PERFORMANCE WORK STATEMENT (PWS)

FOR

PAVEMENT CONDITION INSPECTION STUDIES FY26

AT

AIR FORCE INSTALLATIONS

4 June 2026

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1. GENERAL

Pavement Condition Inspection and PAVER Pavement Management System Update for Airfields and/or Roads and Parking at Air Force installations in the continental United States (US) and overseas.

This Performance Work Statement (PWS) defines requirements to provide airfield and/or roads and parking pavement surface condition evaluations and corresponding analysis and deliverables at various locations across the Air Force enterprise.

In carrying out the work assignments issued in this contract, the Contractor shall furnish the personnel, services, equipment, materials, facilities, and other requirements necessary for, or incidental to, the performance of work set forth herein.

Individuals who possess the qualifications established in Paragraph 4.8, Qualifications of Personnel, shall perform primary technical services.

2. SCOPE

The contractor shall provide non-personal services and shall ensure personnel do not perform any inherently governmental functions in accordance with (IAW) RFO 7.503 to do site evaluation and analysis in support of infrastructure condition assessments. The contractor shall provide technical expertise, labor, travel and all materials required to verify and/or update the pavement inventory and conduct American Society for Testing and Materials (ASTM) level Pavement Condition Index (PCI) inspection to document specific distresses on the airfields and/or roads and parking areas at the installations listed in **PWS Attachment 1**. As part of the effort, the contractor will create or update the PAVER pavement management system database, generate PCI summary reports for use as planning data for maintenance, repair, and construction, and generate separate deliverables for the airfield and/or the roads and parking networks as outlined in this PWS for each of the sites.

The Contractor shall provide all labor, supervision, equipment, supplies, and incidentals pertinent to the performance of the requirements.

3. APPLICABLE DOCUMENTS

The references listed in Table 1 below are the processes, standards, and guidance that shall be followed in performance of the tasks outlined within the body of this PWS. They include US Air Force (USAF), US Army Construction Engineering Research Laboratory (CERL), ASTM and various other references.

Table 1. References

Reference	Date	Title
ASTM D5340 (Airfields)	Current Version	Standard Test Method for Airport Pavement Condition Index Evaluations
ASTM D6433 (Roads and Parking)	Current Version	Standard Practice for Roads and Parking Lots Pavement Condition Index Evaluations
DAFI 32-1041	Jun 2024	Pavement Evaluation Program
UFC 3-250-01	Nov 2016	Pavement Design for Roads and Parking Areas
UFS 3-250-03	Jan 2026	Standard Practice for Flexible Pavements
UFS 3-250-04	Jan 2026	Standard Practice for Concrete Pavements
UFC 3-260-01	Feb 2026	Airfield and Heliport Planning and Design, Change 3
UFC 3-260-02	Jun 2001	Pavement Design for Airfields
UFM 3-260-03	Feb 2026	O&M Manual: Standard Practice for Airfield Pavement Evaluation
UFC 3-260-04	May 2016	Airfield and Heliport Marking
UFM 3-260-16	Feb 2026	O&M Manual: Standard Practice for Airfield Pavement Condition Surveys
UFM 3-270-01	Feb 2026	O&M Manual: Asphalt and Concrete Pavement Maintenance and Repair
UFM 3-270-08	Feb 2026	O&M Manual: Pavement Management
UFS-3-701-01	Feb 2026	DoD Facilities Pricing Guide
Air Force Civil Engineer Center Sustainment Management System Playbook	Nov 2024	Air Force Civil Engineer Center (AFCEC) Sustainment Management System (SMS) Playbook **(PWS Attachment 2)**
Transportation and Airfield Pavements AMP Business Rules	May 2025	FY27-31 AFCAMP Business Rules **(PWS Attachment 3)**
CERL Manual	Nov 2023	PAVER Version 7.1.2 User Guide
TSPWG Manual 3-270-08.14-03	Jan 2024	Pavement Management Plan (PMP)
Department of the Air Force Manual (DAFMAN) 11-501	Jan 2025	Small Unmanned Aircraft Systems Management
Department of the Air Force Manual (DAFMAN) 11-502	Jan 2025	Group(s) 1 and 2 Small Unmanned Aircraft Systems
Department of Air Force Instruction (DAFI) 13-213	Nov 2023	Airfield Driving
FAA AC 150/5300-16B	Jul 2019	General Guidance and Specifications for Aeronautical Surveys: Establishment of Geodetic Control and Submission to the National Geodetic Survey

The references cited in this PWS (e.g., FAA ACs, UFCs, ASTM standards) are intended to provide technical context and best practices. In the event of a conflict between these references and the specific requirements outlined in this PWS, the PWS shall take precedence.

The Contracting Officer Representative (COR) will provide the contractor with previous PCI reports, APE comprehensive evaluation reports, and any supplemental guidance requested within fourteen (14) business days after TO award. In addition, the COR will provide the latest PAVER database and any computer-aided design (CAD) or geographic information systems (GIS) data available from these previous reports. The installation Point of Contact (POC) will be provided so the contractor can request the common installation picture (CIP), construction history updates, Real Property Records and other pertinent data prior to the start of field work. The contractor must contact the COR if the installation POC does not provide the information needed IAW Section 5 within fourteen (14) business days after the original request. The COR will then assist with obtaining the information from the installation.

4. CONTRACT MANAGEMENT, PLANNING, AND REPORTING SERVICES

The contractor shall conduct project planning activities, including assisting in the development, implementation, and maintenance of project schedules, events, status of resources, report(s) on the activities, and progress toward accomplishing project objectives more specifically identified in the subparagraphs below.

4.1. Monthly Status Report (MSR)

The contractor shall prepare and submit a MSR each month of the contract period of performance. Include a summary of events occurring during the reporting period, discussion of performance, existing problem areas, identification of new or potential problems, corrective action taken, and outstanding issues. **(CDRL A001)**

4.2. Conference Minutes

The contractor shall attend and/or support meetings and teleconferences as required by the Contracting Officer (CO) and/or the COR. The purpose of the meetings includes contract discussions, progress reviews, project status, and feedback from the government on the review of draft submittals. The contractor will be responsible for drafting and submitting all meeting minutes to the CO and COR. **(CDRL B001).** The contractor will also be responsible for submitting any conference agenda(s) at least 24 hours prior to the conference.

4.3. Notification Requirements

The contractor shall notify the CO and COR of critical issues that may affect the contract performance and/or human health and the environment. On critical issues, verbal notification is to be made immediately, followed by written notification within three (3) business days of verbal notification.

4.4. Project Planning Chart (PPC)

No later than seven (7) business days after Contract Award, the contractor shall submit a

PPC of the entire project which also includes the timelines for each CLIN (installation) which will include proposed field work schedule to the AFCEC COR for coordination with the identified installations and MAJCOM/AFIMSC Detachment(s) staff, if applicable. Once the COR has notified the contractor that the schedule has been approved by the installation, the contractor will follow up with the installation POC to coordinate any entry requirements, approvals, or permits prior to arrival at the site for field work. This coordination will include providing team information for installation access and the airfield entry authorization letters. Entry requirements vary from location to location so a minimum of 30 business days for CONUS and 45 business days for OCONUS locations is required. The contractor shall coordinate photography of any kind through the installation POC. When required by the installation POC, the contractor must coordinate a photo authorization letter at least fourteen (14) calendar days before starting field work. **(CDRL C001)**

4.4.1. Site Briefings

On the first business day of arrival at each installation, the contractor shall provide an entry briefing to the Base Civil Engineer POC and other installation officials, to include: Engineering, Real Property, Operations, Security Forces and Airfield Management, as arranged by the installation POC. This in-brief shall explain the survey procedures and describe the support needed from the installation to complete the evaluation.

All Contractor personnel shall use normal base working hours of 0800 to 1700 Monday to Friday and exclude any federal holidays unless coordinated in advance or waved by the Base Civil Engineer (BCE), or BCE representative.

The Contractor shall coordinate with the BCE for a complete and updated list of any security/sensitive locations within the installation which would require special permission, special escorts, and/or restrictions to access.

4.5. Airfield Driving and Flight Safety

If proposed plan of contract execution includes vehicle collected data, the contractor shall be responsible for ensuring personnel attending evaluations complete necessary training to obtain an airfield driver's license (AF Form 483 Certificate of Competency) in accordance with all requirements in DAFI 13-213, Airfield Driving. If contractor members do not already possess a valid AF Form 483, the contractor may work with the COR to facilitate the necessary training activities (requires in-person attendance by contractor personnel to Tyndall AFB) and testing requirements with the AFCEC Airfield Driving Program Manager (ADPM) and Airfield Manager. After obtaining an AF Form 483, the contractor will still be responsible for working with the installation Airfield Manager at the location receiving a pavement assessment, for completion of any installation specific airfield driving training/certification requirements and to obtain usage of a radio for communication with the tower. The contractor's QC plan should address ensuring data quality while accounting for the possibility of interruption during data collection. If it is determined that NOTAMs are required to close portions of the airfield for specific periods of time to support testing activities, the contractor shall be

responsible for coordinating these closures with the Airfield Manager to mitigate the impact on aircraft operations.

4.6. Quality Assurance/Quality Control Plan

The contractor shall maintain a Government approved Quality Assurance/ Quality Control Plan (QA/QC). QA/QC Plan shall demonstrate the steps taken during the field survey to ensure the data is collected IAW ASTM D5340 (Airfields) and ASTM D6433 (Roads and Parking), entered into the PAVER database accurately, and meets or exceeds the AFCEC sampling rates specified in Section 5.2.2.4 and 5.2.2.5. The quality control plan shall address the following:

- Survey equipment calibration/certifications and QC analysis results
  - All equipment calibrations and camera maintenance (if applicable) are to be performed in accordance with specific manufacturer's recommendations.
  - Equipment calibrations refer to anything that requires proper/regular calibration to ensure that it is in proper working order and shall produce expected, acceptable results.
  - Calibrations shall be repeated as needed, according to manufacturer's recommendations.
  - All calibration procedures performed during this project, along with the recorded calibration data, are to be documented (i.e., results from tests are recorded and any corrective action taken shall be explained in detail) and reported to the USAF (**CDRL D001**).
- Survey procedures for producing consistent & reproducible datasets
- Survey equipment and data collection tolerances
  - As part of this QC plan, the contractor shall certify that their proposed data collection and analysis methods, regardless of apparatus or technique employed, can reliably produce results in accordance with the minimum data quality standards for pavement and distress attribute measurement as defined in Table 2. These standards are intended to expand upon the intent of those explicitly described in ASTM D6433 and ASTM D5340 and shall be applied and evaluated equally across all methods. A testing apparatus aligning with that described in ASTM D5340, Section 5 inherently shall be assumed to be able to produce results in accordance with these minimum data quality standards, provided that the 12 in scale used by the surveyor reads to the nearest 1/16 inch (1.5 mm).
  - The QC Plan shall define the quality assurance methods and procedures in place to ensure that both georeferenced, and location referenced, data and images are located within proposed precision and accuracies.
- Manual QA/QC of automated distresses detected
  - When manual rating of various pavement distresses/conditions are provided, or when distress rating review of automated distress identifications are provided, the Contractor shall provide a data quantification rating/review process which shall include a rater training plan.
  - The data quantification rating/review process shall assure rater accuracy and consistency.
  - For manual rating, the data collection and quantification process should be

applied in the same manner by all raters using the process. The plan must address the methods to demonstrate and monitor rater consistency throughout the entire data collection and quantification process.
    - For review of automated ratings, the plan must address how reviewers provide consistency via the methods and procedures in place to validate automated ratings.
    - The data quantification rating process must be approved by the USAF prior to implementation.
- Procedures to correct and/or recollect unacceptable data
    - The Contractor's submittals shall require USAF-completed QA reviews and acceptance of deliverables for invoice approvals.
    - The Contractor shall be advised if the submitted deliverables are accepted.
    - If some percentage of a deliverable is not accepted, the USAF shall advise the Contractor of the specific problems, and the expected problem resolution. Once advised of such a need to resolve a problem, the Contractor is expected to resolve problem, at no additional cost to the USAF, within thirty (30) calendar days.

In addition, the QA/QC Plan shall also demonstrate the internal review process by the staff engineers prior to distribution of the deliverables. The quality control team must thoroughly study all existing information regarding design, construction, and maintenance of the pavements provided by the installation and the AFCEC COR. They must also review any previous comprehensive pavement evaluation and PCI reports, results of physical property tests of pavements, climatic data for the vicinity, and soils and drainage data. This information shall be used and analyzed by the team to enable the employment of sound engineering judgement in order to provide the best possible recommendations. The program manager/senior engineer, as defined in Section 4.8, shall be the final reviewer on all draft and final deliverables before submission. The COR will perform Quality Assurance checks of random pavement section conditions.

4.7. Contractor Manpower Reporting

The contractor shall report all contractor labor hours (including subcontractor labor hours) required for performance of services provided under this contract via a secure data collection site. The contractor is required to completely fill in all required data fields using the following web address: Systems Award Maintenance (SAM) https://www.sam.gov/SAM/.

Reporting inputs will be for the labor executed during the period of performance during each Government fiscal year (FY), which runs from October 1 through September 30. While inputs may be reported any time during the FY, all data shall be reported no later than October 31 of each calendar year, beginning with 2026. Contractors may direct questions to the help desk at: Systems Award Maintenance (SAM) https://www.sam.gov/SAM/.

4.8. Qualifications of Personnel

Qualified personnel under the direction of a senior civil engineer shall execute the

contract. The qualifications are as follows (personnel must meet at least one qualification for their respective qualification category):

- *Program Manager/Senior Engineer*- manages AF PCI contracts and performs QA/QC on all reports prior to draft/final submission
  - Registered professional engineer in civil engineering with at least 5 years managing PCI evaluations of airfields or roads and parking IAW ASTM D5340 and ASTM D6433 **or**;
  - PhD in civil engineering with at least 5 years managing PCI evaluations of airfields or roads and parking IAW ASTM D5340 and ASTM D6433 **or**;
  - Master's degree from an ABET accredited school in transportation or pavement engineering with at least 10 years managing PCI evaluations of airfields or roads and parking IAW ASTM D5340 and ASTM D6433.
- *PCI Lead Engineer/Technician*- on site manager for AF PCI contract
  - ABET accredited bachelor's degree in civil engineering with at least 20 network installation PCI evaluations completed of airfield and roads and parking IAW ASTM D5340 and ASTM D6433 or;
  - Engineering technician with at least 25 network installation PCI evaluations completed of airfields or roads and parking IAW ASTM D5340 and ASTM D6433.
- PCI Technicians
  - Engineering technician with at least 10 network installation PCI evaluations completed of airfields or roads and parking IAW ASTM D5340 and ASTM D6433 under the direct supervision of a senior civil engineer.
- GIS/CAD Lead Technician
  - Engineering technician with at least 5 years of professional industry experience completing GIS and/or CAD maps.

5. TECHNICAL SERVICES

5.1. Technical Investigation

The contractor shall provide technical expertise, labor, travel and all materials required to inspect and verify the pavement inventory, conduct a pavement condition inspection to document specific distresses on the airfields or roads and parking areas, create/update the PAVER pavement management system database, perform condition analysis, provide maintenance and repair or construction planning requirements, and generate a deliverable package as specified in the Section 5.3 for each installation.

5.1.1. Pavement Area Summary

The contractor shall capture a 100% inventory of the pavements that exist in the corresponding network at each installation and use this data to assist in reconciling the differences between the PAVER inventory quantities and installation's Real Property Asset Database (RPAD). The contractor shall provide suggested actions to the Base Civil Engineer POC for installation Real Property Office personnel to complete in order to rectify discrepancies between the facility data listed in the installation's RPAD and the inspected facilities identified within the PAVER database. The PAVER/RPAD comparison shall be provided in tabular format as seen in Section 5.3.3.8.

All pavement facilities (whether active or closed/inactive) listed within the installation Geobase records shall be included in the mapping and PAVER inventory to provide data to rectify the disparity in areas. The contractor shall also create branches and sections, or validate previous linear segmentation, for all pavements in the PAVER database including shoulders and closed/inactive pavement. For unaccounted pavement or other concerns (i.e. abandoned in place sections or active sections not captured on the base CIP), the contractor should include in the PAVER inventory and discuss these areas with the POC. See Section 5.1.2, for specific guidance on closed/inactive pavement, shoulders, AGE storage, wash racks, etc.

All paved and unpaved roads and parking areas will be included in the mapping and PAVER inventory to provide data to rectify this disparity in areas. The contractor shall also create branches and sections, or validate previous segmentation, for all pavements in the PAVER database including unpaved and closed or unaccounted pavement. The contractor shall note the general condition of unpaved or unused pavement in the database but do not need to perform a detailed PCI on these pavements. See Paragraph 5.1.2.4 for specific guidance on installation housing.

5.1.2. Pavement Real Property Inventory Mapping and Segmentation

5.1.2.1. Inventoried Surfaces

When performing 100% inventory of all pavements, any open or closed/inactive, paved and unpaved surfaces shall be included in the mapping. The pavement rank of “U” should be assigned to closed/inactive pavement sections within the PAVER database. The general condition of closed/inactive/unsurfaced pavement should be determined via a cursory visual survey and noted in the PAVER database. A cursory visual survey denotes assessments in which the number of inspected sampling units fail to meet the ASTM minimum requirements in order to be considered either a simplified or standard evaluation. The results of a cursory visual survey should be reported as a qualitative assessment of the pavement surface condition as a “GOOD”, “FAIR” or “POOR” within the Overall Condition field of textual condition type within the PAVER database. If the results of a cursory visual survey are to be presented in a tabular format, the Cursory 3-Color Scale should be used.

5.1.2.2. Common Installation Picture

The installation will provide the contractor with the latest common installation picture (CIP) showing installation pavements and buildings (with facility number), and a pavement facility map showing the location of the pavement facilities (with facility number/Real Property Unique ID (RPUID)) listed in the real property record. The contractor shall use this information to adjust branches and sections from previous evaluations to align with the pavement facilities as outlined in Unified Facility Criteria (UFC) 3-260-01 and the general business rules for linear segmentation of pavements as outlined in the Transportation Networks and Airfield Pavements (TNAP), Supplemental Guidance of the Air Force Civil Engineer (AFCE) SMS Playbook. A PDF of the

Transportation Networks and Airfield Pavements (TNAP) sections of the AFCE SMS Playbook relative to PCI evaluations and this contract will be provided to the contractor **(PWS Attachment 2)**.

5.1.2.3. Real Property Data in PAVER

The contractor shall enter/update the real property data in the PAVER database at the Section and Branch level. This data shall include the following: Real Property Site Unique ID (RPSUID), Facility Number, RPUID, facility analysis code (FAC), and Category Code (CATCODE) for each pavement section. These fields are defined in PAVER 7.x, but not in earlier versions of PAVER. If the facility numbers or RPUIDs are not available for specific facilities, the contractor shall request the installation to provide the appropriate data. If no data is provided, the contractor shall enter TBD## (## indicates a sequential number beginning with the first available number) for the Facility ID, RPUID, and Facility Name fields within the database and on any mapping products. The contractor shall coordinate the requested updates to the linear segmentation plan affecting branch and section areas with the COR and installation POC during field investigations and throughout the performance period.

5.1.2.4. Installation Housing

For roads and parking areas within housing (CONUS Installations), the contractor shall conduct the PCI field survey and PAVER database updates for pavements that are not privatized. Privatized housing shall be inventoried but excluded from PCI survey and maintenance planning effort. For OCONUS installations, all housing roads and parking pavements shall be included in the PCI Survey. Driveways are to be inventoried but not inspected.

5.1.2.5. Paved Airfield Shoulders

The contractor shall include these pavements as part of the inventory for airfields when creating drawings and the database. Perform a standard PCI inspection of these pavements. The pavement rank of shoulder sections should match the rank assigned to the adjacent supporting active pavement within the PAVER database. Collect all available construction history of shoulders from the installation POC and input into PAVER.

5.1.2.6. AGE Storage Aprons

The contractor shall include these tertiary pavements as part of the inventory for airfields when creating drawings and the database. The contractor shall perform a standard PCI inspection of these pavements and include them as part of the maintenance planning effort. Any aircraft support storage area within the airfield pavements layer shall be included as part of the effort.

5.1.2.7. Wash Racks

The contractor shall include these tertiary pavements as part of the inventory for airfields when creating drawings and the database. The contractor shall perform a standard PCI inspection of these pavements and include them as part of the maintenance planning effort.

5.1.2.8. Curbs and Gutters

For roads and parking, the contractor shall utilize a USAF created user defined field for each section to indicate the existence of curbs and gutters and a user defined field to note their general condition.

5.2. PCI Inspection Requirements

5.2.1. CADD/GIS Mapping Project Requirements

5.2.1.1. CIP Vector Data

The contractor shall determine the method used to create the vector data for the pavement facilities shown on the CIP. If it was surveyed, the contractor shall not adjust any vector data for pavement facilities to align with imagery. If it was digitized from imagery, the contractor shall determine what image was used and the accuracy of that image. The contractor shall not adjust any vector data for pavement facilities using less accurate procedures than used to create the CIP vector data. The contractor shall digitize new pavement areas from most recent aerial imagery provided in the AF Geo Library (https://www.my.af.mil/datalibrary/). If imagery is not available, use survey grade equipment to plot boundaries of newly constructed pavement and include in computer-aided design and drafting (CADD)/GIS Mapping and shapefiles. Document any recommended changes to the CIP in Appendix B of the Deliverable Package (refer to Section 5.3.5). As an option, the APE mapping template which uses AutoCAD 3D map or ArcGIS Pro will be made available to the contractor for their use and can be requested through the COR.

5.2.1.2. Area Validation

The contractor shall choose at least one pavement section of each branch use (i.e., Runway, Taxiway, Apron, etc.) and verify/validate the area. Compare the field verified area to the CIP and installation GeoBase pavement layer. Where a branch is made up of more than one section, the contractor will physically measure key dimensions for each section and sum them up to determine the area of the branch. The intent of this task is to validate the mapping received from the installation and reconcile any differences between the CIP and what the contractor sees on the ground. Document the procedure used to validate dimensions in Appendix B of the Deliverable Package (refer to Section 5.3.5).

5.2.1.3. PAVER Database Updates

If the inventory definition in the PAVER database changes, the Contractor is responsible for updating the map and any associated links to the PAVER database to reflect the changes. In addition, the contractor shall provide a full listing of any CIP adjustments to the AF as part of the deliverables for this project.

Shapefile associated with the PAVER database shall have the following metadata requirements:

Under Tags: Year of survey, Type of Survey, Installation Name, Company name, Author

Under Summary: Description of survey performed (For Example: PCI inspection, Structural Evaluation, Real Property Validation, etc.).

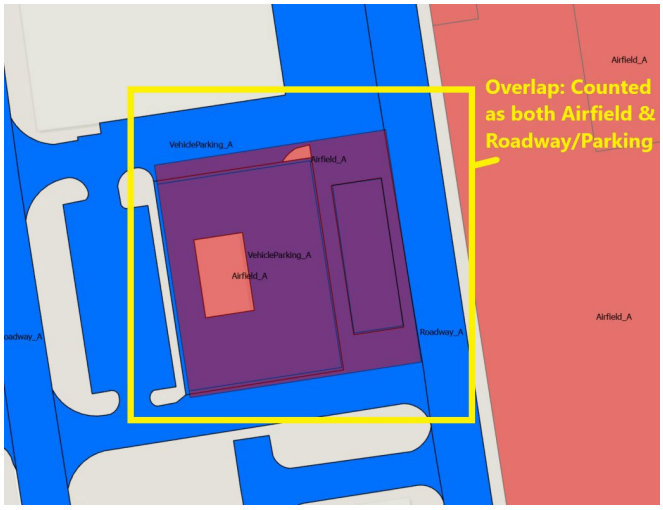
The final PAVER .e70 database provided shall have all sample unit (SU) images stripped out to reduce file size (**CDRL D001**). Note: While all Sample Unit images shall be stripped from the final PAVER .e70 database to minimize file size, the full set of collected images must still be included as part of the overall deliverable in accordance with Section 5.2.2.7 and CDRL D001. Images shall be organized by Section ID and Sample Unit ID and accompanied by a spreadsheet index.

The shapefile shall be in State Plane Coordinate System (SPCS) for all CONUS installations and Universal Transverse Mercator (UTM) for OCONUS installations and free of any topology errors. It shall be named using the following naming convention; SiteName_Air/Roads_4-digit Year of Survey. The site name should be the same as what is on the Real Property Records.

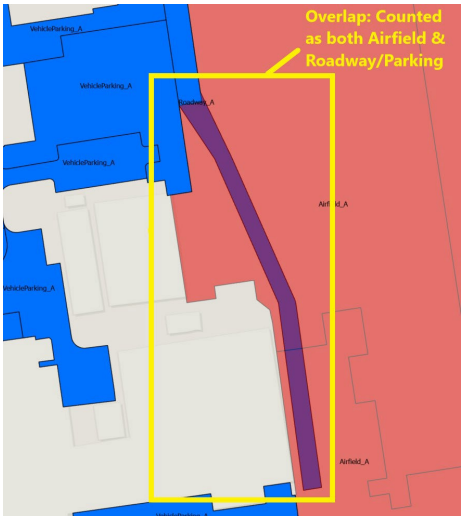
5.2.1.4. CIP Updates

The contractor shall validate all CIP transportation vector data received from installations (e.g., Airfield, Roadway, Vehicle Parking). These three feature classes are separate entities in the CIP and often not checked against each other for topology errors between them. Typical errors that are identified:

- Vehicle Parking areas overlapping Airfield areas



- Roadway areas overlapping Airfield areas



- Vehicle Parking entrance areas overlapping Roadway areas or having gaps between them.

If these CIP data layers require updates/manipulation, the contractor shall make any necessary changes to the geospatial data and notify the installation, prior to the evaluation, to alleviate any concerns that may arise. If the number of errors is excessive (more than 100 topology errors), the contractor shall report these findings to the COR and request the installation GeoBase office to make the updates and supply repaired transportation vector data as soon as possible. When any geospatial information collected as a result of the contract includes information identified in the CIP or pavement Mission Data Set (MDS), the contractor will identify those changes and available metadata and provide it to the installation GeoBase office in SDSFIE file geodatabase format for them to update the CIP. The new APE-mapping template provides a tool to create an SDSFIE compliant file geodatabase using the PAVER .e70 and its shapefile. All geospatial data shall be delivered in the same coordinate system and projection that the CIP originally

was provided. All geospatial information system (GIS) and mapping data will be delivered in SDSFIE Gold format.

5.2.1.5. GPS

Any Geospatial datasets captured by the contractor (e.g., shapefiles, point clouds, imagery) shall be tied to established geodetic control in accordance with FAA AC 150/5300-16B and referenced to NAD 83 (2011) and NAVD 88, or applicable local datum. The contractor shall include metadata describing the coordinate system, projection, datum realization, method of georeferencing (e.g., RTK, post-processed static survey), and the number and location of control points used. The contractor shall employ positioning methods capable of achieving a horizontal positional accuracy of ≤3 cm and vertical accuracy of ≤5 cm RMSE. In particular, the contractor shall identify the centroid of each sample unit for the airfield or roads and parking survey. RTK GNSS is one acceptable method, but alternative techniques may be used if they meet the required accuracy and are documented.

5.2.2. Pavement Condition Inspection

5.2.2.1. As-Built Drawings

The contractor shall work with the installation POC to acquire as-built data for all projects completed since the last AFCEC Airfield Pavement Evaluation report (airfields) or PCI inspection (roads and parking). The installation POC may elect to provide the information or arrange for the contractor to review as-built drawings and records at the Base Civil Engineer offices. The contractor shall review as-built drawings and records to determine the project or work order number(s) and phase (if applicable), project or work order cost, construction date, major maintenance and repair date(s), pavement thickness (if applicable), and work type performed for all inspected pavements, and ensure that this information is accurately reflected in the appropriate data fields within the PAVER database.

5.2.2.2. Interviews

In cases where the installation does not have a thorough historical record of construction dates and maintenance and repair projects, especially on roads and parking lots, the contractor shall review available imagery, to include Google Earth, and interview Installation Civil Engineering and Airfield Management personnel to estimate the date of construction, last major maintenance and repair date(s), and type of work. The contractor shall input “Date Estimated” and source within the comments field of the work history module within the PAVER database. If they cannot provide this estimate, the contractor shall collect and input the data that is available into the PAVER database and will estimate the construction date based on average deterioration rates calculated for asphalt and concrete pavement using sections for which historical data was available. Request background data to include any history of installation relevant to the survey [date opened,

location, current traffic data, previous evaluations (PCI/ Structural), and construction history].

5.2.2.3. Pavement Identification

For pavements that have not been inspected previously, the contractor shall divide the paved areas of the network into branches, sections and sample units. For pavements that have been inspected previously, the contractor shall update the branches and sections as required and assign them to pavement facilities following segmentation guidance and naming conventions as outlined in UFC 3-270-08 and the current general business rules for linear segmentation of pavements as outlined in the TNAP Supplemental Guidance of the SMS Playbook. If pavement is found during the evaluation and not included as part of the installation CIP or Real Property Asset Data, the contractor shall inventory and inspect the pavement, leave real property inventory data in PAVER as TBD, and ensure that these areas are identified and addressed with the installation POC.

5.2.2.4. Sampling Rates, Airfield Networks

For Airfields, the contractor shall determine sampling rate in accordance with procedures for a 95% confidence PCI assessment as described in ASTM D 5340, assuming an acceptable margin of error (e) of +/- 5 PCI points. If a section has not previously been inspected, assume a standard deviation of 15 for concrete and 10 for asphalt to determine the number of sample units to be inspected according to ASTM D 5340-23 Equation (1) and complete the inspection. If a given section has previously been inspected, start with the inspected sample units from the previous inspection. Compute the standard deviation of sample unit PCIs from the previous inspection to determine the required number of sample units to be inspected for the current inspection. Add or remove sample units from the current planned inspection as necessary. **Exception: The total number of sample units inspected shall amount to no less than 10% of the section area.**

Following completion of the inspection, the actual standard deviation of the sample unit PCIs within each section will be computed according to ASTM D 5340-23, Equation (2) and a revised minimum number of sample units to be surveyed will be computed using Equation (1). If the revised number of sample units to be surveyed is greater than the number of sample units already surveyed, select and survey additional random sample units.

5.2.2.5. Sampling Rates, Roads and Parking Networks

For road and parking surveys, the contractor shall use a reduced sampling rate as indicated in ASTM D6433 para. 7.6. However, for sections exceeding 40 sample units in size, the contractor shall inspect either:

A) 10% of the total section by area

Or

B) the number of sample units required to achieve 95% confidence according to ASTM D 6433 Eqn. (1), (assume standard deviation of 15 for concrete and 10 for asphalt if section has not previously been inspected)

Whichever is **less.**

The contractor shall create or update the PAVER database to record the inventory and inspection data for the network. The final use of this data will be to manage the pavement network effectively. If additional sampling is required to support project development at the required confidence level, the contractor shall inspect additional sample units. In addition, if extrapolated distress estimates are inaccurate based on the data collected, the contractor shall collect additional sample units to ensure the data provides an accurate reflection of the condition. For example, if there are large areas of POOR pavement that were not captured in the random sampling and the engineer believes it will have a significant effect on the budget analysis, increase the sampling.

The contractor shall identify and highlight any significant issues for the base pavements.

5.2.2.6. PAVER Data Entry

The contractor shall ensure the PAVER database is divided into separate installations or site networks based on real property ownership or use. For example, housing (un-privatized or privatized), Air National Guard/Department of War (DoW) leased areas, and/or geographically separated areas/sites. The naming for these network IDs should follow this format; Site NameFH (non-privatized housing), Site NamePH (privatized housing), Site NameANG (Air National Guard). The contractor shall contact the COR if there are any questions on the separation of networks and naming convention. If separated in the existing PAVER file, the contractor shall combine the unpaved and paved roads and parking network. The PAVER database shall be cleared of any extraneous system tables or user-fields not applicable to the respective database. Duplicate work types in the database shall be deleted. For all airfield databases, the contractor shall assign the Foreign Object Debry (FOD) Aircraft at the section level in PAVER.

5.2.2.7. Photography

The contractor shall include digital photo documentation of pavement sections and typical distresses for each section. An overview photograph of each section shall be included. All photos will have a text box at the bottom with the GPS location, date the photo was taken, and description of distress/severity and grouped into folders identified with the Section IDs. At a minimum, the contractor shall take one (1) overview photograph and three (3) pavement distress photographs per section.

The contractor shall coordinate photography of any kind through the installation POC. If imagery is collected as part of an automated survey process, the contractor will provide

all imagery data on an external hard drive(s) in a format that can be read in PAVER Image Inspector and ArcGIS Pro. Pavement images shall not be collected during periods when the visibility of cracking and other distress forms are continuously obstructed or obscured. This includes water on the pavement surface, either sand or mud on the pavement surface, low light conditions, excessive shadows, etc. All photos shall be provided as a deliverable along with an Excel spreadsheet index and organized by distress. **(CDRL D001)**

5.2.2.8. PCI Ratings

PCI ratings shall be determined for each network, as well as for each branch, and section according to procedures described in ASTM D 5340-23 for airfields and ASTM D 6633 for roads and parking networks. The PCI ratings at the section level shall be shown on a color- coded map using the applicable PCI Rating specified in ASTM D5340 or D6433. Specific Red, Green, Blue (RGB) color codes to be used for PCI mapping and graphics are shown in Figure 1 below.

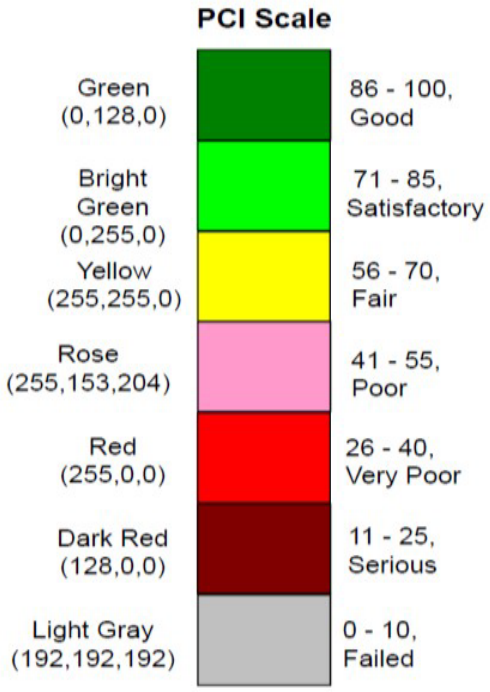


Figure 1. PCI Ratings.

5.2.3. Automated PCI Inspection: Alternate Methods and Approval

The Performance Work Statement (PWS) for PCI Inspections does not exclude the use of automated pavement inspection technologies in lieu of the manual equipment specified in Section 5 of ASTM D5340 and ASTM D6633. However, contractors are required to effectively demonstrate that their solution meets the requirements contained herein. When sUAS technology cannot be used due to installation/location restrictions or pending COTs UAS exemptions, contractors must use manual or alternative inspection methods. These alternative methods must still meet all the requirements defined in this

document and be effectively demonstrated. The USAF reserves the ultimate right to determine technical acceptability and to approve a proposed technology and process for measuring pavement attributes

The USAF recognizes that automated systems (e.g., laser scanners, imaging devices) differ significantly in their principles of operation compared to the tools associated with manual inspection. Further, a given technique employing measurement devices or methods other than those mentioned in ASTM D5340, Section 5 could theoretically produce measurement results meeting the ASTM-specified standard for accuracy/repeatability (+/- 10% if remeasured) but with actual values and results differing significantly from corresponding manual observations, and which may or may not be reflective of ground truth (i.e. manual inspections). Therefore, there is a requirement for additional specificity related to the data quality standards (applicable across all methods of inspection) that can ensure reasonable compatibility of results between various potential evaluation techniques. Note that these data quality standards do not relax the requirements outlined in ASTM D5340 or unfairly disadvantage contractors proposing manual inspection techniques. Instead, the requirements detailed in this section are intended to:

- Avoid limiting the potential enhancements to efficiency and data-rich capabilities of automated and semi-automated inspection methods, while maintaining results and outcomes comparable to manual techniques.
- Establish minimum data quality standards for automated methods to ensure reasonably accurate identification and quantification of pavement distress, achieving parity with the intent of requirements defined in ASTM D5340 and ASTM D6633. These standards will address:
    a. Measurement Resolution, Accuracy and Repeatability
    b. Industry best practices and environmental considerations for data collection to ensure the highest level of data integrity

5.2.3.1. Data Quality Standards for Automated Measurement of Pavement Attributes:

The following data quality standards for automated measurement of pavement attributes as indicated in Table 2 are implemented to define acceptable tolerances for length, width, depth, height, and area attribute measurements of distresses and pavement attributes, ensuring reasonable consistency with manual inspection outcomes. For the government to approve an automated method, the Contractor shall submit results from at least one prior project or independent study demonstrating the accuracy and repeatability of their proposed methodology while showing a direct comparison of similar conditions to manual inspections outlined in this PWS. This documentation must include:

- Data collection performed over both an asphalt and concrete surfaced test section not less than (1) standard sample unit in size where all pavement features and distresses have known attributes as determined via manual test

apparatus, and each test section containing at least one (1) cracking-based distress at both low-severity and (1) at medium-or greater severity and at least (1) depth/height based distress at low-severity and (1) at medium- or greater severity, independently verified using standard testing apparatus as indicated in ASTM D5340 to establish ground truth.

- A minimum of three (3) independent data collection runs over each test section using the proposed methodology.
- Analysis demonstrating compliance with the data quality standards for measurement accuracy and repeatability as described in Table 2.

The USAF reserves the ultimate right to determine technical acceptability and to approve a proposed technology and process for measuring pavement attributes.

Table 2. Minimum Data Quality Standards for Pavement and Distress Attribute Measurements

Requirements	Resolution	Accuracy	Repeatability (min. 3 measurements)
Width Attribute Measurements (x-y plane)	0.06 in (1.5 mm)	± 0.12 in (3.0 mm)	Greater of ± 0.12 in (3.0 mm) or ± 10%
Height/Depth Attribute Measurements (z-plane)	0.06 in (1.5 mm)	± 0.20 in (5.0 mm)	Greater of ± 0.20 in (5.0 mm) or ± 10%
Length Attribute Measurements (x-y plane)	0.1 ft (30 mm)	± 30% for features with corresponding width dimension < 0.12 in (3.0 mm) ± 15% for features with corresponding width dimension of 0.12 in (3.0 mm) to 0.24 in (6.0 mm) ± 10% for features with corresponding width dimension > 0.24 in (6.0 mm)	
Area Attribute Measurements	0.01 square feet	± 20%	± 20%
Mean Texture Depth (if applicable)	0.004 in (0.01 mm)	± 0.04 in (0.1 mm)	Greater of ± 0.04 in (.1 mm) or ± 10%
Pavement Geometry (if applicable)	0.1 degrees	± 0.5 degrees	± 0.5 degrees

5.2.3.2. Equipment, Technology, and Software Tool Requirements

5.2.3.2.1. Navigation System:

The Contractor shall include a detailed plan outlining the proposed data-collection system's navigation components and procedures (e.g., establishing of ground control points (GCPs), network real-time kinematic (RTK)) to ensure accurate and synchronized spatial referencing for all collected data, including coordinates, images, and distress measurements.

Note: The global positional accuracy requirements established in Section 5.2.1.5 for the purpose of pavement inventory validation are not sufficient to ensure accurate distress identification. Contractors must demonstrate that all spatial datasets used to resolve pavement distress attributes are synchronized, whether through real-time methods or post-processing, such that feature alignment errors do not exceed the tolerances defined in Table 2.

This plan must address procedures for mitigating GPS signal loss and satellite outages, as well as strategies for minimizing driver-induced bias (if applicable) or excessive wind (for sUAS based platforms). The plan must clearly define expected accuracies, both relative (e.g., pixel-to-pixel) and global, for all devices and equipment, and summarize these details in a "Technical Detail Response" table (Section 5.2.3.4.1).

5.2.3.2.2. Methodology for Accuracy

The Contractor shall detail their methodology for accurately synchronizing any pavement images and all other collected data with the inventory-related features of the CIP to include Network ID, Branch ID, Section ID, Sample ID, and, where applicable, Slab ID. The plan must differentiate between data/images synchronized in real-time versus post-processing, and outline procedures for identifying data/image start/stop locations, including handling lead-ins/lead-outs and under/overruns.

5.2.3.2.3. Access Limitations/Restrictions

The contractor shall detail their methodology for dealing with access limitations/restrictions or inability to collect data in a particular location due to parked aircraft. Data collection is prohibited during conditions that obstruct distress visibility, such as excessive water, sand, or mud on the pavement surface, or during periods of low light (unless equipment mounted lights are utilized) or when shadows obscure the surface of the pavement being assessed. The government reserves the right to reject results obtained through any proposed distress identification techniques relying solely on automated processing of raster imagery, where the visual quality of the collected raster image is insufficient for the contractor or the government to reasonably perform manual QC/QA of the distress identification result.

5.2.3.3. Distress Feature Identification

As part of the documentation submittal for prior project performance or independent study, the contractor shall provide analysis confirming that all distress types present in the sample unit have been accurately identified in each sample unit at least 95% of the time, in-line with ASTM D 5340-23, Section 13, Note 1, when compared to corresponding manual assessment.

Each detected or assigned distress shall be catalogued as a polygon, line, or point feature and recorded in the appropriate data shell of the file geodatabase used to house the data prior to export into a format ingestible by PAVER. Separate feature classes shall be assigned in the geodatabase for each ASTM Distress Type. All linear distresses are to be represented as line features, and all area-based distresses are represented as polygon features. If a specific area-based distress is derived from linear distresses, it will have more than one unit of measure-based attribute associated with it. For example: Block cracking (Distress # 43) will consist of a polygon feature outlining the extents of the assigned distress and must have an attribute assigned for average width (used to determine severity rating) associated with all the line-based crack features contained within that polygon, in addition to an attribute representing the area of the polygon (used for determining percent distress in the sample unit). All features must also be assigned a series of inventory attributes corresponding with the Pavement Network ID, Branch ID, Section ID, and Sample ID, followed by the applicable distress code/identifier (ASTM D5340-23 or ASTM D 6633), distress severity (L, M, H), and a sequential number (Distress_UniqueID) assigned based on the order in which a particular distress is catalogued within the network. In this way, the combination of inventory attributes associated to a particular distress feature can be used as a unique identifier for that distress, while also allowing for easy roll-up of distress data at the slab, sample, section, branch, or network level and capability for export in an inspection file format compatible with PAVER import for subsequent PCI computation. An example of these nested attributes corresponding to a distress located within a flexible pavement section is shown in Figure 2 below.

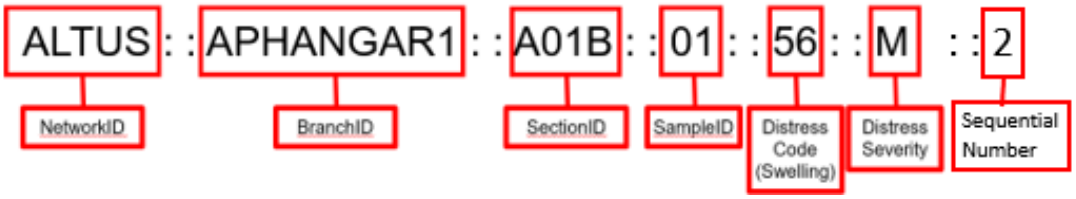


Figure 2. Example: Unique Identifier for a Distress

5.2.3.3.1. Crack Related Distresses:

The Contractor shall provide details for all aspects of cracking data collection and reporting. The Contractor shall specify the minimum detectable crack width for their proposed technology in terms of both the lowest theoretical and practically achievable measurements.

All cracking-based distresses shall be catalogued as either line or polygon features as appropriate (depending on whether distress is area based or length-based), and attributed to Sample IDs, Section IDs, Branch IDs, and Network IDs based on GPS coordinates. The quantities and severities of individual distress types shall be as defined in ASTM D5340-23, Standard Test Method for Airfield Pavement Condition Index (PCI) Surveys. All cracks/crack segments greater than 1 mm in thickness must first be recorded as separate line features in terms of Linear Feet and avg. width. Additional data layers should then subsequently be formed for each of the different cracking-based distress categories defined in ASTM D5340-23 or ASTM D6633. For individual cracks crossing the boundaries of multiple Sections/Sample Units, a separate cracking-based feature will be assigned to each sample unit along with the appropriate length/area measurements corresponding with the portion of the cracking located within each sample unit. Additionally, separate distress features/instances must be assigned for all non-contiguous areas or segments.

5.2.3.3.2. Settlement/Faulting Distress:

The Contractor shall detail their methodology for collecting and reporting settlement/faulting data, including how they will obtain a geospatially accurate representation of rigid pavement joints, with a joint defined as a boundary between two contiguous slabs, or as a boundary between a single slab and portions of two or more slabs. The Contractor must then indicate how they will synchronize any collected vector or raster data to accurately align with the location of the joints. The Contractor shall not be allowed to solely establish joint detection or location via algorithms such as ProVal or via a pre-defined nominal joint spacing variable such as 20-foot spacing. Joint location can be programmatically determined or assigned via automated process, but the contractor must have the ability to inspect for quality control of the data, and either validate or manually adjust the locations of the joints as necessary, prior to final determination of the faulting values. A minimum faulting threshold of 0.125 inches (3.0 mm) shall be used. The assigned settlement/faulting distress value (distress_height attribute) at a given joint between two contiguous slabs will be based upon the magnitude of the maximum obtained elevation differential obtained through regression of elevation data (obtained through digital elevation model, lidar profile, or other method), between two corresponding points on either side of a defined joint, and with at least one (1) elevation differential measurement obtained at the midpoint of the segment representing the joint location. Each faulting distress incidence will be catalogued as either a line or point feature representing the single transverse profile or individual point along the pavement joint where the maximum elevation differential was observed, OR as a line or feature that is coincident with the specific joint along which the faulting data was captured. corresponding points should be located on the same hypothetical line segment or transverse profile bisecting the joint location at a 90-degree angle, and with four (4) inches separating the points located on either side of the joint (resulting in elevation measurement being obtained at approximate 2 in. offset on either side of joint), as a

means of limiting the effect of construction practices such as roll-off defects on the measurement of the faulting magnitude.

5.2.3.3.3. Rutting and Depressions:

The Contractor shall detail their methodology for collecting and reporting rutting and depression data, defining ruts as surface depressions in the wheel path and depressions as any other localized surface depressions, with both measured in terms of square feet (plan area) and maximum depth. Depth will be computed using transverse profile elevations based on an assumed 10-foot digital straightedge. Minimum thresholds are 0.24 inches (6.0 mm) for rutting and 0.125 inches (3.0 mm) for depressions. Ruts or depressions spanning multiple Sections/Sample Units will have separate distress features assigned to each unit with corresponding area measurements.

5.2.3.3.4. Shoving, Swells, and Blowups:

The Contractor shall detail their methodology for collecting and reporting shoving, swell, and blowup data. These distresses are measured in square feet (plan area) and maximum height, determined from pavement profile elevations and an assumed 10-foot digital straightedge. The minimum threshold for these distresses (rigid pavement) is 0.24 inches (6.0 mm).

5.2.3.3.5. Raveling and Weathering:

The Contractor shall detail their methodology for collecting and reporting raveling and weathering data, including their ability to identify these distresses and their severities as defined in ASTM D5340-23. The Contractor must describe their method for differentiating grooved AC pavements from weathering/raveling.

5.2.3.3.6. Miscellaneous Rigid and Flexible Pavement Distresses:

The Contractor shall describe their technology and procedures for identifying additional rigid and flexible pavement distresses outlined in Section 4.2.3. This includes explaining how pavement imagery and data will be analyzed to differentiate between rigid pavement distresses like spalling, patching, scaling, ASR, shrinkage cracking, popouts, and durability cracking. Importantly, ASR should not be solely identified through visual inspection; suspected instances are to be classified as scaling unless previous petrographic analyses have confirmed ASR presence or high potential.

5.2.3.4. Data Acquisition Methodology

The Contractor shall provide (in .pdf format) a comprehensive description of their data acquisition methodology (**CDRL D001**), including:

5.2.3.4.1. Equipment and Sensor Specifications:

Detailed specifications of all equipment and sensors used for data collection (e.g., cameras, LiDAR scanners, GPS receivers). The Contractor shall submit a Technical Detail Response table that lists the equipment, associated specifications, and features which provides sufficient detail indicating how the equipment shall meet or exceed the requirements outlined in this section.

5.2.3.4.2. Acquisition Procedures:

Step-by-step procedures outlining the data acquisition process, including data collection parameters, speed, and any pre- or post-processing techniques.

- For all raster image or point cloud-based pavement data collection techniques, the Contractor shall clearly specify the proposed Ground Sampling Distance (GSD) or point spacing necessary to accurately resolve spatial attributes associated with pavement distresses. The proposed GSD/point spacing must be justified and demonstrate the ability to meet the minimum resolution standards outlined in Table 2 of this document. This ensures sufficient detail for accurate distress identification and measurement.
- If employing raster-image based data collection and analysis techniques, the Contractor shall clearly specify the planned image overlap settings and Digital Elevation Model (DEM) resolution to be associated with each Contract Line Item Number (CLIN). While image overlap settings can be tailored based on the specific pavement surface type and anticipated distress types/densities encountered in previous investigations, a minimum overlap of 50% front and side overlap shall be maintained at all times.

5.2.3.4.3. Data Processing and Analysis Methods:

The contractor shall include a thorough description of the methods used to process the raw data, extract pavement distress attribute measurements, and identify/assign distresses type and severity (if not performed manually) including any software, algorithms, models, or geoprocessing tools employed.

5.2.4. sUAS Operations for Pavement Condition Index (PCI) Data Collection

5.2.4.1. sUAS Approvals

This section outlines the approval process for contractors proposing to utilize contractor-owned and operated small Unmanned Aerial Systems (sUAS) for pavement condition data collection activities under this contract. Contractors must adhere to all applicable federal, DoW, Department of Air Force (DAF), and installation-specific regulations and procedures governing sUAS operations.

5.2.4.1.1. sUAS Platform-Specific Approvals:

Airworthiness Approval: Contractors must ensure that the proposed sUAS platform, including the specific sensor payload configuration, has received airworthiness approval from the Technical Airworthiness Authority (TAA).

Commercial Off The Shelf (COTS) UAS Exemption to Policy (ETP), if required at the time of Period of Performance (PoP) for the contract. The USAF will submit an initial request/application for COTS UAS exemption, to HQ AFMC/A3, if a company does not already possess one. For this, the contractor shall provide a Critical Components List (CCL) of the equipment and sensors being used. The CCL shall be submitted on a company letterhead and list the exact manufacturer, model and information on the equipment being used.

> "Blue List" Recommended: To ensure timely contract execution, it is highly recommended for contractors proposing sUAS operations to utilize sUAS platforms and sensor payloads included on the Defense Contract Management Agency (DCMA) "Blue" list (https://bluelist.appsplatformportals.us/UAS-Cleared-List/). While "Blue List" platforms have received preliminary vetting, contractors are still required to submit an exemption request to AFMC/A3 specific to their intended use under this contract. This process is expedited due to the platform's existing cybersecurity vetting. Proposals that include sUAS platforms not on the "Blue List" will be considered, however, timelines for getting approval could take much longer or not get accepted at all.
>
> Rationale: Platforms on the "Blue List" have undergone a rigorous cybersecurity mitigation process using the Risk Management Framework (RMF), which can be a timely process. This pre-approval significantly streamlines the COTs exemption process necessary for sUAS operations on DoW installations.

Approved Authority to Operate (ATO), if required at the time of Period of Performance (PoP) for the contract. An ATO must be approved and signed by an O-6 commander or equivalent for each installation. To obtain this approval, the flight approval authority will send all required documents listed in Sections 5.2.4.1.2 through 5.2.4.1.6 to the installation for consideration.

Non-Compliance: For contractors proposing sUAS technology, where sUAS technology is not allowed, a COTs UAS exemption approval is not yet received, or a signed ATO is not received, contractors shall default to using manual or other alternative inspection methods at installations/locations (as long as technically is acceptable otherwise). Whatever method chosen; the contractor must demonstrate that the solution meets all requirements contained herein this document.

5.2.4.1.2. Airspace Approvals:

Certificate of Authorization (COA): Contractors must obtain a COA from the FAA for all sUAS operations conducted in controlled airspace. The contractor is responsible for submitting the COA application to the FAA through the installation's designated approval authority. Processing times for COAs can vary, so contractors are advised to initiate this process well in advance of planned operations.

For all European countries, European Union Aviation Safety Agency (EASA) UAS certifications will be required for flying approval. EASA makes broad and general rules for all EU countries regarding aviation. Additionally, each countries' own federal aviation authority has its set of rules. More information can be obtained at the following:

a. https://www.easa.europa.eu/en/domains/drones-air-mobility/operating-drone/open-category-low-risk-civil-drones
b. https://www.easa.europa.eu/en/domains/civil-drones/naa

Installation Airspace Approval: Contractors must obtain airspace approval from the installation's airfield management office or equivalent authority. This approval ensures sUAS operations do not conflict with existing base activities or pose a safety hazard. Refer to Appendix A and **PWS Attachment 4** for additional installation-specific information regarding sUAS operations. Approval will be contingent upon the contractor successfully completing the following:

Concept of Operations (CONEMP): Contractors must develop and submit a CONEMP for review and approval by the installation commander or designated representative. The CONEMP should address the following:

Mission objectives and scope

Specific areas to be inspected

Operational procedures, including launch and recovery locations

Risk mitigation strategies

Emergency procedures

Data management plan

Environmental considerations

5.2.4.1.3. Spectrum Management Analysis:

The contractor shall obtain an approved spectrum management analysis for each installation. The Contractor is responsible for providing a specification sheets for their system to process the management analysis (allow 30 days to process).

5.2.4.1.4. National Defense Authorization Act (NDAA) Compliance

Contractors must provide a NDAA compliance certification/memorandum on company letterhead ensuring that all sUAS components are NDAA compliant.

5.2.4.1.5. Contractor Operational Approvals:

Operator Certification: All contractor personnel involved in sUAS operations, including remote pilots in command (PIC), visual observers (VOs), and other crew members, must possess the required certifications and qualifications as mandated by the FAA and AFMAN 11-502. This includes:

FAA Part 107 Remote Pilot Certificate (or higher) for PICs.

Completion of any additional training required by the specific sUAS platform manufacturer or the AF.

5.2.4.1.6. Critical Components List (CCL):

CCL will be provided to ensure parts are not manufactured in a covered county. The critical components list should cover, as applicable, the:

- Flight Controller
- Radio
- Data Transmission Device
- Camera
- Gimbal
- Ground Control System
- Operating Software
- Network Connectivity

5.2.4.1.7. Pre-Performance Meeting:

Prior to commencing any sUAS operations, the contractor will participate in a mandatory pre-performance meeting with the COR, installation IPMO or sUAS Program Manager, and other relevant stakeholders. The purpose of this meeting is to:

Review and confirm the contractor's understanding of all applicable regulations, procedures, and installation-specific restrictions.

Finalize the CONEMP and ensure it aligns with installation requirements.

Coordinate operational logistics, including scheduling, communication protocols, and safety procedures.

5.2.4.1.8. Reporting:

The contractor shall provide the COR with regular progress reports on all sUAS-related activities. These reports shall include information on:

a) Status of approvals

b) Flight operations conducted
c) Data collected
d) Any issues encountered

5.2.4.1.9. Disclaimer:

This section provides a general overview of the sUAS approval process. Contractors are solely responsible for familiarizing themselves with and complying with all applicable regulations, procedures, and restrictions. **Failure to obtain required approvals does not relieve the contractor of the responsibility to complete pavement assessments.** Contractor shall default to using other approved inspection methods (e.g., manual inspection) if required approvals are not obtained for sUAS operations.

5.3. Deliverable Package (CDRL D001)

The contractor shall produce draft and final submittals for the airfield and/or roads and parking network at each location listed in the contract. The draft deliverable package submission will include PDF Executive Summary, drawing files, photos, an excel workbook, a copy of the PAVER database, and a distress database (if automated inspection technology is used), all in electronic format. The final deliverable package shall include the PDF Executive Summary, CAD and/or GIS files, final updated PAVER database, photographs, excel workbook, distress database, and other electronic source files used to generate the excel workbook, all delivered electronically.

Deliverable Schedule: The contractor shall deliver a draft deliverable package for government review within 60 working days after completion of all fieldwork. The government will provide the contractor with written comments within 60 working days of receipt. The contractor shall respond to the government comments in writing within 14 working days of receipt of the comments and discuss adjudication of the comments with the government prior to delivering the final deliverable package. The final deliverable package shall be delivered within 21 working days of adjudication of comments.

5.3.1. Executive Summary

The contractor shall provide an executive summary no longer than three written pages in length (total of four pages including a 7-color PCI map), focusing on high-level details, findings, and recommendations from the inspection. The following outlined sections shall be included. **(CDRL D001)**

5.3.1.1. Introduction and Purpose

A description of the survey objectives, scope, and description of work performed, as well as the goals and objectives deliverables.

5.3.1.2. Background Information

Background data should include any history of base relevant to the survey (date opened, location, climatological data, current traffic data, previous evaluations (e.g., PCI , Structural, Comprehensive), and construction history).

5.3.1.3. Major Projects

Provide a synopsis of major projects completed since the last evaluation and entered into the PAVER database. If major projects have been accomplished, the contractor shall verify pavement thickness with installation personnel. The contractor shall inquire with AFCEC to determine if PCNs have been updated for airfield construction.

5.3.1.4. Key Findings

The key findings section shall focus on the most pressing areas of concern in primary and secondary-ranked pavements, predominant types of pavement distresses observed during the inspection, deterioration trends (e.g., rapid decline), as well as potential causes and factors affecting pavement conditions.

5.3.1.5. Summary Tables

Include a Pavement Condition Summary, which shall contain a table like Table 3, with the area and area-weighted average PCI for the current and previous PCI inspection for each branch use category. Present numerical values to the nearest whole number value. In addition, provide bar charts with a comparison of the area weighted average PCI for the current and previous PCI results for each branch use category as well as the overall area weighted average PCI for the network (Figure 3).

Table 3. Condition Summary Example.

Branch Use	Area-Weighted Average				Condition Category	Pavement		
	2019 PCI	2019 Age	2024 PCI	2024 Age		Area (ft²)	Area (%)	Sections
Cannon AFB								
Apron	79	31	77	35	Good	7,634,054	51	49
Overrun	88	6	75	11	Good	594,450	4	4
Runway	79	17	87	16	Good	2,706,791	18	24
Shoulder	--	13	76	14	Good	1,884,061	12	29
Taxiway	73	28	76	31	Good	2,266,361	15	28
Overall Airfield	*78*	*27*	*78*	*28*	Good	*15,085,717*	*100*	*134*

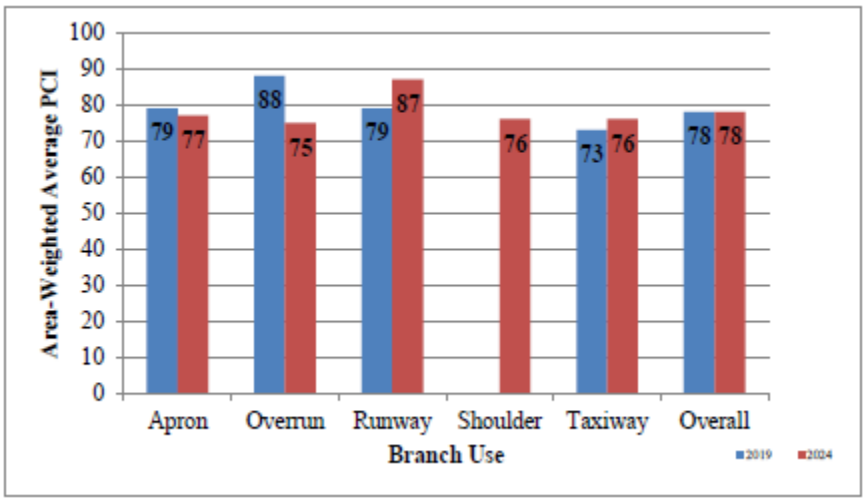


Figure 3. Comparison of Area-Weighted Average PCI.

The summary shall also briefly mention the predominant types of pavement distresses observed during the inspection. Conclusions & Recommendations

Provide a brief paragraph(s) highlighting any significant issues for the base pavements and. Identify key branches that are recommended for Major M&R. Provide high-level recommendations relating to Maintenance/Rehabilitation needs based on observed PCI and distress levels (i.e., localized routine maintenance, operational (stop-gap) maintenance and repair, major maintenance and rehabilitation, complete reconstruction).

5.3.1.6. Seven-color PCI map

An 11 inch by 17-inch, seven-color PCI map displaying Section ID bubbles with pavement thickness from last structural evaluation or as-built drawings for each section on the map. Refer to Section 5.3.4 for specific map details.

5.3.2. Updated PAVER database

The contractor shall provide an updated PAVER database (i.e., E70 file) that includes all inspection distress data for all the samples/sections included in each installation inspection. The PAVER database will be used to calculate PCI values, per the ASTM standard, for all the pavement sections and branches. The database will include the updated shapefile to reflect recent construction or pavement footprint changes. The database will also include saved budget scenarios and associated work plans used to provide a prioritized list of major M&R recommendations and the consequence of localized distress maintenance as well as updated FOD index/potential. The updated PAVER database will be used to provide the required tables for the Excel Workbook listed in Section 5.3.3. **(CDRL D001)**

5.3.3. Excel Workbook

The contractor shall provide an Excel workbook that includes individual tabs providing the information and data tables outlined in the following sections. **(CDRL D001)**

5.3.3.1. Overview of PCI results

Provide a table that includes a definition of PCI rating and pavement distribution (see Table 4). Provide a table with PCI results (see Table 5) by branch use and pavement surface type (e.g., PCC, AC, composite, etc.) along with a pie chart that graphically depicts the data.

Table 4. Definition of PCI ratings and pavement distribution.

Definition of PCI ratings and pavement distribution					
Simplified PCI Rating	**PCI Rating**	**PCI Range**	**Definition**	**Pavement Area (ft^2)**	**Pavement Area (%)**
Good	Good	86-100	Pavement has minor or no distresses and will require only routine maintenance.	4,896,712	52.3
	Satisfactory	71-85	Pavement has scattered low-severity distresses that need only routine maintenance.	2,170,250	23.2
Fair	Fair	56-70	Pavement has a combination of generally low- and medium-severity distresses. M&R needs are routine to major in the near future.	893,682	9.5
Poor	Poor	41-55	Pavement has low-, medium-, and high-severity distresses that probably cause some operational problems. Near-term maintenance and repair needs may range from routine up to a requirement for reconstruction.	1,295,337	13.8
Poor < 40	Very Poor	26-40	Pavement has predominantly medium- and high-severity distresses that cause considerable maintenance and operational problems. Near-time maintenance and repair needs will be intensive in nature.	108,240	1.2
	Serious	11-25	Pavement has mainly high-severity distresses that cause operational restrictions; immediate repairs are needed.	0	0.0
	Failed	0-10	Pavement deterioration has progressed to the point that safe operations are no longer possible; complete reconstruction is required.	0	0.0

Table 5. PCI results by branch use and pavement surface type.

Branch Use	Surface Type	Pavement Area (ft^2)	Pavement Area (%)	Area-Weighted Average PCI
Apron	AC	304,293	3.2	87
	APC	128,945	1.3	35
	PCC	3,741,084	37.7	88
Overrun	AC	299,280	3.0	94
Runway	APC	1,124,267	11.3	63
	PCC	375,391	3.8	97
Taxiway	AC	658,644	6.6	86
	APC	747,151	7.5	71
	PCC	2,537,207	25.5	88
Overall	*AC*	*1,262,217*	*12.8*	*81*
	APC	*2,000,363*	*20.1*	*65*
	PCC	*6,653,682*	*67.1*	*89*
	ALL	***9,916,262***	***100***	***84***

5.3.3.2. Projected PCI Table

Provide a table depicting the projected PCI for the next 10 years based on deterioration rate computed in Section 5.3.3.20 assuming only stopgap work is performed.

5.3.3.3. Maintenance and Repair (M&R) Requirements

Develop maintenance and repair requirements for each non-privatized pavement network. The maintenance program will list the type of work required and estimated cost for completing the work. This maintenance plan should cover a period of 10 years from the beginning of the next fiscal year after the inspection. List requirements that should be funded first and outline the impact of unfunded projects. Maintenance requirements should be determined based on maintaining all primary pavements at a PCI of 70 or greater, all secondary and tertiary pavements at a PCI of 55 or greater. Note: Costs projections shall be based on the latest cost data available in RS Means Heavy Construction Cost Handbook.

The Contractor shall make repair type recommendations and provide associated costs according to the standard M&R maintenance policies established for the AF in AFI 32-1041 and UFC 3-270-01. Recommendations should include both global and localized preventive maintenance, stopgap maintenance and major repair. Include a reference to budget scenario details in Section 5.3.3.19 and pavement repair plan maps in Section 5.3.4 Appendix A.

Provide the cost by work type and cost by condition data tables in the Excel Workbook.

5.3.3.4. Comparison of Budget Scenarios

Provide a table with a comparison of budget scenarios outlining the annual costs for each budget scenario as shown in Table 6 below. Provide a short dialogue of the chosen optimum budget scenario with justification.

Table 6. Comparison of Budget Scenarios

Plan FY	M&R Policy Type				Total	Backlog After Plan Year	PCI	
	Stopgap	Preventive (Global & Localized)	Major Below Critical PCI	Major Above Critical PCI			Before	After
Backlog Elimination								
2014	$8,506	$71,054	$789,299	$180,203	$1,049,062	$2,074,775	81	84
2015	$9,142	$50,012	$986,140	$0	$1,045,294	$2,134,505	84	88
2016	$7,121	$49,919	$742,964	$0	$800,004	$1,527,694	87	89
2017	$6,234	$52,146	$537,694	$0	$596,074	$990,000	88	88
2018	$0	$54,318	$990,000	$0	$1,044,318	$0	87	89
2018	$0	$48,288	$334,103	$0	$382,390	$0	88	89
2019	$0	$50,597	$0	$0	$50,597	$0	88	88
Total	**$31,003**	**$376,334**	**$4,380,200**	**$180,203**	**$4,967,740**		**81**	**88**
Backlog Elimination Gross Funding Requirement						**$4,967,740**		
Condition Stabilization								
2014	$15,523	$71,054	$315,714	$180,203	$582,494	$2,548,361	81	83
2015	$18,916	$49,999	$503,551	$0	$572,467	$3,120,644	82	84
2016	$19,464	$49,908	$495,464	$0	$564,835	$2,777,780	83	83
2017	$16,865	$52,134	$507,107	$0	$576,106	$2,561,867	82	85
2018	$18,003	$54,306	$247,500	$0	$319,809	$2,827,322	84	85
2019	$21,125	$48,276	$334,103	$0	$403,504	$3,338,254	84	85
2020	$24,243	$50,586	$0	$0	$74,828	$3,851,209	83	84
Total	**$134,139**	**$376,263**	**$2,403,439**	**$180,203**	**$3,094,044**		**81**	**84**
Condition Stabilization Gross Funding Requirement						**$6,945,253**		
Stopgap M&R Only								
2014	$17,625				$17,625	$3,117,635	81	81
2015	$30,279				$30,279	$4,197,464	80	80
2016	$39,980				$39,980	$4,375,284	79	79
2017	$44,907				$44,907	$4,921,368	78	78
2018	$74,762				$74,762	$6,207,524	77	77
2019	$82,030				$82,030	$7,262,419	76	76
2020	$89,400				$89,400	$8,421,939	75	75
Total	**$378,983**				**$378,983**		**81**	**75**
Stopgap M&R Only Gross Funding Requirement						**$8,800,922**		

5.3.3.5. Prioritized List of Major M&R Projects

Provide a prioritized list of major M&R requirements by each section and associated costs for each year from the optimum budget scenario chosen in PAVER (see Table 7).

Table 7. PAVER Recommended Major M&R

Year	Branch-Section	Rank	Area (ft²)	Surface	Recommended Treatment	PCI Before Treatment	Cost
2028	TWF-T02A	P	273,980	AC	Mill and AC Overlay	57	$568,882
2028	TWF-T04A	P	100,058	AC	Mill and AC Overlay	56	$210,588
2028	TWF-T12A	P	36,084	AC	Mill and AC Overlay	45	$198,419
2028	OAPOWERCHK-A41B	S	8,252	PCC	Selective Slab Replacement	41	$243,451
2028	TWANG-T26C	S	13,920	PCC	Selective Slab Replacement	50	$89,451
2028	SHRW1432-S01	T	106,796	AC	Mill and AC Overlay	57	$220,236
2028	SHTWE-S03	T	14,131	AC	Mill and AC Overlay	64	$26,203
2028	SHTWLOOP-S04	T	242,486	AC	Mill and AC Overlay	64	$453,264
						2028 Subtotal	**$5,839,386**

5.3.3.6. List of Consequence of Localized Distress Maintenance

Provide a table with a list of localized distress maintenance requirements utilizing the PAVER preventative and stopgap maintenance and repair policies outlined in TSPWG Manual 3-270-08.14-03 and UFC 3-270-01. Organize the list by section. List the types of work required as well as quantity and estimated cost for each work type (See Table 8).

Table 8. Localized M&R Required in the First Year

Branch ID	Section ID	PAVER Policy	Work Description	Work Qty	Work Unit	Unit Cost	Work Cost
AP84BAY	A53B	USAF25_Air_PRV	Crack Sealing - AC	140	ft	$1.27	$178
AP84BAY	A54B	USAF25_Air_PRV	Crack Sealing - PCC	147	ft	$4.67	$687
AP84BAY	A54B	USAF25_Air_PRV	Patching - PCC Partial Depth	96	ft²	$12.37	$1,193
AP84BAY	A54B	USAF25_Air_PRV	Joint Seal (Localized)	779	ft	$3.89	$3,031
AP84BAY	A55B	USAF25_Air_PRV	Crack Sealing - PCC	19	ft	$4.67	$89
AP84BAY	A55B	USAF25_Air_PRV	Patching - PCC Partial Depth	281	ft²	$12.37	$3,473
AP84BAY	A56B	USAF25_Air_PRV	Patching - PCC Partial Depth	123	ft²	$12.37	$1,516
APDV	A44B	USAF25_Air_PRV	Crack Sealing - AC	285	ft	$1.27	$362
APLIMAROW	A40B	USAF25_Air_PRV	Crack Sealing - AC	483	ft	$1.27	$614

5.3.3.7. Real Property Summary

Provide a user defined report from the PAVER database with the Facility ID/Number, RPUID, CATCODE, Branch Name, Branch ID, Rank, PCI, and area (in square feet and square yards) as shown in Table 9 below. In addition, include a table prior to the summary with definitions for each of the terms above. Reference AFI 32-1041 and DAFI 32-9005 for current guidance on linear segmentation, as well as real property accountability and reporting policies for pavement assets.

Table 9. Real Property Summary

REAL PROPERTY SUMMARY Great Falls ANGB, MT								
Facility Number	RPUID	CATCODE	Branch Name	Branch ID	Rank	Branch PCI	Branch Area	
							ft^2	yd^2
120	438978	113321	Alert Apron	APALERT	T	63	92,848	10,316
TBD	TBD	852273	Hangar #30 AGE Parking	OAAGE	T	51	51,825	5,758
119	438977	113321	Hangar Aprons	OAHANG	T	56	21,286	2,365
71	434097	116665	Hush House Apron	OAHUSH	T	30	21,770	2,419
120	438978	113321	Load Crew Trainer	OALOAD	T	96	9,513	1,057
131	438987	116661	North End Arm/Dearm	OANARM	S	87	64,664	7,185
110	438969	113321	Parking Apron	APPARK	P	80	559,431	62,158
131	438987	116661	South End Arm/Dearm	OASARM	S	89	64,988	7,221
116	438975	116642	North Arm/Dearm Apron Shoulder	SHOANARM	S	-	18,515	2,057
116	438975	116642	South Arm/Dearm Apron Shoulder	SHOASARM	S	-	20,339	2,260

5.3.3.8. PAVER/RPAD Comparison

Create a table with action items for the installation to complete in order to rectify discrepancies between the facility data in the RPAD and the inspected facilities listed within the PAVER database. The table will list discrepancies such as: missing information for any category (i.e. missing facility number), data that does not correlate in both the PAVER SMS and RPAD (i.e., CATCODE, RPUID, and type of facility mismatch between systems), inspected areas that are not within +/-5% of the area listed in the RPAD. An example of the table headings is provided in Table 10 below.

Table 10. PAVER/RPAD Comparison Table

Facility Number	RPUID	FAC	CATCODE	Total Area (yd^2)		Comment and Action Items
				PAVER	RPAD	
Keesler AFB						
1	456143	1121	112211	66,397	66,851	Area Correction required.
4	453918	1111	111111	113,917	93,834	Area Correction required.

5.3.3.9. PCI Deterioration Rate Summary

Include a table sorted by section with a comparison of results from the last and current PCI inspection with a remarks/comments column that provides a brief explanation for sections that have an unexplained decrease in PCI, unusually high rate of deterioration (hereby defined as 1.5 times the average deterioration rates calculated and outline in Section 5.3.3.20), or increase in PCI (likely localized or major M&R performed but not recorded). See example in Table 11 below.

Table 11. PCI Deterioration Rate Summary Table.

PCI DETERIORATION RATE SUMMARY KEESLER AFB													
Branch				Section									
Name	PCI 2017	PCI 2021	PCI Change	ID	Surface Type	Section Rank	Age	PCI 2017	PCI 2021	PCI Change	Det Rate 1*	Det Rate 2**	Comments
Apron													
Overflow Apron	91	90	-1	A03B	PCC	S	41	80	82	2	-0.44	+0.40	No high-severity joint spalls were observed during the 2021 inspection
Overflow Apron	91	90	-1	A28B	AC	S	12	78	75	-3	-2.10	-0.60	--

5.3.3.10. Branch Use Inventory

Provide a table broken out by aprons, overruns, runways, taxiways, shoulders (or roads and parking), and total (see Table 12 below). The table will have a column for pavement area (SF), percent area, number of sections, and area-weighted average PCI. Pie or bar charts may be used in addition to the table to show the distribution of pavement branch use and condition.

Table 12. Branch Use Inventory

Branch Use	Pavement			Area-Weighted Average	
	Area (ft²)	Area (%)	Sections	Age	PCI
Apron	2,112,733	53.1	30	50	68
Runway	1,025,253	25.8	22	16	77
Shoulder	242,096	6.1	8	21	71
Taxiway	597,577	15.0	9	19	69
Total	***3,977,659***	***100.0***	***69***	***35***	***71***

5.3.3.11. Pavement Surface Type

Provide a table that gives an area breakdown of pavement surface type (e.g., PCC, AC, composite, etc.). The table will include the pavement surface type, area (SF), percent area, number of sections, and area-weighted average PCI for each pavement type (see Table 13 below). Pie or bar charts may be used to show the distribution of pavement surface types and condition.

Table 13. Pavement Surface Type.

Surface Type	Pavement			Area-Weighted Average	
	Area (ft²)	Area (%)	Sections	Age	PCI
AC	1,200,791	30.2	27	17	62
APC	298,189	7.5	6	11	71
PCC	2,478,679	62.3	36	46	75
Total	***3,977,659***	***100***	***69***	***36***	***71***

5.3.3.12. Summary of Area-Weighted Average Condition by Rank

Provide a table that gives a PCI breakdown of pavement condition by rank and surface type (see Table 14 below). The table will include branch use, pavement rank, pavement surface type, area (SF), percent area, number of sections, and area-weighted average age and PCI.

Table 14. Area-weighted Average Condition by Rank.

Branch Use	Pavement Rank	Pavement Type	Pavement			Area-Weighted Average	
			Area (ft²)	Area (%)	Sections	Age	PCI
Apron	Primary	AC	--	--	--	--	--
		APC	186,468	4.7	5	12	70
		PCC	1,058,167	26.6	10	59	76
	Secondary	AC	9,797	0.2	1	11	75
		APC	--	--	--	--	--
		PCC	520,679	13.1	6	56	64
	Tertiary	AC	104,857	2.6	1	16	48
		APC	232,765	5.9	7	45	47
		PCC	--	--	--	--	--

5.3.3.13. Sections Not Inspected

Provide a summary list of sections (in tabular format) not inspected and excluded for condition analysis and work plans with justification for exclusion.

5.3.3.14. Pavement Condition Index Results

Provide Table 15 below with the Standard PCI criteria for pavement. Create a section PCI summary like Table 16 containing the branch name, section ID, area (SF), pavement surface type, PCI index and rating, and distress related cause columns for climate, load and other. In addition, include a branch condition report from PAVER modified to include the columns (use branch name and not branch IDs) shown on Table 17 and a PAVER generated section-level extrapolated distress table as shown in Table 18.

Table 15. Standard Pavement Criteria.

Simplified PCI Rating	PCI Rating	PCI Range	Definition
Good	Good	86-100	GOOD: Pavement has minor or no distresses and will require only routine maintenance.
	Satisfactory	71-85	SATISFACTORY: Pavement has scattered low-severity distresses that need only routine maintenance.
Fair	Fair	56-70	FAIR: Pavement has a combination of generally low- and medium-severity distresses. M&R needs are routine to major in the near future.
Poor	Poor	41-55	POOR: Pavement has low-, medium-, and high-severity distresses that probably cause some operational problems. Near-term maintenance and repair needs may range from routine up to a requirement for reconstruction.
	Very Poor	26-40	VERY POOR: Pavement has predominantly medium- and high-severity distresses that cause considerable maintenance and operational problems. Near-time maintenance and repair needs will be intensive in nature.
Poor < 40	Serious	11-25	SERIOUS: Pavement has mainly high-severity distresses that cause operational restrictions; immediate repairs are needed.
	Failed	0-10	FAILED: Pavement deterioration has progressed to the point that safe operations are no longer possible; complete reconstruction is required.

Table 16. Section PCI Summary.

Section Condition Report								
Branch Name	Section ID	Area (ft²)	Surface	Index	Rating	Distress Related Cause		
						Climate	Load	Other
AGE Apron	A24	22,325	PCC	36	Very Poor	19	72	9
AGE Apron	A29	49,698	PCC	27	Very Poor	10	86	4
AGE Apron	A30	13,620	PCC	38	Very Poor	11	89	0

Table 17. Branch PCI Report.

Branch Condition Report					
Branch ID	Number of Sections	True Area (ft²)	Use	Weighted Average PCI	Branch Rating
APAGE	3	85,643	APRON	31	Very Poor
APNWARMUP	1	72,804	APRON	88	Good
APREFUELER	2	148,526	APRON	60	Fair

Table 18. Summary of Extrapolated Distress Report.

Extrapolated Distress Report							
Branch Name	Section ID	PCI	Distress Code	Severity	Distress Quantity	PCI Deduct	Distress Description
Taxiway A	T08A	46	48	Low	1,515 Ft	5.2	L&T Cracking
			48	Medium	10,607 Ft	32.7	L&T Cracking
			50	Low	31,259 SqFt	21.9	Patching
			50	Medium	2,769 SqFt	12.6	Patching
			57	Medium	98,873 SqFt	18.3	Weathering

5.3.3.15. FOD Potential Information (*Airfields Only*)

Include a FOD index criteria table as seen on Table 19 below for airfield pavements. Include Recommended FOD Curve Applicability for Various Aircraft Table from UFC 3-270-08. Provide FOD Index/FOD Potential Aircraft relationship table like Table 20. Also, provide a FOD potential rating summary that includes branch name, section ID, area (SF), pavement surface type, aircraft category, and FOD index, potential, and rating (see Table 21). Last, provide a table listing all the distresses associated with FOD potential, severities, and causes (see Table 22).

Table 19. FOD Index Criteria.

*FOD INDEX CRITERIA FOR AIRFIELD PAVEMENTS (FOR STANDARD** AIRCRAFT AND PAVEMENT SURFACE TYPES)								
Assessment/Rating Category	FOD Potential Rating	Definition	F - 16		KC - 135		C -17	
			ASPHALT CONCRETE (AC)	PORTLAND CEMENT CONCRETE (PCC)	ASPHALT CONCRETE (AC)	PORTLAND CEMENT CONCRETE (PCC)	ASPHALT CONCRETE (AC)	PORTLAND CEMENT CONCRETE (PCC)
Good	FOD Index ≤ 45	Almost no FOD potential to minor potential	0 - 32	0 - 41	0 - 44	0 - 60	0 - 59	0 - 77
Fair	45 < FOD Index < 61	Moderate FOD Potential	33 - 45	42 - 62	45 - 60	61 - 78	60 - 75	78 - 89
Poor	FOD Index ≥ 61	High to Severe FOD Potential	46 - 100	63 - 100	61 - 100	79 - 100	76 - 100	90 - 100

* FOD Index is calculated using the PCI survey data by considering only the distresses/severity levels capable of producing FOD.
** For other aircraft, see AFI 32-1041, Table 8.7, to determine the appropriate FOD curve relationship to standard aircraft.

Table 20. FOD Index/FOD Potential Aircraft Relationship.

Standard Aircraft	For Aircraft Listed Below, Use FOD Index/FOD Potential Rating Relationship Curve for Standard Aircraft (Left Column)
F-16	A-37, AT-38, F-15, F-22, F-35, T-37, T-38
KC-135	A-300, A-310, A-320, A-321, A-330, A-340, A-380, AN-124, B-1, B-2, B52, B-707, B-720, B-737, B-747, B-757, B-767, B-777, C-21, C-32, C38, C-40, C-135, DC-8, DC-10, E-3, E-4, E-8, EC-18, EC-135, IL-76, KC-10, L-1011, MD-10, MD-11, T-1A, T-43, VC-25, VC-137
C-17	A-10, B-717, B-727, C-5, C-9, C-12*, C-20, C-22, C-23*, C-27, C-37, C38, C-41, C-130*, C-295, CN 235, CV-22, DC-9, MC-12, MD-81, MD82, MD-87, MD-90, MV-22*, P-3*, RC-26, RQ-4, T-6*
* denotes turboprop- or turboshaft-equipped aircraft	

Table 21. FOD Potential Rating Summary.

Branch Name	Section ID	Area (ft²)	Surface	Aircraft Category	Section FOD		
					Index	Potential	Rating
Aprons							
AGE Apron	A24	22,325	PCC	C-17	54	30	Good
AGE Apron	A29	49,698	PCC	C-17	55	31	Good
AGE Apron	A30	13,620	PCC	C-17	41	23	Good
North Warm-up Apron	A21B	72,804	PCC	C-17	16	0	Good

Table 22. FOD Producing Distresses and Cause.

Distresses associated with FOD Potential					
AC Distress	**Severity**	**Cause**	**PCC Distress**	**Severity**	**Cause**
41. Alligator cracking	L, M, H	Load related	61. Blowup	L, M, H	Climate related
43. Block cracking	L, M, H	Climate related	62. Corner break	L, M, H	Load related
46. Jet blast	NA	Other	63. LTD (Linear) cracks	L, M, H	Load related
47. Joint reflection cracking	L, M, H	Climate related	64. Durability cracks	M, H	Climate related
48. L&T cracking	L, M, H	Climate related	65. Joint seal damage	L, M, H	Climate related
49. Oil spillage	NA	Other	66 & 67. Small & Large Patches	L, M, H	Other
50. Patching	L, M, H	Other	68. Pop outs	NA	Other
52. Raveling	L, M, H	Climate related	69. Pumping	NA	Load related
54. Shoving	M, H	Other	70. Scaling	L, M, H	Other
55. Slippage cracking	NA	Other	72. Shattered slabs	L, M, H	Load related
57. Weathering	M, H	Climate related	74. Joint spalls	L, M, H	Other
			75. Corner spalls	L, M, H	Other
			76. ASR	M, H	ASR
Severity levels = low (L), medium (M), and high (H)					

5.3.3.16. Structural Results (*Airfields Only*)

An aircraft classification number (ACN) table providing the ACN values of each applicable critical aircraft shall be included (see Table 23). Include a structural index report table for airfield pavements like Table 24 below. The information for this table can be obtained from the last Airfield Structural Evaluation Report completed by AFCEC and provided by the COR. As the mission changes, so may the critical aircraft. The contractor shall verify the mission critical aircraft for structural index computation with the installation and AFCEC COR. If nothing has changed since the last Airfield Structural Evaluation, the contractor should clearly note that the data is XX yr. old and collected at the time of the last (20XX) structural evaluation.

Table 23. Aircraft Classification Number Table.

Subgrade Category	C-17 @ 580,000 lbs	
High Subgrade Strength (A)	51/R/A	50/F/A
Medium Subgrade Strength (B)	49/R/B	56/F/B
Low Subgrade Strength (C)	54/R/C	68/F/C
Ultra-Low Subgrade Strength (D)	66/R/D	89/F/D

Table 24. Structural Index Report.

Section ID	Primary Aircraft	ACN	PCN	Structural Index
A12A	C-130J	39/R/D	28/R/D/W/T	1.39
A15C	C-130J	37/R/C	19/R/C/W/T	1.95
A17B	C-130J	29/F/A	69/F/A/W/T	0.42
A18B	C-130J	37/R/C	31/R/C/W/T	1.19

5.3.3.17. Friction Characteristic Results (Airfields Only)

Include a summary of friction characteristic results table for airfield pavements that provides the friction index and rating at different distances on the runway. This information can be found in the last Airfield Comprehensive/Structural Evaluation Report completed by AFCEC and provided by the COR. Please note in the table dialogue, or as a side note, the year the friction data was collected and state that this value is a snapshot in time and likely has changed since the evaluation.

5.3.3.18. Engineering Assessment Summary Tables (Airfields Only)

Provide Table 25 below with the Engineering Assessment (EA) criteria for airfield pavement. Create a summary table like Table 26 containing the branch name, section ID, PCI index and rating, FOD index and rating, structural index and rating, friction index and rating, and EA rating.

Table 25. EA Criteria for Airfield Pavement.

ENGINEERING ASSESSMENT (EA) CRITERIA FOR AIRFIELD PAVEMENT				
Assessment/Rating Category	PCI Rating	FOD Potential Rating	Structural Index Rating	*Friction Index Rating (Runway Pavements Only)
Adequate	PCI ≥ 71 (GOOD)	FOD Potential Index ≤ 45 (GOOD)	ACN / PCN < 1.10 (GOOD)	Mu Value > 0.49 (GOOD)
Degraded	55 < PCI < 71 (FAIR)	45 < FOD Potential Index < 61 (FAIR)	1.10 ≤ ACN / PCN ≤ 1.40 (FAIR)	0.34 ≤ Mu Value ≤ 0.49 (FAIR)
Unsatisfactory	PCI ≤ 55 (POOR)	FOD Potential Index ≥ 61 (POOR)	ACN / PCN > 1.40 (POOR)	Mu Value < 0.34 (POOR)

* Friction Index Values calculated from GripTester© Continuous Friction Measurement Equiment (CFME) testing conducted at 40 mph (65 km/h) only.
For other testing equipment, use the values corresponding to the ratings of Good, Fair, and Poor in AFI 32-1041, Table 8.3.

Table 26. EA Summary.

Branch Name	Section ID	PCI		FOD		Structural		Friction Rating		EA Rating
		Index	Rating	Potential	Rating	Index	Rating	Index	Rating	
Aprons										
AGE Apron	A24	**36**	Poor	30	Good	**ND**	NA	NA	NA	Unsatisfactory
	A29	**27**	Poor	31	Good	**ND**	NA	NA	NA	Unsatisfactory
	A30	**38**	Poor	23	Good	**ND**	NA	NA	NA	Unsatisfactory
North Warm-up Apron	A21B	88	Good	0	Good	0.83	Good	NA	NA	Adequate

5.3.3.19. Budget Details

Provide tables that outline the basis of cost estimations outlined and provided in Section 5.3.3.3. Include tables that show the maintenance policies, descriptions of each repair type and costs associated with each repair. Provide the source of the cost data for the estimates.

5.3.3.20. Family Models for Condition Deterioration Prediction

Include the plots from PAVER showing the deterioration rate data plot for each family. Include the following families as applicable: all AC, all PCC, all composite, primary AC, primary PCC, secondary AC, secondary PCC, tertiary AC, tertiary PCC, runway AC, runway PCC, apron AC, apron PCC, taxiway AC, and taxiway PCC pavements as appropriate. Please include calculation details from the plots.

5.3.3.21. Distribution List and References

Provide a table with the report distribution list and list all references used during the inspection and report development.

5.3.4. Appendix A: Maps

Provide a list of the CAD and GIS files included on the disk with a description of each file. Include the name and description of any data elements or layers used in these files. All airfield maps shall be provided as CAD and/or Environmental Systems Research Institute (ESRI)/shapefiles for export to AF GIS. As an option, the new APE mapping template which uses AutoCAD Map 3D or ESRI ArcMap Pro will be made available to the contractor for their use and can be requested through the COR. All roads and parking maps shall be provided as CAD and/or ESRI/shapefiles for export to AF GIS. Also, ensure each CAD map contains a title block with the organization's information, map title, installation name, engineer, date, drawing number, drafter, scale, north arrow, appropriate legend, and sheet number. Appendix A shall include maps A1-A9 for airfields and A1, A3, A4, A8, and A9 for roads and parking pavements. **(CDRL D001)**

5.3.4.1. Map A1

Map A1 shall consist of the Pavement Facility Map. It will include all applicable pavement facilities on the installation.

5.3.4.2. Map A2

Map A2 shall consist of the Pavement Branch Identification Map. All major branches of the pavement networks shall be included.

5.3.4.3. Map A3

Map A3 shall consist of the Pavement Rank Map.

5.3.4.4. Map A4

Map A4 shall consist of the 7-color PCI Map.

5.3.4.5. Map A5

Map A5 shall consist of the FOD Potential Rating.

5.3.4.6. Map A6

Map A6 shall consist of the Structural Index Rating.

5.3.4.7. Map A7

Map A7 shall consist of the Friction Index Rating (runways only).

5.3.4.8. Map A8

Map A8 shall consist of the Engineering Assessment Rating.

5.3.4.9. Map A9

Map A9 shall consist of the Sample Unit Identification Map.

5.3.5. Appendix B: CIP and Pavement Area data

For the CIP vector data verification and update tasks, describe in detail (pdf format) of any recommended changes to the CIP and justification of any recommended changes. For area validation tasks, document the procedure used to validate dimensions in the field. Refer to Section 5.2.1 for more details. **(CDRL D001)**

5.3.6. Appendix C: Work History Report

Provide a work history report in .pdf format from PAVER standard reports summarizing construction history for each section. **(CDRL D001)**

5.3.7. Appendix D: Distress Database

If automated distress detection technology is elected, provide a complete pavement distress/feature georeferenced database (i.e., shape file) containing distresses represented as line or polygons. **(CDRL D001)**

6. SERVICES SUMMARY

Performance Objective (PO)	PWS Paragraph(s)	Performance Threshold	Method of Surveillance
PO1: Perform Area Validation	PWS 5.1.1 and 5.2.1.2	S: Verify the actual area of each pavement branch by physically measuring key dimensions using a tape or a wheel that has been calibrated against a known distance with no more than three (3) discrepancies. Discrepancy is defined as failure to use resource or survey grade GPS equipment to validate the area of each branch.	Periodic Inspection (Monthly)
PO2: Provide 100% Pavement Inventory, mapping, and segmentation	PWS 5.1.2 and 5.2.1	S: Provide 100% inventory, mapping and segmentation of all pavement sections and reconcile data between RPAD and PAVER Database with no more than three (3) discrepancies. Discrepancy is defined as failure to provide any inventory, mapping, and/or segmentation of all pavement sections. Discrepancy is also defined as failure to reconcile data between RPAD and PAVER Database.	100% Inspection (per report)
PO3: Distress Identification	PWS 5.2.3.3	S: Properly assign and catalogue all individual pavement distresses, ensuring 95% accurate distress type identification IAW ASTM D5340-23 standards. For manual and automated inspection technology, linear and area attribute measurements to be considered compliant if they are in accordance with standards outlined in Section 5.2.3.3	100% Inspection (2.5% random sampling in USG's QA tool, ESRI Arc GIS v10.7) (upon final post-processed data delivery)
PO4: Provide Final deliverables, and all Content, in Appropriate Format	PWS 5.3	S: After draft submission comments are provided by the Government, successfully rectify all comments provided by COR with no more than one (1) submission of final report.	100% Inspection (per report)

7. STATUS OF FORCES AND HOST NATION SUPPORT AGREEMENTS

The Contractor shall ensure employees are kept abreast of applicable laws, agreements, policies, etc. The Contractor shall comply with all applicable US and international law, Status of Forces Agreements (SOFAs), and Host Nation Support Agreements (HNSAs). Unless addressed otherwise by international agreement, Contractor personnel

are subject to the law of the nation in which they are located. The Contractor shall be prepared to comply with all local taxes, immigration requirements, customs formalities and duties, environmental rules, bond or insurance requirements, work permits, and transportation or safety codes. The fact that the supported Government entity may enjoy certain exemptions from local law does not mean contractor personnel are also exempt. Additionally, the Contractor is subject to host nation criminal law, unless specifically addressed otherwise by international agreement. Under United States law, Contractor employees and other civilians accompanying the armed forces may also be prosecuted by the United States Government for criminal acts. The contractor is responsible for obtaining and complying with the most current copy of applicable agreements from the US Department of State official website.

- All contractor employees performing fieldwork are to be loaded into Synchronized Predeployment and Operational Tracker (SPOT) and submit for all applicable OCONUS locations for work to be performed. SPOT requests can be performed at https://spot.dmdc.mil.

8. OPTIONAL/UNFUNDED CLINs

In the event the government determines to turn on any optional work, the government will issue a modification to exercise an optional CLIN listed within Group B identified in PWS Attachment 1. Once a new CLIN is funded, the contractor shall follow guidance in accordance with the PWS. Each optional CLIN that is exercised will receive its own 12-month period of performance or will run until the end of the active PoP, whichever occurs later. Prior to an optional CLINs period of performance beginning, the contractor will be given a 15-day calendar notice. The government has until the end of the active PoP of this contract to exercise and fund any optional CLIN.

9. GOVERNMENT POINTS OF CONTACT

Contracting Officer (CO), the term used herein, does not include any representative not acting within the scope of his/her authority. Notwithstanding any of the provisions of this contract, the CO shall be the only individual authorized to in any way amend or modify the terms of this contract.

Contracting Office

772 ESS/PKD

139 Barnes Drive Suite 1, Tyndall AB, FL 32403-5319

Phone: 850-283-6302 DSN: 523-6302

E-mail: lisa.jones.31@us.af.mil

AFCEC PCI Program Manager and Contracting Officers Representative (COR)

Mr. John Sprouse, HQ AFCEC/COSA

139 Barnes Drive Suite 1, Tyndall AB, FL 32403-5319

Phone: 850-283-6085 DSN: 523-6085

E-mail: john.sprouse.2@us.af.mil

Attachments:		Date:
1.	Pavement Area Summary	15 May 2026
2.	DAF AFCEC SMS Playbook	11 Nov 2024
3.	FY27-31 AFCAMP Business Rules	15 May 2025
4.	Installation-Specific sUAS Operations Requirements	30 June 2025
5.	Exhibit A, CDRL A001	12 May 2026
6.	Exhibit B, CDRL B001	12 May 2026
7.	Exhibit C, CDRL C001	12 May 2026
8.	Exhibit D, CDRL D001	12 May 2026

Appendix A: Installation-Specific sUAS Operations Information/Restrictions

Additional information can be obtained in Attachment 4 of the PWS. **Note: All included information is subject to change. Please contact the MAJCOM/installation specific POCs to verify accuracy and to obtain any updated information.**

Appendix B: DAF Compass Part 52 Provisions/Clauses

Ombudsman
An ombudsman has been appointed to hear and facilitate the resolution of concerns from offerors, potential offerors, and others for this acquisition. When requested, the ombudsman will maintain strict confidentiality as to the source of the concern. The existence of the ombudsman does not affect the authority of the program manager, contracting officer, or source selection official. Further, the ombudsman does not participate in the evaluation of proposals, the source selection process, or the adjudication of protests or formal contract disputes. The ombudsman may refer the interested party to another official who can resolve the concern.

Before consulting with an ombudsman, interested parties must first address their concerns, issues, disagreements, and/or recommendations to the contracting officer for resolution. Consulting an ombudsman does not alter or postpone the timelines for any other processes (e.g., agency level bid protests, GAO bid protests, requests for debriefings, employee-employer actions, contests of OMB Circular A-76 competition performance decisions).

If resolution cannot be made by the contracting officer, the interested party may contact the ombudsman, [Insert names, addresses, telephone numbers, facsimile numbers, and e-mail addresses of Center/MAJCOM/FLDCOM/DRU/DAFRCO ombudsman/ombudsmen]. Concerns, issues, disagreements, and recommendations that cannot be resolved at the Center/MAJCOM/FLDCOM/DRU ombudsman level, may be brought by the interested party for further consideration to the Department of the Air Force ombudsman, Associate Deputy Assistant Secretary (ADAS) (Contracting), SAF/AQC, 1060 Air Force Pentagon, Washington DC 20330-1060, phone number (571) 256-2395, facsimile number (571) 256-2431.

The ombudsman has no authority to render a decision that binds the agency.

Do not contact the ombudsman to request copies of the solicitation, verify offer due date, or clarify technical requirements. Such inquiries shall be directed to the contracting officer.

Elimination of Use of Class I Ozone Depleting Substances (ODS)
Contractors shall not:

Provide any service or product with any specification, standard, drawing, or other document that requires the use of a Class I ODS in the test, operation, or maintenance of any system, subsystem, item, component, or process; or

Provide any specification, standard, drawing, or other document that establishes a test, operation, or maintenance requirement that can only be met by use of a Class I ODS as part of this contract/order.

For the purposes of Department of the Air Force policy, the following products that are pure (i.e., they meet the relevant product specification identified in AFI 32-7086[AR2]) are Class I ODSs:

Halons: 1011, 1202, 1211, 1301, and 2402;

Chlorofluorocarbons (CFCs): CFC-11, CFC-12, CFC-13, CFC-111, CFC-112, CFC-113, CFC-114, CFC-115, CFC-211, CFC-212, CFC-213, CFC-214, CFC-215, CFC-216, and CFC-217, and the blends R-500, R-501, R-502, and R-503; and

Carbon Tetrachloride, Methyl Chloroform, and Methyl Bromide.

Health and Safety on Government Installations
In performing work under this contract on a Government installation, the contractor shall:

1. Take all reasonable steps and precautions to prevent accidents and preserve the health and safety of contractor and Government personnel performing or in any way coming in contact with the performance of

this contract; and

a. Take such additional immediate precautions as the contracting officer may reasonably require for health and safety purposes

2. The contracting officer may, by written order, direct Department of the Air Force Occupational Safety and Health (AFOSH) Standards and/or health/safety standards as may be required in the performance of this contract and any adjustments resulting from such direction will be in accordance with the Changes clause of this contract.
3. Any violation of these health and safety rules and requirements, unless promptly corrected as directed by the contracting officer, shall be grounds for termination of this contract in accordance with the Default clause of this contract.

Contractor Access to Department of the Air Force Installations

The contractor shall obtain base identification and vehicle passes, if required, for all contractor personnel who make frequent visits to or perform work on the Department of the Air Force installation(s) cited in the contract. Contractor personnel are required to wear or prominently display installation identification badges or contractor-furnished, contractor identification badges while visiting or performing work on the installation.

The contractor shall submit a written request on company letterhead to the contracting officer listing the following: contract number, location of work site, start and stop dates, and names of employees and subcontractor employees needing access to the base. The letter will also specify the individual(s) authorized to sign for a request for base identification credentials or vehicle passes. The contracting officer will endorse the request and forward it to the issuing base pass and registration office or Security Forces for processing. When reporting to the registration office, the authorized contractor individual(s) should provide a valid driver's license, current vehicle registration, valid vehicle insurance certificate, and [insert any additional requirements to comply with local security procedures] to obtain a vehicle pass.

During performance of the contract, the contractor shall be responsible for obtaining required identification for newly assigned personnel and for prompt return of credentials and vehicle passes for any employee who no longer requires access to the work site.

When work under this contract requires unescorted entry to controlled or restricted areas, the contractor shall comply with [insert any additional requirements to comply with DAFI 31-101, Integrated Defense, and DODMAN5200.02_DAFMAN 16-1405 , Air Force Personnel Security Program] citing the appropriate paragraphs as applicable.

Upon completion or termination of the contract or expiration of the identification passes, the prime contractor shall ensure that all base identification passes issued to employees and subcontractor employees are returned to the issuing office.

The contractor shall provide an after-hours contact number or after-hours email in the Emergency Mass Notification System (EMNS) for each of their personnel, whose normal place of duty is on a DoD installation or within a DoD facility. The contractor shall comply with any additional requirements in DAFMAN 10-206 for emergency operational reporting. Foreign Nationals may participate and may remove themselves from the Emergency Mass Notification System at any time. To update information, personnel can access the globe icon on their system desktop screens and choose the "Access Self-Service" option.

Failure to comply with these requirements may result in withholding of final payment.

Common Access Cards (CAC) for Contractor Personnel

For installation(s)/location(s) cited in the contract, contractors shall ensure Common Access Cards (CACs) are obtained by all contract or subcontract personnel who meet one or both of the following criteria:

- Require logical access to Department of Defense computer networks and systems in either:

- the unclassified environment; or
- the classified environment where authorized by governing security directives.
- Perform work, which requires the use of a CAC for installation entry control or physical access to facilities and buildings.

Contractors and their personnel shall use the following procedures to obtain CACs:

- Contractors shall provide a listing of personnel who require a CAC to the contracting officer. The government will provide the contractor instruction on how to complete the Contractor Verification System (CVS) application and then notify the contractor when approved.
- Contractor personnel shall obtain a CAC from the nearest Real Time Automated Personnel Identification Documentation System (RAPIDS) Issuing Facility (typically the local Military Personnel Flight (MPF)).

While visiting or performing work on installation(s)/location(s), contractor personnel shall wear or prominently display the CAC as required by the governing local policy.

During the performance period of the contract, the contractor shall:

- Within 7 working days of any changes to the listing of the contract personnel authorized a CAC, provide an updated listing to the contracting officer who will provide the updated listing to the authorizing government official;
- Return CACs in accordance with local policy/directives within 7 working days of a change in status for contractor personnel who no longer require logical or physical access;
- Return CACs in accordance with local policy/directives within 7 working days following a CACs expiration date; and
- Report lost or stolen CACs in accordance with local policy/directives.

Within 7 working days following completion/termination of the contract, the contractor shall return all CACs issued to their personnel to the issuing office or the location specified by local policy/directives.

Failure to comply with these requirements may result in withholding of final payment.