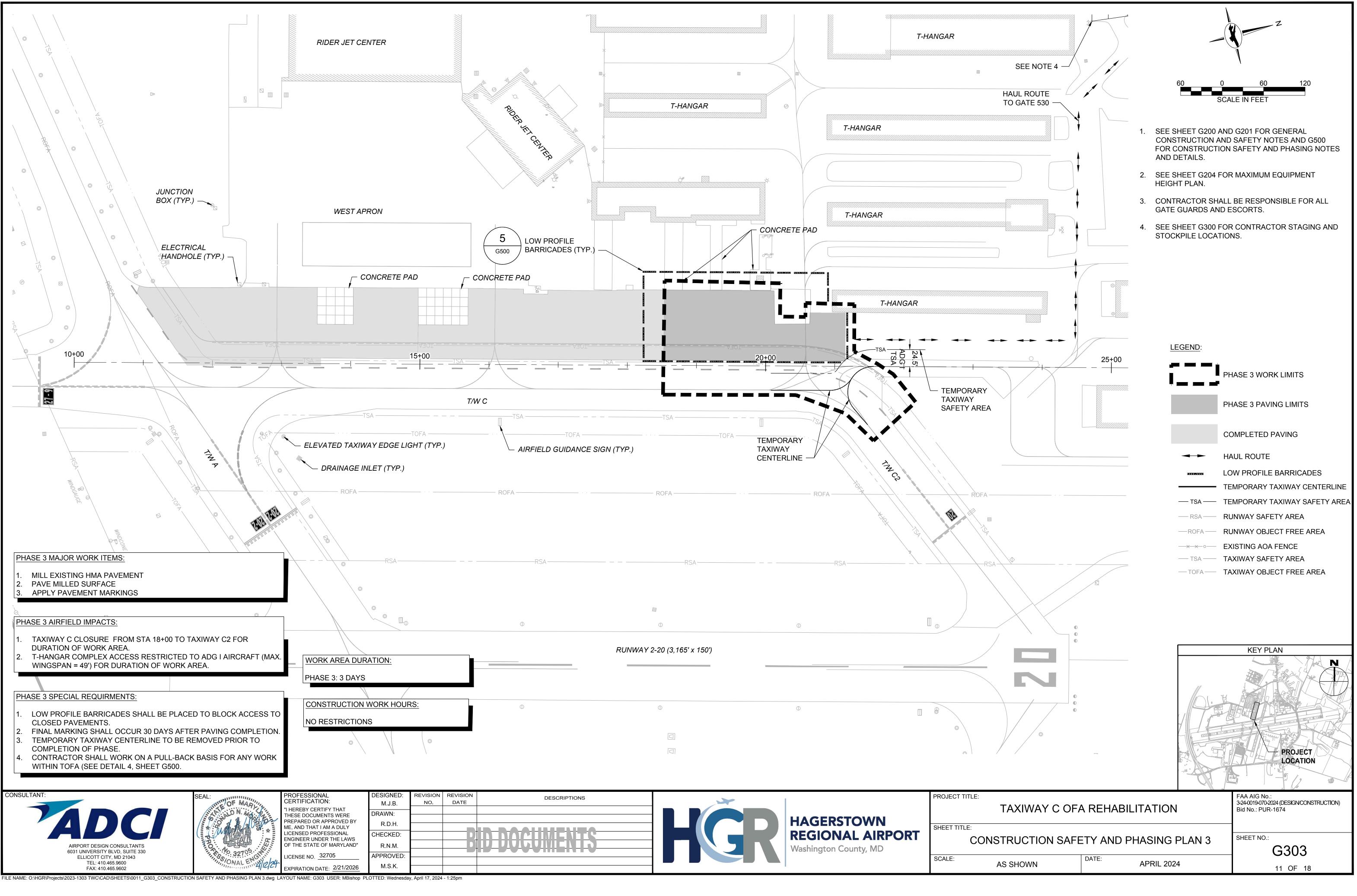


	DESIGNED: M.J.B.	REVISION NO.	REVISION DATE	
	DRAWN:			
	R.D.H.			
	CHECKED:			
	R.N.M.			
_	APPROVED:			
5	M.S.K.			









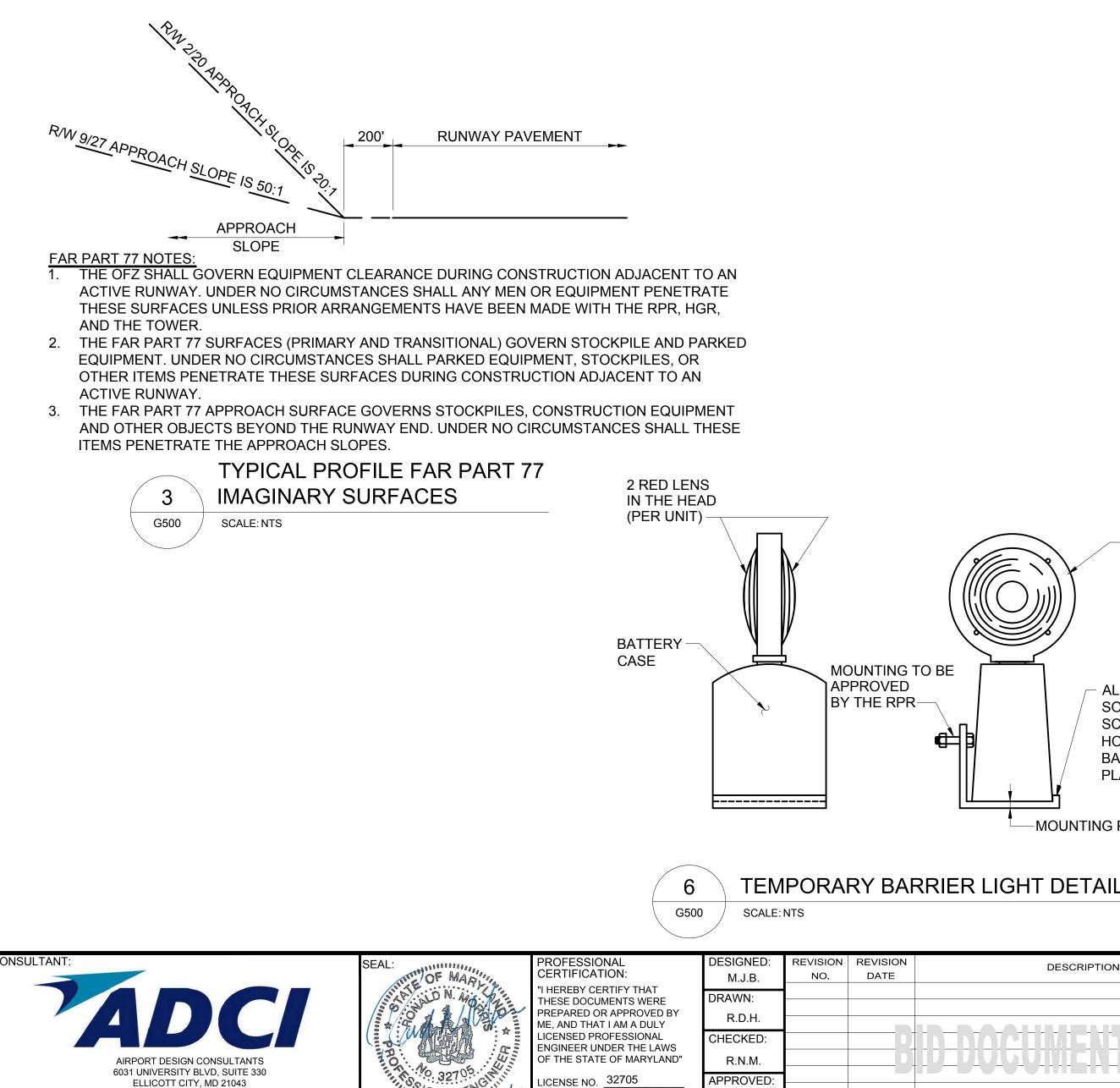
DEDOCCUMENTS INTERVIEW OF A COUNTY, MD SHEET	T TITLE: CO E:

GENERAL PHASING NOTES:

- 1. THE INTENT OF THE PHASING PLAN IS TO MINIMIZE THE IMPACT OF CONSTRUCTION ON THE OPERATION OF THE AIRPORT. THE CONTRACTOR SHALL CONSTRUCT THE PROJECT AS OUTLINED IN THE PLANS UNLESS OTHERWISE APPROVED BY THE RESIDENT PROJECT REPRESENTATIVE (RPR). ADJUSTMENTS TO THE PHASING PLAN MAY BE NECESSARY TO ACCOMMODATE UNFORESEEN PROBLEMS WITH AIRPORT OPERATION.
- 2. THE CONTRACTOR SHALL PROVIDE, MAINTAIN, MOVE, REMOVE (AS DIRECTED) THE SAME PERSON EACH DAY THROUGHOUT THE CONSTRUCTION BARRIERS TO DELINEATE AREAS CLOSED TO AIRCRAFT TRAFFIC AND TO PROJECT. THE SUPERINTENDENT SHALL HAVE THE MARK ALL OPEN EXCAVATIONS, PAVEMENT DROP-OFFS ETC. RESPONSIBILITY OF COORDINATING EACH DAY'S WORK
- 3. THE CONTRACTOR SHALL SUBMIT A CONSTRUCTION SCHEDULE FOR REVIEW AND APPROVAL OF THE RPR PRIOR TO STARTING CONSTRUCTION. STRICT ADHERENCE TO THE APPROVED SCHEDULE WILL BE ENFORCED TO AVOID CONFLICTS WITH OTHER CONSTRUCTION ACTIVITIES AND ADVERSE EFFECTS ON AIRPORT OPERATIONS.
- 4. ELECTRICAL WORK SHALL BE SEQUENCED TO MAINTAIN ALL ELECTRICAL SYSTEMS WITHOUT ANY INTERRUPTIONS. TEMPORARY WIRING IF REQUIRED SHALL BE INCIDENTAL TO THE CORRESPONDING ELECTRICAL WORK. ALL ELECTRICAL WORK SHALL BE COORDINATED WITH THE RPR AND THE AIRPORT MAINTENANCE DEPARTMENT. THE RPR AND WEEKENDS MUST B
- 5. EROSION AND SEDIMENT CONTROL DEVICES MUST BE IN PLACE PRIOR TO THE START OF GRADING OPERATIONS.
- 6. ACTIVE PAVEMENTS MUST BE KEPT CLEAR AND FREE OF DEBRIS AT ALL TIMES. THE CONTRACTOR MUST HAVE A VACUUM SWEEPER AND OPERATOR READY AT ALL TIMES DURING WORK ADJACENT TO ACTIVE AIRFIELD PAVEMENTS.
- 7. THE CONTRACTOR MUST COMPLY WITH ALL APPLICABLE FAA ADVISORY CIRCULARS AND FEDERAL AVIATION REGULATIONS. PAY PARTICULAR ATTENTION TO FAA AC 150/5370-2G.
- 8. MAXIMUM EQUIPMENT HEIGHTS FOR ACTIVE WORK AREAS AND STAGING AREA ARE LIMITED BY FAR PART 77 AND OBSTACLE FREE ZONE (OFZ) SURFACES IDENTIFIED ON THIS SHEET.
- 9. DUST ON CONSTRUCTION PROJECTS IS A MAJOR PROBLEM. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DUST CONTROL ON-SITE AT ALL TIMES ON A CONTINUOUS BASIS. THE CONTRACTOR MUST SUBMIT A DETAILED DUST CONTROL PLAN TO THE RPR FOR APPROVAL PRIOR TO BEGINNING WORK. THE COST FOR THIS WORK SHALL BE INCLUDED UNDER VARIOUS CONTRACT ITEMS.
- 10. RED LIGHTS SHALL MEET THE LUMINANCE REQUIREMENTS OF THE FAA.

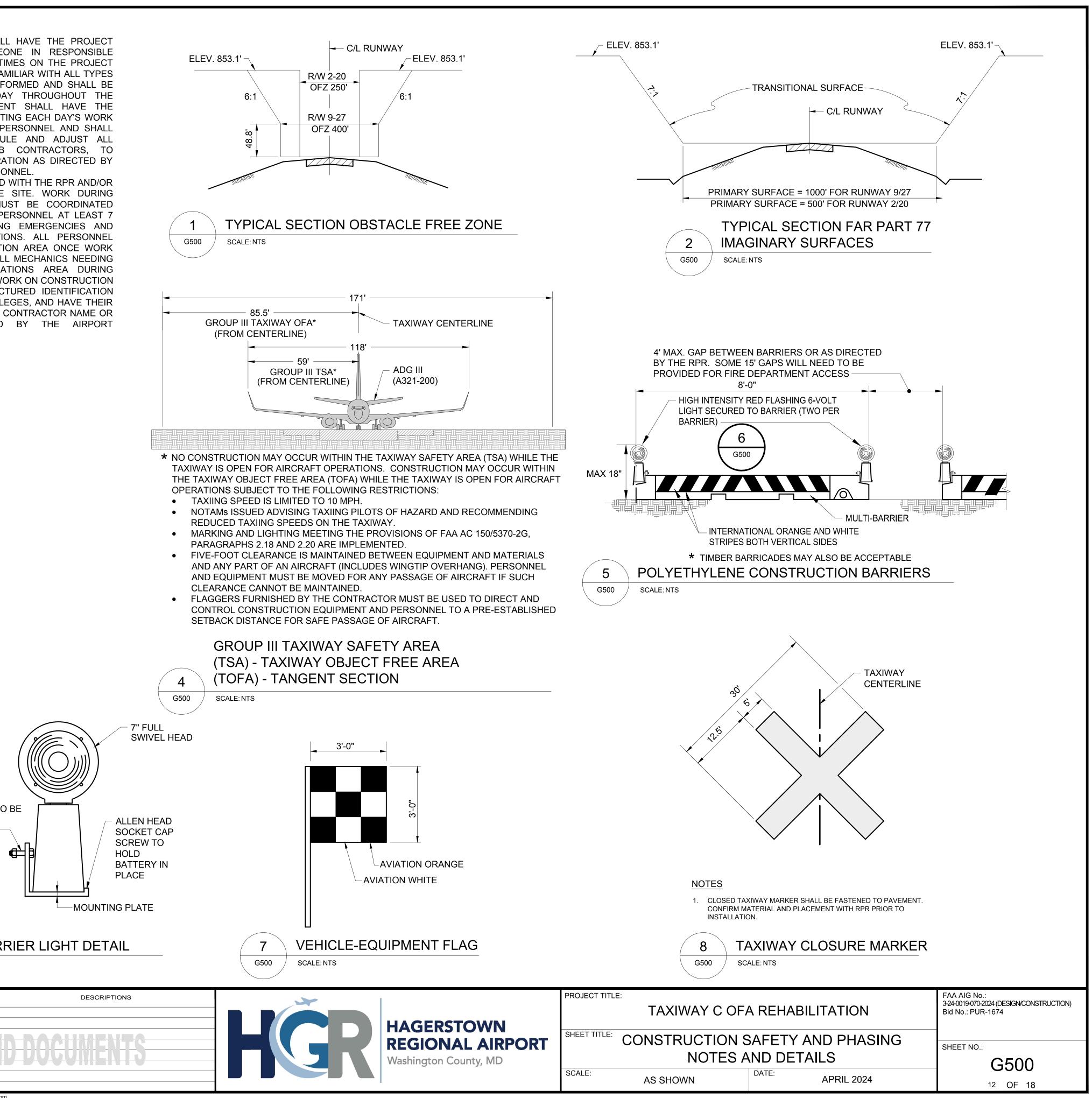
TEL: 410.465.9600

FAX: 410.465.9602



SUPERVISION:

THE PRIME CONTRACTOR SHALL HAVE THE PROJECT SUPERINTENDENT OR SOMEONE IN RESPONSIBLE CHARGE BE PRESENT AT ALL TIMES ON THE PROJECT SITE. THIS PERSON SHALL BE FAMILIAR WITH ALL TYPES OF CONSTRUCTION BEING PERFORMED AND SHALL BE THE SAME PERSON EACH DAY THROUGHOUT THE RESPONSIBILITY OF COORDINATING EACH DAY'S WORK WITH THE RPR AND AIRPORT PERSONNEL AND SHALL HAVE AUTHORITY TO SCHEDULE AND ADJUST ALL WORKERS, PRIME AND SUB CONTRACTORS, TO ACCOMMODATE AIRPORT OPERATION AS DIRECTED BY ALL WORK MUST BE PERFORMED WITH THE RPR AND/OR AIRPORT PERSONNEL ON THE SITE. WORK DURING EVENINGS AND WEEKENDS MUST BE COORDINATED WITH THE RPR AND AIRPORT PERSONNEL AT LEAST 7 DAYS IN ADVANCE, EXCLUDING EMERGENCIES AND SHALL CLEAR THE CONSTRUCTION AREA ONCE WORK HAS STOPPED FOR THE DAY. ALL MECHANICS NEEDING ACCESS TO THE AIR OPERATIONS AREA DURING EVENINGS AND WEEKENDS TO WORK ON CONSTRUCTION EQUIPMENT SHALL HAVE A PICTURED IDENTIFICATION BADGE, RECEIVE DRIVING PRIVILEGES, AND HAVE THEIR VEHICLES IDENTIFIED WITH THE CONTRACTOR NAME OR MAGNETIC PLACARD ISSUED BY THE AIRPORT



M.S.K.

EXPIRATION DATE: 2/21/2026

Appendix C. Sample Contractors Safety Plan Compliance Document (SPCD)

SAFETY PLAN COMPLIANCE DOCUMENT (SPCD)

Project Location:	Hagerstown Regional Airport	
-		
Project Name:	Taxiway C OFA Rehabilitation	

General Statement:

The Construction Safety and Phasing Plan (CSPP), has been prepared in accordance with FAA Advisory Circular 150/5370-2G, *Operational Safety on Airports During Construction and the requirements of the Airport Owner*. The CSPP has been submitted to the FAA for review and comment. Any comments from the FAA which were received prior to bid opening have been incorporated into the CSPP.

In the event that the FAA transmits comments which require that the CSPP be revised after bid opening, I understand that I am obligated to abide by the conditions and statements contained in the revised CSPP. I further understand that I will be given the opportunity to evaluate the revised CSPP as it relates to my contract and request appropriate compensation in accordance with the provisions of the contract.

Supplemental Information:

Where the CSPP covers a subject and no additional information is needed, the statement below reads, "No supplemental information required". Where additional information is required by the Contractor, the information shall be provided in the spaces below.

The section numbers below correspond with the section numbers in the CSPP.

3.1 Coordination

Statement: [Explain how you will distribute information and details of meetings to employees and subcontractors.]

3.2 Phasing

Statement: [List the number of days each Work Area will take. State the time day work will start and finish for each work area.]

3.3 Areas and Operations affected by the construction activity

Statement: Information is provided in the CSPP. No supplemental information is required.

3.4 Navigational Aid (NAVAID) Protection

Statement: Information is provided in the CSPP. No supplemental information is required.

3.5 Contractor Access

Security Statement: [Explain how you will maintain integrity of the airport security fence at the access gate, e.g.: Gate guards, closed and locked gates, temporary fencing, etc.]

Training Statement: [List individuals who will receive driver training (for certificated airports and as requested.]

Communication Statement: [Identify types of radios, if any, you will use to communicate with drivers and personnel. Identify who will be monitoring radios. Identify a contact person and phone number if ATCT cannot reach the contractor's designated person by radio.]

Escort Statement: [Identify who will escort material delivery vehicles.]

3.6 Wildlife Management

Statement: [Identify who will be monitoring wildlife in the construction area. Identify who will be monitoring wildlife at the construction gate.]

3.7 Foreign Object Debris (FOD) Management

Statement: [Identify who will be preparing a FOD Management Plan. (Plan must be approved prior to the start of construction activities.)]

3.8 Hazardous Material (HAZMAT) Management

Statement: [Identify who will be preparing a Spill Prevention Plan. (Plan must be approved prior to the start of construction activities.)]

3.9 Notification of Construction Activities. Provide the following:

Key Personnel Statement: [Identify your key personnel points of contact with phone numbers.]

Emergency Contacts Statement: [Identify your emergency contacts with 24 hour phone numbers.]

Equipment Statement: [Part 77: Identify equipment you will be using that is taller than 25 feet, including on-site batch plants. Identify the maximum height it will be extended to during construction for each Work Area and the expected duration. Identify when during the day it will be used.]

3.10 Inspection Requirements.

Statement: [Identify the person who will be responsible for daily inspections to ensure conformance with the CSPP. Describe additional inspections you will employ, if any, to ensure conformance.]

3.11 Underground Utilities.

Statement: [Discuss proposed methods of identifying and protecting underground utilities.]

3.12 Penalties

Statement: Information is provided in the CSPP. No supplemental information is required.

3.13 Special Conditions.

Statement: [Identify who will be responsible for moving equipment and personnel from the work area and vacating the area in the event of a special condition listed in the CSPP.]

3.14 Runway and Taxiway Visual Aids. Including marking, lighting, signs, and visual NAVAIDs.

Statement: Information is provided in the CSPP. No supplemental information is required.

3.15 Marking and Signs for Access Routes. Discuss proposed methods of demarcating access routes for vehicle drivers.

Statement: Information is provided in the CSPP. No supplemental information is required.

3.16 Hazard Marking and Lighting.

Statement: [Identify who will be responsible for maintaining hazard marking and lighting. Include a 24 hour phone number.]

3.17 Work Zone Lighting for Nighttime Construction.

Statement: [Identify who will be responsible for maintaining work zone lighting for nighttime construction. Include a 24 hour phone number.]

3.18 Protection of Areas, Zones, and Surfaces. Include object free areas, obstacle free zones, approach/departure surfaces and safety areas as required. Discuss proposed methods of identifying, demarcating, and protecting airport surfaces including:

Equipment and methods for maintaining Taxiway/Taxilane Safety Area standards.

Statement: Information is provided in the CSPP. No supplemental information is required.

Equipment and methods for separation of construction operations from aircraft operations, including details of barricades.

Statement: Information is provided in the CSPP. No supplemental information is required.

3.19 Other Limits of Construction.

Other limitations are identified in the CSPP and do not require an entry in this document.

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Appendix D. Construction Project Daily Safety Inspection Checklist

APPENDIX D. CONSTRUCTION PROJECT DAILY SAFETY INSPECTION CHECKLIST

The situations identified below are potentially hazardous conditions that may occur during airport construction projects. Safety area encroachments, unauthorized and improper ground vehicle operations, and unmarked or uncovered holes and trenches near aircraft operating surfaces pose the most prevalent threats to airport operational safety during airport construction projects. The list below is one tool that the airport operator or contractor may use to aid in identifying and correcting potentially hazardous conditions. It should be customized as appropriate for each project including information such as the date, time and name of the person conducting the inspection.

Item	Action Required (Describe)	No Action Required (Check)
Excavation adjacent to runways, taxiways, and aprons improperly backfilled.		
Mounds of earth, construction materials, temporary structures, and other obstacles near any open runway, taxiway, or taxi lane; in the related Object Free area and aircraft approach or departure areas/zones; or obstructing any sign or marking.		
Runway resurfacing projects resulting in lips exceeding 3 inch (7.6 cm) from pavement edges and ends.		
Heavy equipment (stationary or mobile) operating or idle near AOA, in runway approaches and departures areas, or in OFZ.		
Equipment or material near NAVAIDs that may degrade or impair radiated signals and/or the monitoring of navigation and visual aids. Unauthorized or improper vehicle operations in localizer or glide slope critical areas, resulting in electronic interference and/or facility shutdown.		
Tall and especially relatively low visibility units (that is, equipment with slim profiles) — cranes, drills, and similar objects — located in critical areas, such as OFZ and		

Table D-1. Potentially Hazardous Conditions

Item	Action Required (Describe)	No Action Required (Check)
approach zones.		
Improperly positioned or malfunctioning lights or unlighted airport hazards, such as holes or excavations, on any apron, open taxiway, or open taxi lane or in a related safety, approach, or departure area.		
Obstacles, loose pavement, trash, and other debris on or near AOA. Construction debris (gravel, sand, mud, paving materials) on airport pavements may result in aircraft propeller, turbine engine, or tire damage. Also, loose materials may blow about, potentially causing personal injury or equipment damage.		
Inappropriate or poorly maintained fencing during construction intended to deter human and animal intrusions into the AOA. Fencing and other markings that are inadequate to separate construction areas from open AOA create aviation hazards.		
Improper or inadequate marking or lighting of runways (especially thresholds that have been displaced or runways that have been closed) and taxiways that could cause pilot confusion and provide a potential for a runway incursion. Inadequate or improper methods of marking, barricading, and lighting of temporarily closed portions of AOA create aviation hazards.		
Wildlife attractants — such as trash (food scraps not collected from construction personnel activity), grass seeds, tall grass, or standing water — on or near airports.		
Obliterated or faded temporary markings on active operational areas.		
Misleading or malfunctioning obstruction lights. Unlighted or unmarked obstructions in the approach to any open runway pose aviation hazards.		

Item	Action Required (Describe)	No Action Required (Check)
Failure to issue, update, or cancel NOTAMs about airport or runway closures or other construction related airport conditions.		
Failure to mark and identify utilities or power cables. Damage to utilities and power cables during construction activity can result in the loss of runway / taxiway lighting; loss of navigation, visual, or approach aids; disruption of weather reporting services; and/or loss of communications.		
Restrictions on ARFF access from fire stations to the runway / taxiway system or airport buildings.		
Lack of radio communications with construction vehicles in airport movement areas.		
Objects, regardless of whether they are marked or flagged, or activities anywhere on or near an airport that could be distracting, confusing, or alarming to pilots during aircraft operations.		
Water, snow, dirt, debris, or other contaminants that temporarily obscure or derogate the visibility of runway/taxiway marking, lighting, and pavement edges. Any condition or factor that obscures or diminishes the visibility of areas under construction.		
Spillage from vehicles (gasoline, diesel fuel, oil) on active pavement areas, such as runways, taxiways, aprons, and airport roadways.		
Failure to maintain drainage system integrity during construction (for example, no temporary drainage provided when working on a drainage system).		

Item	Action Required (Describe)	No Action Required (Check)
Failure to provide for proper electrical lockout and tagging procedures. At larger airports with multiple maintenance shifts/workers, construction contractors should make provisions for coordinating work on circuits.		
Failure to control dust. Consider limiting the amount of area from which the contractor is allowed to strip turf.		
Exposed wiring that creates an electrocution or fire ignition hazard. Identify and secure wiring, and place it in conduit or bury it.		
Site burning, which can cause possible obscuration.		
Construction work taking place outside of designated work areas and out of phase.		