Project Specifications for 100% Design Submittal

Repair Airfield Pavement Spalling

Project #: RVKQ 21-0019

Program Funding: FYXX

Niagara Falls ARS, NY

Book I

30 April 2026

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ENVIRONMENTAL MANAGEMENT AND PROTECTION
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PART 1 GENERAL

1.1 REFERENCES

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

U.S. AIR FORCE (USAF) / DEPARTMENT OF DEFENSE (DOD)

AFI 32-1053	Pest Management Program
AFI 32-7041	Water Quality Compliance
AFI 32-7042	Waste Management

DOD Energy Independence and Security Act (EISA) Section 438, Storm Water Requirements

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910.120	Hazardous Waste Operations and Emergency Response
33 CFR 328	Definitions of Waters of the United States
40 CFR 68	Chemical Accident Prevention Provisions
40 CFR 82	Protection of Stratospheric Ozone
40 CFR 152 - 186	Pesticide Programs
40 CFR 260	Hazardous Waste Management System: General
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Standards Applicable to Generators of Hazardous Waste
40 CFR 263	Standards Applicable to Transporters of Hazardous Waste
40 CFR 264	Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 265	Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 266	Standards for the Management of Specific

	Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
40 CFR 268	Land Disposal Restrictions
40 CFR 270	EPA Administered Permit Programs: The Hazardous Waste Permit Program
40 CFR 273	Standards for Universal Waste Management
40 CFR 279	Standards for the Management of Used Oil
40 CFR 280	Technical Standards and Corrective Action Requirements for Owners and Operators of Underground Storage Tanks (UST)
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
40 CFR 302	Designation, Reportable Quantities, and Notification
40 CFR 355	Emergency Planning and Notification
49 CFR 171	General Information, Regulations, and Definitions
49 CFR 171 - 178	Hazardous Materials Regulations
49 CFR 172	Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements
49 CFR 173	Shippers - General Requirements for Shipments and Packagings

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual
WETLAND MANUAL	Corps of Engineers Wetlands Delineation Manual Technical Report Y-87-1

1.2 DEFINITIONS

1.2.1 Environmental Pollution and Damage

Environmental pollution and damage is the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade the environment aesthetically, culturally and/or historically.

1.2.2 Environmental Protection

Environmental protection is the prevention/control of pollution and habitat disruption that may occur to the environment during construction.

The control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.2.3 Solid Waste

Includes but is not limited to garbage, refuse, debris, sludge, or other discharged material, including solid, liquid, semisolid, or contained gaseous materials resulting from domestic, industrial, commercial, mining, or agricultural operations. Types of solid waste typically generated at construction sites may include:

a. Green waste: The vegetative matter from landscaping, land clearing and grubbing, including, but not limited to, grass, bushes, scrubs, small trees and saplings, tree stumps and plant roots. Marketable trees, grasses and plants that are indicated to remain, be re-located, or be re-used are not included.

b. Surplus soil: Existing soil that is in excess of what is required for this work, including aggregates intended, but not used, for on-site mixing of concrete, mortars and paving. Contaminated soil meeting the definition of hazardous material or hazardous waste is not included. Surplus soil must be disposed of at a facility approved by 914 MSG/CEV. Please provide written documentation prior to soil removal.

c. Debris: Non-hazardous solid material generated during the construction, demolition, or renovation of a structure which exceeds 60 mm(2.5 inch) (2.5 inch) particle size that is: a manufactured object; plant or animal matter; or natural geologic material (e.g. cobbles and boulders), broken or removed concrete, masonry, and rock asphalt paving; ceramics; roofing paper and shingles. Inert materials may be reinforced with or contain ferrous wire, rods, accessories and weldments. A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection will be disposed of by the contractor with weights and recycling facilities documented and submitted to LGC. This includes wood, and scrap metal. Recyclable materials will be handled in a similar manner.

1.2.4 Hazardous Waste

Any discarded material, liquid, solid, or gas, which meets the definition of hazardous material or is designated hazardous waste by the Environmental Protection Agency or State Hazardous Control Authority as defined in 40 CFR 260, 40 CFR 261, 40 CFR 263, 40 CFR 264, 40 CFR 265, 40 CFR 266, 40 CFR 268, 40 CFR 270, 40 CFR 271, 40 CFR 272, 40 CFR 273, 40 CFR 279, and 40 CFR 280.

1.2.5 Contractor Generated Hazardous Waste

Contractor generated hazardous waste means materials that, if abandoned or disposed of, may meet the definition of a hazardous waste. These waste streams would typically consist of material brought on site by the Contractor to execute work, but are not fully consumed during the course of construction. Examples include, but are not limited to, excess paint

thinners (i.e. methyl ethyl ketone, toluene etc.), waste thinners, excess paints, excess solvents, waste solvents, and excess pesticides, and contaminated pesticide equipment rinse water.

1.2.6 Hazardous Materials

Hazardous materials as defined in 49 CFR 171 and listed in 49 CFR 172.

Hazardous material is any material that:

a. Is regulated as a hazardous material per 49 CFR 173, or

b. Requires a Material Safety Data Sheet (MSDS) per 29 CFR 1910.120, or

c. During end use, treatment, handling, packaging, storage, transportation, or disposal meets or has components that meet or have potential to meet the definition of a hazardous waste as defined by 40 CFR 261 Subparts A, B, C, or D.

Designation of a material by this definition, when separately regulated or controlled by other instructions or directives, does not eliminate the need for adherence to that hazard-specific guidance which takes precedence over this instruction for "control" purposes. Such material include ammunition, weapons, explosive actuated devices, propellants, pyrotechnics, chemical and biological warfare materials, medical and pharmaceutical supplies, medical waste and infectious materials, bulk fuels, radioactive materials, and other materials such as asbestos, mercury, and polychlorinated biphenyls (PCBs). Nonetheless, the exposure may occur incident to manufacture, storage, use and demilitarization of these items. All hazardous materials used in this project must be registered with the Niagara Falls HAZMART.

1.2.7 Waste Hazardous Material (WHM)

Any waste material which because of its quantity, concentration, or physical, chemical, or infectious characteristics may pose a substantial hazard to human health or the environment and which has been so designated. Used oil not containing any hazardous waste, as defined above, falls under this definition. Hazardous waste will be appropriately tested and discarded in a manner which is in compliance with other State and local, 914 MSG/CEV requirements.

1.2.8 Oily Waste

Oily wastes are those materials which are, or were, mixed with oil and have become separated from that oil. Oily wastes also includes materials which have come into contact with oil including wastewaters, centrifuge solids, filter residues or sludges, bottom sediments, tank bottoms, and sorbents.

This definition includes materials such as oily rags, "spedi-dry" sorbent clay and organic sorbent material. These materials must be handled as directed by 914 MSG/CEV.

1.2.9 Regulated Waste

Those solid wastes that have specific additional Federal, state, or local controls for handling, storage, or disposal.

1.2.10 Ozone Depleting Substances (ODS)

Ozone Depleting Substances are any Class I or Class II controlled substances as defined in Federal Regulations 40 CFR 82. All Class I and Class II Ozone Depleting Substance (ODS) must be handled in accordance with 40 CFR 82, and Section 602(a) and 602(s) of The Clean Air Act Amendments of 1990.

1.2.11 Universal Waste

The universal waste regulations streamline collection requirements for certain hazardous wastes in the following categories: batteries, pesticides, mercury-containing equipment (e.g., thermostats) and lamps (e.g., fluorescent bulbs). Please contact 914 MSG/CEV for disposition instructions.

1.2.12 Installation Pest Management Coordinator

Installation Pest Management Coordinator (IPMC) is the individual officially designated by the Installation Commander to oversee the Installation Pest Management Program and the Installation Pest Management Plan.

1.2.13 Project Pesticide Coordinator

The Project Pesticide Coordinator (PPC) is an individual that resides at a Civil Works Project office and that is responsible for oversight of pesticide application on Project grounds.

1.2.14 Pesticide

Pesticide is defined as any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant or desiccant.

1.2.15 Pests

The term "pests" means arthropods, birds, rodents, nematodes, fungi, bacteria, viruses, algae, snails, marine borers, snakes, weeds and other organisms (except for human or animal disease-causing organisms) that adversely affect readiness, military operations, or the well-being of personnel and animals; attack or damage real property, supplies, equipment, or vegetation; or are otherwise undesirable.

1.2.16 Surface Discharge

The term "Surface Discharge" implies that the water is discharged with possible sheeting action and subsequent soil erosion may occur. Waters that are surface discharged may terminate in drainage ditches, storm sewers, creeks, and/or "waters of the United States" and would require a permit to discharge water from the governing agency.

1.2.17 Waters of the United States

All waters which are under the jurisdiction of the Clean Water Act, as defined in 33 CFR 328.

1.2.18 Wetlands & Other Waters of the U.S.

Wetlands means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, and bogs and will be delineated in accordance with the WETLAND MANUAL. There are Federal and State wetlands located on Niagara Falls Air Reserve Station. Construction or work in these areas including other "Waters of the U.S." such as Cayuga Creek and its tributaries and certain drainage ditches are regulated by the NYSDEC and the U.S. Army Corps of Engineers. There are no wetlands identified with the project limits.

1.3 GENERAL REQUIREMENTS

The Contractor shall minimize environmental pollution and damage that may occur as the result of construction operations. The environmental resources within the project boundaries and those affected outside the limits of permanent work shall be protected during the entire duration of this contract. The Contractor shall comply with all applicable environmental Federal, State, and local laws and regulations. The Contractor shall be responsible for any delays resulting from failure to comply with environmental laws and regulations.

1.4 CONFORMANCE WITH ENVIRONMENTAL MANAGEMENT SYSTEM

The Contractor shall perform work under this contract consistent with the relevant policy and objectives identified in the agency, organizational, or facility environmental management system (EMS) applicable for your contract. The Contractor shall perform work in a manner that conforms to all appropriate Environmental Management Programs and Operational Controls identified by the agency, organizational, or facility EMS, and provide monitoring and measurement information as necessary for the organization to address environmental performance relative to the environmental, energy, and transportation management goals. In the event an environmental nonconformance or noncompliance associated with the contracted services is identified, the contractor shall take corrective and/or preventative actions. In the case of a noncompliance, the Contractor shall respond and take corrective action immediately. In the case of a nonconformance, the Contractor shall respond and take corrective action based on the time schedule established by the EMS Site Coordinator. In addition, the Contractor shall ensure that their employees are aware of the roles and responsibilities identified by the environmental management system and how these requirements affect their work performed under this contract.

1.5 SUBCONTRACTORS

The Contractor shall ensure compliance with this section by subcontractors.

1.6 PAYMENT

No separate payment will be made for work covered under this section. The Contractor shall be responsible for payment of fees associated with environmental permits, application, plan development, and/or notices obtained by the Contractor. All costs associated with this section shall be included in the contract price. The Contractor shall be responsible for payment of all fines/fees for violation or non-compliance with Federal, State, Regional and local laws and regulations. The Contractor

shall be responsible for payment of all costs associated with the cleanup of a spill caused by the Contractor.

1.7 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

Survey Report

Demolition Plan; G, RO

SD-09 Field Reports

Stormwater Inspection Reports

Waste/Recycled Material Log (Attachment 2)

SD-11 Closeout Submittals

Disposal Documentation for Hazardous and Regulated Waste

Waste/Recycled Material Log (Attachment 2)

1.8 ENVIRONMENTAL PROTECTION PLAN

Prior to commencing construction activities or delivery of materials to the site, the Contractor shall submit an Environmental Protection Plan for review and approval by the Contracting Officer and 914 MSG/CEV. The purpose of the Environmental Protection Plan is to present a comprehensive overview of known or potential environmental issues which the Contractor must address during construction. Issues of concern shall be defined within the Environmental Protection Plan as outlined in this section. The Contractor shall address each topic at a level of detail commensurate with the environmental issue and required construction task(s). Topics or issues which are not identified in this section, but which the Contractor considers necessary, shall be identified and discussed after those items formally identified in this section. Prior to submittal of the Environmental Protection Plan, the Contractor shall meet with the Contracting Officer for the purpose of discussing the implementation of the initial Environmental Protection Plan; possible subsequent additions and revisions to the plan including any reporting requirements; and methods for administration of the Contractor's Environmental Plans. The Environmental Protection Plan shall be current and maintained onsite by the Contractor.

1.8.1 Compliance

No requirement in this Section shall be construed as relieving the Contractor of any applicable Federal, State, and local environmental protection laws and regulations. During Construction, the Contractor shall be responsible for identifying, implementing, and submitting for approval any additional requirements to be included in the Environmental Protection Plan.

1.8.2 Contents

The environmental protection plan shall include, but shall not be limited to, the following:

a. Name(s) of person(s) within the Contractor's organization who is(are) responsible for ensuring adherence to the Environmental Protection Plan.

b. Name(s) and qualifications of person(s) responsible for manifesting hazardous waste to be removed from the site, if applicable.

c. Name(s) and qualifications of person(s) responsible for training the Contractor's environmental protection personnel.

d. Description of the Contractor's environmental protection personnel training program.

e. Drawings showing locations of proposed temporary excavations or embankments for haul roads, stream crossings, material storage areas, structures, sanitary facilities, and stockpiles of excess or spoil materials including methods to control runoff and to contain materials on the site.

f. Traffic control plans including measures to reduce erosion of temporary roadbeds by construction traffic, especially during wet weather. Plan shall include measures to minimize the amount of sediment transported onto paved roads by vehicles or runoff.

g. Work area plan showing the proposed activity in each portion of the area and identifying the areas of limited use or nonuse. Plan should include measures for marking the limits of use areas including methods for protection of features to be preserved within authorized work areas.

h. Drawing showing the location of borrow areas.

i. A Spill Control Plan which shall include the procedures, instructions, and reports to be used in the event of an unforeseen spill of a substance regulated by 40 CFR 68, 40 CFR 302, 40 CFR 355, and/or regulated under State or Local laws and regulations. The Spill Control Plan shall include procedures contained within the Hazardous Materials Emergency Planning and Response (HAZMAT) Plan for Niagara Falls Air Reserve Station "Quick Reference Guide, Off-Station Contractors and Suppliers" (Attachment 1). In response to a spill, the Contractor is responsible for assisting the Fire Department (914 MSG/CEF) or Environmental Office (914 MSG/CEV) in development of a spill report and any other actions needed by Niagara Falls ARS to respond to the spill/cleanup. This plan shall include as a minimum:

    1. The name of the individual who will report any spills or hazardous substance releases and who will follow up with complete documentation. This individual shall immediately notify the Fire Department and the Contracting Officer. The plan shall contain a list of the required reporting channels and telephone numbers.

    2. The name and qualifications of the individual who will be responsible for implementing and supervising the containment and

cleanup.

3. Training requirements for Contractor's personnel and methods of accomplishing the training.

4. A list of materials and equipment to be immediately available at the job site, tailored to cleanup work of the potential hazard(s) identified.

5. The methods and procedures to be used for expeditious contaminant and cleanup.

j. A Non-hazardous Solid Waste Disposal Plan which identifies methods and locations for solid waste disposal including clearing debris. The plan shall include schedules for disposal. The Contractor shall identify any subcontractors responsible for the transportation and disposal of solid waste. Licenses or permits shall be submitted for solid waste disposal sites that are not a commercial operating facility. Evidence of the disposal facility's acceptance of the solid waste (i.e. acceptance letter prior to disposal, weight tickets, receipts, etc.) shall be attached to this plan during the construction.

The Contractor shall attach a copy of each of the Non-hazardous Solid Waste Diversion Reports to the disposal plan. The report shall be submitted to the Contracting Officer and 914 MSG/CEV on the first working day after the first quarter that non-hazardous solid waste has been disposed and/or diverted and shall be for the previous quarter (e.g. the first working day of January, April, July, and October) and at project completion. The report shall state the project name, project number, project duration, contractor name, name of contact, and phone number. Additionally, the report shall include the date the waste was disposed, waste type (i.e. scrap metal concrete, construction debris, etc.), disposal method (landfill, recycle, incineration, etc.), disposal location (facility name, city, state), and total amount (in tons) of waste generated. See Waste/Recycled Material Log (Attachment 2).

k. A Recycling and Solid Waste Minimization Plan which identifies the measures to divert waste disposal from landfills. The Contractor must divert solid waste and construction and demolition debris (C&D) in accordance with federal regulations, see tables below. The Contractor will generate the least amount of solid waste possible, maximize pollution prevention processes, and maximize landfill diversion through source reduction, reuse of materials, and recycling. The Contractor will not dispose of any hazardous waste, salvageable items, green waste, concrete, or asphalt in landfills. These items must be properly disposed, diverted, recycled, or reused. The plan shall detail the Contractor's actions to comply with and to participate in Federal, State, Regional, and local government sponsored recycling programs to reduce the volume of solid waste at the source.

Solid Waste

Fiscal year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Minimum Diversion Rate Requirement	42%	44%	46%	48%	50%	50%	50%	50%	50%	50%

C&D Waste

Fiscal year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Minimum Diversion Rate Requirement	52%	54%	56%	58%	60%	60%	60%	60%	60%	60%

l. An Air Pollution Control plan which details the measures to limit dust, debris, materials, trash, etc. from impacting air quality.

m. A Contaminant Prevention Plan that: identifies potentially hazardous substances to be used on the job site; identifies the intended actions to prevent introduction of such materials into the air, water, or ground; and details provisions for compliance with Federal, State, and local laws and regulations for storage and handling of these materials. In accordance with EM 385-1-1, a copy of the Material Safety Data Sheets (MSDS) and the maximum quantity of each hazardous material to be on site at any given time shall be included in the contaminant prevention plan. As new hazardous materials are brought on site or removed from the site, the plan shall be updated.

n. A Waste Water Management Plan that identifies the methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines. Waste water must be discharged in accordance with applicable Federal, state, and local regulations. If proposed discharge methods require permits, the Contractor shall submit a copy of the permit and associated documentation to the Contracting Officer prior to discharging the waste water.

o. A Historical, Archaeological, Cultural, Biological Resources and Wetlands Plan that defines procedures for identifying and protecting historical, archaeological, cultural resources, biological resources and wetlands known to be on the project site: and/or identifies procedures to be followed if historical archaeological, cultural resources, biological resources and wetlands not previously known to be onsite or in the area are discovered during construction. The plan shall include methods to assure the protection of known or discovered resources and shall identify lines of communication between Contractor personnel and the Contracting Officer.

p. A Pesticide Treatment Plan shall be included and updated, as

information becomes available. The plan shall include: sequence of treatment, dates, times, locations, pesticide trade name, EPA registration numbers, authorized uses, chemical composition, formulation, original and applied concentration, application rates of active ingredient (i.e. pounds of active ingredient applied), equipment used for application and calibration of equipment. The Contractor is responsible for Federal, State, Regional and Local pest management record keeping and reporting requirements as well as any additional Installation Project Office specific requirements. The Contractor shall follow AR 200-5 Pest Management, Chapter 2, Section III "Pest Management Records and Reports" for data required to be reported to the Installation AFI 32-1053 Sections 3.4.13 and 3.4.14 for data required to be reported to the Installation.

1.8.3 Appendix

Copies of all environmental permits, permit application packages, approvals to construct, notifications, certifications, reports, and termination documents shall be attached, as an appendix, to the Environmental Protection Plan. The Contractor shall prepare all permit, permit applications, etc. for review and approval by 914 MSG/CEV. 914 MSG/CEV shall submit all permits and permit applications, etc. to the appropriate regulatory authorities unless otherwise agreed upon between the Contractor and 914 MSG/CEV.

1.9 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

A Storm Water Pollution Prevention Plan (SWPPP) has been developed as part of this project. This plan has been developed to meet the erosion and sediment control requirements for the State of New York. The Contractor will implement the SWPPP that was prepared by the U.S. Army Corps of Engineers (COE) as shown on the plans, and as directed in these specifications. This SWPPP, which will be provided to the Contractor as part of these documents (Attachment 3), must be implemented in accordance with the SPDES permit. A Notice of Intent (NOI) has been prepared by the COE and submitted to the State and all applicable Agencies. Prior to the notice to proceed being issued, or any construction activity (ground disturbing activity) to commence/ start by the Contractor, the compliance letter and SPDES permit must be issued by the State. The Contractor shall maintain a copy of the State compliance letter, the SPDES Permit and SWPPP at the construction site. Any changes made to the plan must be documented and approved by the Contracting Officer. Note, the SWPPP is a part of the total Pollution Prevention Plan that the Contractor is responsible for preparing.

The definition of a construction activity is defined in the NYSDEC State Pollutant Discharge Elimination System (SPDES) General Permit for Stormwater Discharges from Construction Activity, GP-0-20-001 (or most recent version) as "any clearing, grading, excavation, filling, demolition or stockpiling activities that result in soil disturbance. Clearing activities can include, but are not limited to, logging equipment operation, the cutting and skidding of trees, stump removal and/or brush root removal. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of a facility." Water quality compliance shall be in accordance with AFI 32-7041.

1.9.1 Construction Activities with Soil Disturbance Equal to or Greater than 1 Acre

For construction activities with soil disturbance equal to or greater than one acre, a NYSDEC SPDES General Permit for Stormwater Discharges from Construction Activity, GP-0-20-001 (or most recent version), shall be obtained. The Contractor shall be responsible for compliance with this permit. The Contractor will be responsible for all reports and documentation needed to comply with this permit including, but not limited to: the inspection reports, NOT. The Contractor shall prepare all permit related documentation for approval by 914 MSG/CEV or 914 MSG/CEV designated entity prior to start of construction activities. 914 MSG/CEV or 914 MSG/CEV designated entity shall submit all permits and permit applications, etc. to the appropriate regulatory authorities unless otherwise agreed upon between the Contractor and 914 MSG/CEV.

In addition to the minimum SWPPP component requirements as required by the permit, the Contractor (and its Subcontractors) shall:

a. Sign a contractor certification statement ensuring compliance with stormwater control measures described within the SWPPP.

b. Define Trained Contractor(s) (as defined in the permit) on behalf of the Contractor and Subcontractor who will be present on-site on a daily basis during soil disturbing activities.

c. Designate and provide a Qualified Inspector (as defined in the permit) to perform required inspections.

d. Include training certificates for Trained Contractor(s) and Qualified Inspector(s) who will perform these duties throughout the duration of the project.

1.9.2 Not Used

1.10 PROTECTION FEATURES

Prior to start of any onsite construction activities, the Contractor and the Contracting Officer shall make a joint condition survey. Immediately following the survey, the Contractor shall prepare a brief report including a plan describing the features requiring protection under the provisions of the Contract Clauses, which are not specifically identified on the drawings as environmental features requiring protection along with the condition of trees, shrubs and grassed areas immediately adjacent to the site of work and adjacent to the Contractor's assigned storage area and access route(s), as applicable. This survey report shall be signed by both the Contractor and the Contracting Officer upon mutual agreement as to its accuracy and completeness. The Contractor shall protect those environmental features included in the Survey Report and any indicated on the drawings, regardless of interference which their preservation may cause to the Contractor's work under the contract.

1.11 SPECIAL ENVIRONMENTAL REQUIREMENTS

The Contractor shall comply with the special environmental requirements listed here and included at the end of this section.

1.11.1 Demolition

If the project requires the demolition of facility, portion of a facility, or structure a Demolition Plan shall be submitted to the Contracting Officer for approval prior to the start of demolition. At a minimum, the Demolition Plan shall include the following: proposed method to demolish buildings, recycling plan, engineering controls to reduce the amount of dust released to the air, disposal location, utilities capping plan, etc.

1.11.2 Hazardous Material/Waste Certifications and Training

If the project requires the Contractor to be in contact with hazardous materials or wastes, the Contractor and their personnel shall be appropriately trained and certified to handle such materials. At a minimum, personnel must be trained in accordance with OSHA 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER) standards. Documentation of proper training shall be submitted with the Environmental Protection Plan or upon request.

1.11.3 Asbestos

The Contractor shall comply with all Federal, state (New York State Code Rule 56), and local regulations for handling, removal, and disposal of asbestos containing material. The Contractor shall notify the Contracting Officer and 914 MSG/CEV before conducting any work that involves any material that contains or is suspected to contain asbestos.

1.11.4 Lead-based Paint

The Contractor shall comply with all Federal, state, and local regulations for work involving Lead-based paint. The Contractor shall notify the Contracting Officer and 914 MSG/CEV before conducting any work involving Lead-based paint.

1.11.5 Borrow Soils

It is the responsibility of the Contractor to have any off site fill material certified that the fill material is suitable and meets environmental fill requirements, if applicable. The fill material shall be deemed suitable via sampling by an environmental engineering firm acceptable to the Contracting Officer's Representative (COR). This confirmation shall include obtaining and testing representative samples from the proposed borrow source. The engineering firm will submit certification of environmentally suitable material signed by a licensed professional engineer. This certification along with all proposed borrow sources, borrow materials, sampling and analysis plans and reports shall be deemed acceptable to the COR prior to transportation of borrow material to the site.

1.12 ENVIRONMENTAL ASSESSMENT OF CONTRACT DEVIATIONS

Any deviations, requested by the Contractor, from the drawings, plans and specifications which may have an environmental impact will be subject to approval by the Contracting Officer and 914 MSG/CEV and may require an extended review, processing, and approval time. The Contracting Officer reserves the right to disapprove alternate methods, even if they are more cost effective, if the Contracting Officer or 914 MSG/CEV determines that the proposed alternate method will have an adverse environmental impact.

1.13 NOTIFICATION

The Contracting Officer will notify the Contractor in writing of any observed noncompliance with Federal, State or local environmental laws or regulations, permits, and other elements of the Contractor's Environmental Protection Plan. The Contractor shall, after receipt of such notice, inform the Contracting Officer of the proposed corrective action and take such action when approved by the Contracting Officer. The Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No time extensions shall be granted or equitable adjustments allowed to the Contractor for any such suspensions. This is in addition to any other actions the Contracting Officer may take under the contract, or in accordance with the Federal Acquisition Regulation or Federal Law

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 ENVIRONMENTAL PERMITS AND COMMITMENTS

The Contractor shall be responsible for obtaining and complying with all environmental permits and commitments required by Federal, State, Regional, and local environmental laws and regulations. The Contractor shall prepare all permit applications for review and approval by 914 MSG/CEV. 914 MSG/CEV shall submit all permits and permit applications, etc. to the appropriate regulatory agencies unless otherwise agreed upon by the Contractor and 914 MSG/CEV. The Contractor shall prepare and submit the Joint Application form to 914 MSG/CEV as necessary for appropriate permits.

3.2 LAND RESOURCES

The Contractor shall confine all activities to areas defined by the drawings and specifications. Prior to the beginning of any construction, the Contractor shall identify any land resources to be preserved within the work area. Except in areas indicated on the drawings or specified to be cleared, the Contractor shall not remove, cut, deface, injure, or destroy land resources including trees, shrubs, vines, grasses, topsoil, and land forms without approval. No ropes, cables, or guys shall be fastened to or attached to any trees for anchorage unless specifically authorized. The Contractor shall provide effective protection for land and vegetation resources at all times as defined in the following subparagraphs. Stone, soil, or other materials displaced into uncleared areas shall be removed by the Contractor.

3.2.1 Work Area Limits

Prior to commencing construction activities, the Contractor shall mark the areas that need not be disturbed under this contract. Isolated areas within the general work area which are not to be disturbed shall be marked or fenced. Monuments and markers shall be protected before construction operations commence. Where construction operations are to be conducted during darkness, any markers shall be visible in the dark. The Contractor's personnel shall be knowledgeable of the purpose for marking and/or protecting particular objects.

3.2.2 Landscape

Trees, shrubs, vines, grasses, land forms and other landscape features indicated and defined on the drawings to be preserved shall be clearly identified by marking, fencing, or wrapping with boards, or any other approved techniques. The Contractor shall restore landscape features damaged or destroyed during construction operations outside the limits of the approved work area.

3.2.3 Contractor Facilities and Work Areas

The Contractor's field offices, staging areas, stockpile storage, and temporary buildings shall be placed in areas designated on the drawings or as directed by the Contracting Officer. Temporary movement or relocation of Contractor facilities shall be made only when approved. Erosion and sediment controls shall be provided for on-site borrow and spoil areas to prevent sediment from entering nearby waters. Temporary excavation and embankments for plant and/or work areas shall be controlled to protect adjacent areas.

3.3 WATER RESOURCES

The Contractor shall monitor construction activities to prevent pollution of surface and ground waters. Toxic or hazardous chemicals shall not be applied to soil or vegetation unless otherwise indicated. All water areas affected by construction activities shall be monitored by the Contractor. For construction activities immediately adjacent to impaired surface waters, the Contractor shall be capable of quantifying sediment or pollutant loading to that surface water when required by State or Federally issued Clean Water Act permits.

The Contractor shall implement and adhere to the provisions in the SWPPP, as discussed in Section 1.9. This includes, but is not limited to, construction, maintenance, and inspection of appropriate Best Management Practices (BMPs). The Contractor shall maintain Stormwater Inspection Reports in accordance with the SWPPP and submit these reports to 914 MSG/CEV for review on request.

3.4 AIR RESOURCES

Equipment operation, activities, or processes will be in accordance with all Federal, state, and local air emission and performance laws and standards.

3.4.1 Particulates

The Contractor shall control dust particles, aerosols, and gaseous by-products from construction activities at all times, including weekends, holidays, and hours when work is not in progress. Maintain excavations, stockpiles, haul roads, permanent and temporary access roads, plant sites, spoil areas, borrow areas, and all other work areas to prevent nuisance or hazardous air conditions. The Contractor shall comply with all Federal, state, and local regulations for air pollution, including visibility requirements. The Contractor shall implement air pollution control measures as proposed in the Environmental Protection Plan and approved by 914 MSG/CEV.

3.4.2 Odors

The Contractor shall control odors to prevent nuisances and to maintain compliance with Federal, state, and local regulations.

3.4.3 Noise

The Contractor shall comply with Federal, state, and local regulations for noise from construction activities.

3.4.4 Burning

Burning shall be prohibited on the Government premises.

3.5 HAZARDOUS MATERIALS MANAGEMENT AND WASTE DISPOSAL

3.5.1 Hazardous Materials

Hazardous materials are defined in 49 CFR 171 - 178. The Contractor shall register all hazardous materials with the Niagara Falls HAZMART and submit a Hazardous Material Inventory Log to the Contracting Officer prior to construction and at project completion. The Hazardous Material Inventory Log shall include a list all hazardous materials used with chemical MSDS, maximum quantity stored on base, dates used, and the total quantity used. The Contractor shall manage and store all hazardous materials in accordance with AFI 32-7042, Federal, state, and local regulations. Copies of MSDS shall be maintained on site at all times.

3.5.2 Contractor Generated Hazardous Waste/Excess Hazardous Material

Hazardous wastes are defined in 40 CFR 261, or are as defined by applicable State and local regulations.

The Contractor shall, at a minimum, manage and store hazardous waste in compliance with 40 CFR 262 and in accordance with the Environmental Protection Plan discussed in Section 1.7. The Contractor shall take sufficient measures to prevent spillage of hazardous and toxic materials during dispensing. The Contractor shall segregate hazardous waste from other materials and wastes, shall protect it from the weather by placing it in a safe covered location, and shall take precautionary measures such as berming or other appropriate measures against accidental spillage.

The Contractor shall be responsible for storage, describing, packaging, labeling, marking, and placarding of hazardous waste and hazardous material in accordance with 49 CFR 171 - 178, State, and local laws and regulations. The Contractor shall transport Contractor generated hazardous waste off Government property within 60 days in accordance with the Environmental Protection Agency and the Department of Transportation laws and regulations. The Contractor shall manifest, pack, ship and dispose of hazardous waste, regulated waste, and universal waste in compliance with Federal, State and local laws and regulations.

Spills of hazardous or toxic materials regulated in accordance with 40 CFR 300 shall be immediately reported to the Contracting Officer and the 914 MSG/CEV. Cleanup and cleanup costs due to spills shall be the Contractor's responsibility. The disposition of Contractor generated hazardous waste and excess hazardous materials are the Contractor's responsibility. The Contractor shall coordinate the disposition of hazardous waste with the Contracting Officer and 914 MSG/CEV.

3.5.3 Disposal Documentation for Hazardous and Regulated Waste

The Contractor shall submit a copy of the applicable EPA and or State permit(s), manifest(s), or license(s) for transportation, treatment, storage, and disposal of hazardous and regulated waste by permitted facilities. Hazardous or toxic waste manifest must be reviewed, signed, and approved before the Contractor may ship waste.

3.5.4 Fuel and Lubricants

Storage, fueling and lubrication of equipment and motor vehicles shall be conducted in a manner that affords the maximum protection against spill and evaporation. Fuel, lubricants and oil shall be managed and stored in accordance with all Federal, State, Regional, and local laws and regulations. Used lubricants and used oil to be discarded shall be stored in marked corrosion-resistant containers and recycled or disposed in accordance with 40 CFR 279, State, and local laws and regulations. There shall be no storage of fuel on the project site. Fuel must be brought to the project site each day that work is performed.

3.5.5 Waste Water

Disposal of waste water shall be as specified below.

a. Waste water from construction activities, such as onsite material processing, concrete curing, foundation and concrete clean-up, water used in concrete trucks, forms, etc. shall be contained for disposal. The Contractor shall dispose of the construction related waste water off-Government property in accordance with all Federal, State, Regional and Local laws and regulations.

b. For discharge of groundwater, the Contractor shall propose a disposal method in the Environmental Protection Plan for approval by 914 MSG/CEV. If a State or Federal permit is required based on the proposed disposal method the Contractor shall prepare all supporting permit documentation for approval by 914 MSG/CEV prior to start of construction activities. 914 MSG/CEV shall submit all permits and permit applications, etc. to the appropriate regulatory authorities unless otherwise agreed upon between the Contractor and 914 MSG/CEV.

c. For discharge of water generated from the flushing of lines after disinfection or disinfection in conjunction with hydrostatic testing hydrostatic testing, the Contractor shall propose a disposal method in the Environmental Protection Plan for approval by 914 MSG/CEV.

3.6 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

There are no known historic properties at Niagara Falls Air Reserve Station. If there are unanticipated discoveries of historic properties during construction, excavation, or repair, contractors will stop or redirect work and notify the Base Contracting Officer (who in turn shall immediately notify the 914 MSG/CEV Cultural Resources Manager) until a qualified archeologist can evaluate the find. Examples of historic properties include but are not limited to; (a) intact or fragmentary artifacts of human manufacture such as tools, weapons, pottery, basketry, and textiles; (b) human remains such as bone, teeth, mummified flesh, burials and cremations; and (c) components of structures and features such as houses, mills, piers, fortifications, raceways, earthworks and mounds.

Should the unanticipated discovery involve human remains, construction activities will stop in the vicinity and the Base Contracting Officer shall be notified immediately (who in turn shall immediately notify the 914 MSG/CEV Cultural Resources Manager).

3.7 BIOLOGICAL RESOURCES

The Contractor shall minimize interference with, disturbance to, and damage to fish, wildlife, and plants including their habitat. The Contractor shall be responsible for the protection of threatened and endangered animal and plant species including their habitat in accordance with Federal, State, Regional, and local laws and regulations.

3.8 INTEGRATED PEST MANAGEMENT

In order to minimize impacts to existing fauna and flora, the Contractor, through the Contracting Officer, shall coordinate with the Installation Pest Management Coordinator (IPMC) Project Pesticide Coordinator (PPC) at the earliest possible time prior to pesticide application. The Contractor shall discuss integrated pest management strategies with the IPMC and receive concurrence from the IPMC through the COR prior to the application of any pesticide associated with these specifications. Installation Project Office Pest Management personnel shall be given the opportunity to be present at all meetings concerning treatment measures for pest or disease control and during application of the pesticide. The use and management of pesticides are regulated under 40 CFR 152 - 186.

3.8.1 Pesticide Delivery and Storage

Pesticides shall be delivered to the site in the original, unopened containers bearing legible labels indicating the EPA registration number and the manufacturer's registered uses. Pesticides shall be stored according to manufacturer's instructions and under lock and key when unattended

3.8.2 Qualifications

For the application of pesticides, the Contractor shall use the services of a subcontractor whose principal business is pest control. The subcontractor shall be licensed and certified in the state where the work is to be performed.

3.8.3 Pesticide Handling Requirements

The Contractor shall formulate, treat with, and dispose of pesticides and associated containers in accordance with label directions and shall use the clothing and personal protective equipment specified on the labeling for use during all phases of the application. Material Safety Data Sheets (MSDS)shall be available for all pesticide products.

3.8.4 Application

Pesticides shall be applied by a State Certified Pesticide Applicator in accordance with EPA label restrictions and recommendation. The Certified Applicator shall wear clothing and personal protective equipment as specified on the pesticide label. Water used for formulating shall only come from locations designated by the Contracting Officer. The Contractor shall not allow the equipment to overflow. Prior to application of

pesticide, all equipment shall be inspected for leaks, clogging, wear, or damage and shall be repaired prior to being used.

3.9 PREVIOUSLY USED EQUIPMENT

The Contractor shall clean all previously used construction equipment prior to bringing it onto the project site. The Contractor shall ensure that the equipment is free from soil residuals, egg deposits from plant pests, noxious weeds, and plant seeds. The Contractor shall consult with the USDA jurisdictional office for additional cleaning requirements.

3.10 MAINTENANCE OF POLLUTION FACILITIES

The Contractor shall maintain permanent and temporary pollution control facilities and devices for the duration of the contract or for that length of time construction activities create the particular pollutant.

3.11 TRAINING OF CONTRACTOR PERSONNEL

The Contractor's personnel shall be trained in all phases of environmental protection and pollution control. The Contractor shall conduct environmental protection/pollution control meetings for all Contractor personnel prior to commencing construction activities. Additional meetings shall be conducted for new personnel and when site conditions change. The training and meeting agenda shall include: methods of detecting and avoiding pollution; familiarization with statutory and contractual pollution standards; installation and care of devices, vegetative covers, and instruments required for monitoring purposes to ensure adequate and continuous environmental protection/pollution control; anticipated hazardous or toxic chemicals or wastes, and other regulated contaminants; recognition and protection of archaeological sites, artifacts, wetlands, and endangered species and their habitat that are known to be in the area.

All on-site contractor personnel shall complete yearly EPA sponsored environmental training specified for the type of work conducted on-site. Upon contract award, the Contracting Officer's Representative will notify the facility-level Environmental Management Systems Coordinator to arrange EMS training for appropriate staff.

3.12 POST CONSTRUCTION CLEANUP

The Contractor shall clean up all areas used for construction in accordance with Contract Clause: "Cleaning Up". The Contractor shall, unless otherwise instructed in writing by the Contracting Officer, obliterate all signs of temporary construction facilities such as haul roads, work area, structures, foundations of temporary structures, stockpiles of excess or waste materials, and other vestiges of construction prior to final acceptance of the work. The disturbed area shall be graded, filled and the entire area seeded unless otherwise indicated.

ATTACHMENT 1 - QUICK REF GUIDE FOR CONTRACTORS

ATTACHMENT 2 - WASTE RECYCLABLE MATERIAL LOG

ATTACHMENT 3 - STORMWATER POLLUTION PREVENTION PLAN

-- End of Section --

ATTACHMENT 1 TO SECTION 01 57 20.00 10 -
QUICK REF GUIDE FOR CONTRACTORS

OFF-STATION CONTRACTORS AND SUPPLIERS

IF YOU DETECT A SPILL OF POL OR OTHER HAZARDOUS MATERIAL

The following steps should be taken if an off-base contractor or supplier detects a spill of POL or hazardous material resulting from their operations at Niagara Falls ARS.

If the spill can be contained by the off-base contractor or supplier without injury to personnel and without assistance from Niagara Falls ARS response teams, the following procedures shall be observed by the organization or any person recognizing an oil and/or hazardous material release:

1. Contain and/or control the release.
2. Notify the CEF at 236-2117 commercial (ext. 911 on-Station phone) and provide the following information:
    a. Name of individual reporting spill, facility address, facility phone number
    b. Date and time of discharge
    c. Location of discharge
    d. Type of material discharged
    e. Estimate of the total quantity discharged
    f. Source of the discharge
    g. Description of all affected media (e.g., water, land, air)
    h. Cause of the discharge
    i. Damages or injuries caused by the discharge
    j. Actions being used to stop, remove, and mitigate effects of the discharge
    k. Whether an evacuation has occurred
    l. Names of other individuals or organizations contacted
3. Clean up the release using proper absorbent media for the substance spilled. Recover as much of the spill as possible utilizing absorbents or approved vacuum device to minimize hazardous waste volume. **(Do not hose down spilled material into floor drains or storm drains.)**
4. Follow any operating instructions and/or directive relative to spill response and proper waste disposal.
5. If requested by any appropriate Station official, properly label and close DOT-approved containers of the spilled material and contaminated absorbent, assist with the completion of AF Forms 1348-1 and 2005, and contact the hazardous waste coordinator to turn-in the waste to the hazardous waste storage facility.
6. Complete HAZMAT Release Incident Form (see end of this Guide) with available information and submit to 914 AW/MSG/CEV as soon as possible but not later than close of business the next business day.

If the spill cannot be contained by the off-Station contractor or supplier**:**

1. Activate emergency alarm system, if any.
2. Evacuate to an area upwind of the spill.
3. Ensure all employees shut down their operations and secure their equipment, if time permits.
4. Notify the CEF at 236-2117 commercial (ext. 911 on-Station phone) and provide the following information:
    a. Name of individual reporting spill, facility address, facility phone number
    b. Date and time of discharge
    c. Type of material discharged
    d. Estimate of the total quantity discharged
    e. Source of the discharge
    f. Description of all affected media (e.g., water, land, air)
    g. Cause of the discharge
    h. Damages or injuries caused by the discharge
    i. Actions being used to stop, remove, and mitigate effects of the discharge
    j. Whether an evacuation has occurred
    k. Names of other individuals or organizations contacted
5. Stop the source of the spill when possible without undue risk of personal injury, including the use of on-site spill containment equipment and materials.
6. Make the spill scene OFF LIMITS to unauthorized personnel.
7. Restrict or eliminate all sources of ignition.
8. Report to the Incident Commander (IC) upon his/her arrival.
9. Ensure an employee roll call is conducted to ensure all personnel are accounted for and not trapped in the affected area.
10. Perform or assist with the post-emergency cleanup operations within the contractor's/supplier's capabilities and under the direction of Civil Engineering. Permission must be obtained through CEV/CEX and the Contracting Officer to bring additional off-Station resources (i.e. non-AFR contracted spill response contractors) to the Station.
11. Follow any operating instructions and/or directive by IC relative to spill response and proper waste disposal.
12. Complete HAZMAT Release Incident Form (see end of this Guide) with available information and submit to 914 AW/MSG/CEV as soon as possible but not later than close of business the next business day.

NIAGARA FALLS AIR RESERVE STATION
HAZMAT RELEASE INCIDENT FORM

A. GENERAL INFORMATION **INCIDENT NO. (From Fire Dept.)**_____

Date of Incident: _____ Time of Incident: _____ Report Date: _____

Notifier's Name: _____ Phone: _____ Location: _____ Organization: _____

Spiller's Name: _____ Phone: _____ Location: _____ Organization: _____

Severity of Incident: ☐ Level I ☐ Level II ☐ Level III
(Fire Department Determines Response Level: Tables 2-1 and 2-2 of Plan)

Location (bldg. no. or other descriptive info): _____

Pollutant: ☐ JP-____ ☐ Mogas ☐ Diesel Fuel ☐ Other _____

Chemical Name: _____ CAS No: _____ RQ: _____

Amount Discharged: _____Source of Discharge: _____

How Estimated: _____

Description of Incident: _____

Affected Media: ☐ Air ☐ Land ☐ Water ☐ Other _____

Amount Discharge to Navigable Waters or Adjoining Shorelines: _____

Cause: ☐ Human Error ☐ Procedure Other, Describe:_____
☐ Equipment Failure ☐ Pressure-related

Threat/Damage to Human Life: ☐ Severe ☐ Minor ☐ None

Threat/Damage to Property: ☐ Severe ☐ Federal ☐ Private ☐ Minor ☐ State
☐ None ☐ Municipal

Threat/Damage to Environment: ☐ Severe ☐ Fish ☐ Other: _____
☐ Minor ☐ Wildlife ☐ None ☐ Plants

Describe release response: _____

Immediately report release to Fire Dept.@ 911 and CEV (3126/3124 – 914th AW; 2514 – 107th AW).
Time reported: (Fire Dept.) _____ (CEV) _____
Describe cleanup action: _____

Long-term Remediation Required? ☐ Yes ☐ No

Is Off-Station Notification Required? (refer to
(HAZMAT Plan pages 2-13 to 2-20) ☐ Yes ☐ No ***If YES, complete Section B.***

NIAGARA FALLS AIR RESERVE STATION
HAZMAT RELEASE INCIDENT FORM *(continued)*

B. OFF-STATION REPORTING OF RELEASE (COMPLETE ONLY IF REQUIRED)

THE HAZMAT PLAN, CHAPTER 2, HAS A TABLE THAT DESCRIBES THE VARIOUS SCENARIOS THAT REQUIRE OFF-STATION REPORTING OF RELEASES. REFER TO THE TABLE BEFORE COMPLETING THE REMAINDER OF THIS FORM.

NOTIFICATIONS: NOTIFIER'S NAME _____

NRC/Case No. _____	☐ Yes	☐ No	Date:_____	Time:_____	Name:_____
SEMO	☐ Yes	☐ No	Date:_____	Time:_____	Name:_____
LEPC	☐ Yes	☐ No	Date:_____	Time:_____	Name:_____
DEC	☐ Yes	☐ No	Date:_____	Time:_____	Name:_____
DOT	☐ Yes	☐ No	Date:_____	Time:_____	Name:_____
Niagara Co. Health Dept.	☐ Yes	☐ No	Date:_____	Time:_____	Name:_____
Sewer District #1	☐ Yes	☐ No	Date:_____	Time:_____	Name:_____
U.S. EPA Region II	☐ Yes	☐ No	Date:_____	Time:_____	Name:_____
HQ AFRC/CEV	☐ Yes	☐ No	Date:_____	Time:_____	Name:_____

New York State DEC Spill Number: _____

No. of employees in facility: _____ No. evacuated: _____

General Public notified? ☐ Yes ☐ No How: _____

C. PREVENTATIVE ACTIONS

Training, procedures, management practices to be implemented to prevent future occurrence of release:

_____

_____

D. REPORTING OFFICIAL

Name of Reporting Official: _____ Organization: _____

Signature: _____ Date: _____

ATTACHMENT 2 TO SECTION 01 57 20.00 10 -
WASTE RECYCLABLE MATERIAL LOG

WASTE/RECYCLED MATERIALS LOG FOR CONTRACTORS

Contractor Guidelines: Contractor shall fill out this log as a record of how waste generated during a construction project will be disposed/recycled. Original or copies of the waste tickets received from the landfill or recycling facility shall accompany this log. The log shall be submitted to the 914 MSG/CEV via the Contracting Officer quarterly (1 Jan, 1 Apr, 1 Jul, 1 Oct) and upon project completion.

Project Name:	
Project Number:	
Project Duration:	
Contractor Name:	
Name of Contact:	
Phone No:	

Date	Waste Type (i.e. scrap metal, concrete, etc)	Disposal Method (Landfill or Recycle)	Disposal Location (Facility Name)	Weight (tons)

ATTACHMENT 3 TO SECTION 01 57 20.00 10 -
STORMWATER POLLUTION PREVENTION PLAN

CONSTRUCTION SWPPP / E&S PLAN

Airfield Joint Sealant Repairs
Project #: RVKQ 21-0019
4/22/2026

1.0	**GENERAL INFORMATION:**
	Design/Layout of E&S control by: 914 MSG/CEC
	Inspection/Monitoring by: To Be Determined
	Installation of E&S Control by: Contractor
2.0	**PROJECT DESCRIPTION:**
	The project involves replacement of joint sealants of aprons and taxiway pavements and potential partial depth repair of aprons and taxiway pavements. Major work components for general construction work consist of the following as shown on the Construction Plans: • Joint removal and replacement. • If necessary, saw cut, excavate and remove isolated partial depth concrete slab sections. Construct new partial depth reinforced, isolated slab sections. • Replace pavement markings where removed for pavement patching or where damaged during construction. • Install and maintain temporary erosion and sediment controls as per the SWPPP • Provide temporary toilet facilities at locations determined by Contracting Officer No soil disturbance, excavation or dewatering are anticipated as part of this project.
3.0	**SOILS:**
	The project construction activities are limited to the existing pavement structure and do not disturb the underlying soils. Therefore, the existing soils were not evaluated for this project.
4.0	**TOPOGRAPHY AND DRAINAGE:**
	The airfield pavement slopes to various storm drains located across the apron or to adjacent grassy areas which ultimately are conveyed into Cayuga Creek. The final post-construction project site elevations will match the pre-construction project site elevations. The existing drainage patterns will not be altered.
5.0	**STAGING OF EARTH MOVING ACTIVITIES:**
	NA. No soil will be disturbed as part of this project.

CONSTRUCTION SWPPP / E&S PLAN Airfield Joint Sealant Repairs Project #: RVKQ 21-0019 4/22/2026	
	The Contractor is solely responsible to clean the work sites regularly during and at the end of each workday of each phase as the work progresses, to prevent the accumulation of FOD (foreign object debris). The Contractor will only be permitted to work on one phase at a time for the project. All debris shall be placed in a demolition container/dumpster to prevent accumulation of debris at the demolition site and surrounding area.
6.0	**STORMWATER MANAGEMENT:**
	There will be no change to stormwater direction or flow during or after this project. Work areas where drains or culverts are located, drains shall be covered, managed, and inspected by the Contractor's project manager to make sure no debris will find its way into the storm sewer system. This inspection shall take place daily as work is progressing.
7.0	**POLLUTION PREVENTION:**
	During the progress and at the completion of work, all refuse and waste material shall be removed from Government property and disposed according to Federal, State, and Local environmental regulations. If waste material is not removed daily, the Contractor shall provide a covered waste container at his expense. The Contractor shall monitor equipment for leaking fluids, contain and clean up any spills, if possible, and contact NFARS Fire Department at 716-236-2117 regarding any spills. The Contractor shall prevent oily or other hazardous substances from entering the ground, drainage areas, storm drainage system, or local bodies of water. Burning of trash or rubbish is not permitted. Portions of the project work areas are located in or near AFFF (aqueous film forming foam) contaminated sites. Contactor shall be aware of AFFF sites and if contaminated soils are encountered the Contractor shall contact the 914 MSG/LGC immediately. No excavation or dewatering are anticipated as part of this project. Industry standard safety measures and equipment decontamination shall be followed for work on IRP sites. The 914th MSG/CEV will provide guidance on collection, storage, characterization and disposal requirements. Contractor shall document contaminated waste generation locations, dates and approximate amounts.

CONSTRUCTION SWPPP / E&S PLAN Airfield Joint Sealant Repairs Project #: RVKQ 21-0019 4/22/2026	
8.0	**TEMPORARY E&S CONTROL MEASURES:**
	Temporary erosion control at storm drains, as needed, shall include stone and block inlet protection per the project plan drawings. Rock socks shall be used at storm drains, as needed. Silt fence shall be installed, as needed, at locations outside of the airfield apron and taxiway.
9.0	**PERMANENT E&S CONTROL MEASURES:**
	A temporary concrete washout may be constructed near the construction laydown area, as shown on the project plan drawings. After removal of the concrete washout, the disturbed area shall be seeded and mulched or otherwise stabilized in a manner acceptable to the installation.
10.0	**INSPECTION AND MAINTENANCE PROGRAM FOR E&S CONTROL MEASURES**
	Erosion and sediment controls shall be inspected once every 7 days. Sediment buildup shall be removed when it reaches 25% of the height of the sandbags. Any damage to the filter fabric or sandbags shall be repaired immediately. Sediment shall be disposed of properly off base.

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.1 REFERENCES

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

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

15 CFR 772	Definition of Terms
15 CFR 773	Special Licensing Procedures

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-01 Preconstruction Submittals

List of contact personnel; G

View location map; G

Progress and completion pictures; G

1.3 MINIMUM INSURANCE REQUIREMENTS

Procure and maintain during the entire period of performance under this contract the following minimum insurance coverage as addressed in FAR 28.307-2 including by FAR Clause 52.228-5 “Insurance-Work on a Government Installation” and others as required by State Law.

1.4 CONTRACTOR PERSONNEL REQUIREMENTS

1.4.1 Subcontractors and Personnel

Furnish a list of contact personnel of the Contractor and subcontractors including addresses and telephone numbers for use in the event of an emergency. As changes occur and additional information becomes available, correct and change the information contained in previous lists.

1.4.2 Identification Badges

Identification badges, if required, will be furnished without charge. Application for and use of badges will be as directed. Immediately report instances of lost or stolen badges to the Contracting Officer.

1.4.3 Contractor Personnel Requirements

Failure to obtain entry approval will not affect the contract price or time of completion.

1.4.3.1 Personnel List

Submit for approval, at least 15 days prior to the desired date of entry, an original alphabetical list of personnel who require entry into Government property to perform work on the project. Furnish for each person:

a. Name
b. Date and place of birth
c. Citizenship
d. Home address
e. Social security number

The request for personnel passes shall be accompanied with the following certification:

"I hereby certify that all personnel on this list are either born U.S. citizens, or naturalized U.S. citizens with the naturalization number shown."

Signature/Firm Name

1.4.3.2 Citizenship Requirements

Personnel will not be admitted to the work site without approval. Work under this contract is restricted to U.S. citizens with current Real ID compliant identification.

1.4.3.3 Documents Acceptable for Proof of Citizenship

a. Birth registration card
b. Certificate of live birth, birth certificate
c. Certificate of Naturalization
d. Certificate of registration
e. DD-214 (Must Cite Birthplace)
f. DD Form 4 (Contract for Enlistment and Must Cite Birthplace)
g. DD 1966 (Application for Enlistment)
h. Military discharge papers (must cite birthplace)
i. Delayed birth certificate
j. Hospital birth certificate
k. Marriage license certificate
l. Merchant marine certificate
m. Military officer ID card
n. Notification of birth registration
o. USA passport

1.4.3.4 Vehicle List

Submit an original list of vehicles to be utilized at the work site with the following information for each vehicle:

a. Make
b. Year
c. Model
d. License number
e. Registered owner

1.4.3.5 Passes

Submit request for personnel and vehicle passes together. Include the Certificate of Insurance for Contractor and Subcontractor(s) and the Statement of Acknowledgement Form SF 1413 with the submittal. Passes will normally be issued within 21 days.

1.4.3.6 Control

Maintain strict accountability over passes. Immediately report to the source of issue, passes missing or lost and the circumstances. If the Contractor has another active contract or one commencing immediately, employees' names may be transferred from one contract to the other. Final payment will not be effected until employees are transferred to another contract or the records are cleared. Furnish a signed letter, countersigned by the source of issue, stating that passes have been turned in.

1.5 SUPERVISION

Have at least one qualified supervisor capable of reading, writing, and conversing fluently in the English language on the job site during working hours. In addition, if a Quality Control (QC) representative is required on the contract, then that individual shall also have fluent English communication skills.

1.6 PRECONSTRUCTION CONFERENCE

After award of the contract but prior to commencement of any work at the site, meet with the Contracting Officer to discuss and develop a mutual understanding relative to the administration of the value engineering and safety program, preparation of the schedule prices, shop drawings, and other submittals, scheduling programming, and prosecution of the work. Major subcontractors who will engage in the work shall also attend.

1.7 AVAILABILITY OF CADD DRAWING FILES

After award and upon request, the electronic "Computer-Aided Drafting and Design (CADD)" drawing files will only be made available to the Contractor for use in preparation of construction data related to the referenced contract subject to the following terms and conditions. Request specific drawing numbers of files required; the entire set of drawing files will not be provided.

Data contained on these electronic files shall not be used for any purpose other than as a convenience in the preparation of construction data for the referenced project. Any other use or reuse shall be at the sole risk of the Contractor and without liability or legal exposure to the Government. The Contractor shall make no claim and waives to the fullest extent permitted by law, any claim or cause of action of any nature against the Government, its agents or sub consultants that may arise out of or in connection with the use of these electronic files. The Contractor shall, to the fullest extent permitted by law, indemnify and hold the Government harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic CADD drawing files are not construction documents. Differences may exist between the CADD files and the corresponding construction documents. The Government makes no representation regarding the accuracy or completeness of the electronic CADD files, nor does it make representation to the compatibility of these files with the Contractors hardware or software. In the event that a conflict arises between the signed and sealed construction documents prepared by the Government and the furnished CADD files, the signed and sealed construction documents shall govern. The Contractor is responsible for determining if any conflict exists. Use of these CADD files does not relieve the Contractor of duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate the work of all contractors for the project.

If the Contractor uses, duplicates and/or modifies these electronic CADD files for use in producing construction data related to this contract, all previous indicia of ownership (seals, logos, signatures,initials and dates) shall be removed.

1.8 ELECTRONIC MAIL (E-MAIL) ADDRESS

The Contractor shall establish and maintain electronic mail (e-mail) capability along with the capability to open various electronic attachments in Microsoft, Adobe Acrobat, and other similar formats. Within 10 days after contract award, the Contractor shall provide the Contracting Officer a single (only one) e-mail address for electronic communications from the Contracting Officer related to this contract including, but not limited to contract documents, invoice information, request for proposals, and other correspondence. The Contracting Officer may also use email to notify the Contractor of base access conditions when emergency conditions warrant, such as hurricanes, terrorist threats, etc. Multiple email address will not allowed.

It is the Contractor's responsibility to make timely distribution of all Contracting Officer initiated e-mail with its own organization including field office(s). The Contractor shall promptly notify the Contracting Officer, in writing, of any changes to this email address.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

Not used.

-- End of Section --

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

Requirements of this Section apply to, and are a component part of, each section of the specifications.

1.2 REFERENCES (NOT APPLICABLE)

1.3 SUBMITTALS

A standard transmittal form provided by the Government shall be used to transmit each submittal.

Submittal Description (SD): Drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules, performance and test data, and similar materials to be furnished by the Contractor explaining in detail specific portions of the work required by the contract.

The following items, SD-01 through SD-11, are descriptions of data to be submitted for the project. The requirements to actually furnish the applicable items will be called out in each specification.

SD-01 Preconstruction Submittals

Submittals which are required prior to a notice to proceed on a new contract. Submittals required prior to the start of the next major phase of the construction on a multi-phase contract. Schedules or tabular list of data or tabular list including location, features, or other pertinent information regarding products, materials, equipment, or components to be used in the work, submitted prior to contract notice to proceed or next major phase of construction.

SD-02 Shop Drawings

Submittals which graphically show relationship of various components of the work, schematic diagrams of systems, detail of fabrications, layout of particular elements, connections, and other relational aspects of the work.

SD-03 Product Data

Data composed of catalog cuts, brochures, circulars, specifications and product data, and printed information in sufficient detail and scope to verify compliance with requirements of the contract documents.

SD-04 Samples

Samples, including both fabricated and unfabricated physical examples of materials, products, and units of work as complete units or as portions of units of work.

SD-05 Design Data

Design calculations, mix design analyses, or other data, written in nature, and pertaining to a part of the work.

SD-06 Test Reports

Written reports of a manufacturer's findings of his product during field inspections, attesting that the products are installed in accordance with the manufacturer's installation instructions, shop drawings, or other manufacturer's requirements. Written reports by a general Contractor or his subcontractors including daily logs reporting on the progress of daily activities or attesting that the work has been installed in accordance with the contract plans and specifications.

SD-07 Certificates

A document, required of the Contractor, or through the Contractor by way of a supplier, installer, manufacturer, or other Lower Tier Contractor, the purpose of which is to further the quality or orderly progression of a portion of the work by documenting procedures, acceptability of methods or personnel, qualifications, or other verification of quality.

Statements signed by responsible officials of a manufacturer of a product, system, or material attesting that the product, system or material meet specified requirements. Statements must be dated after the award of this contract, name the project, and list the specific requirements which it is intended to address.

SD-08 Manufacturer's Instructions

Preprinted material describing installation of a product, system, or material, including special notices and material safety data sheets, if any concerning impedances, hazards, and safety precautions.

SD-09 Manufacturer's Field Reports

A written report which includes the findings of a test made at the job site, in the vicinity of the job site, or on a sample taken from the job site, on a portion of the work, during or after installation. Report must be signed by an authorized official of a testing laboratory or agency and must state the test results; and indicate whether the material, product, or system has passed or failed the test.

SD-10 Operation and Maintenance Data

Data intended to be incorporated in an operations and maintenance manual.

SD-11 Closeout Submittals

Special requirements necessary to properly close out a construction contract. For example, as-built drawings, manufacturer's help and product lines necessary to maintain and install equipment. Also, submittal requirements necessary to properly close out a major phase of construction on a multi-phase contract.

1.4 PREPARATION

1.4.1 Marking

Permanent marking shall be provided on each submittal to identify it by contract number; transmittal date; Contractor's, Subcontractor's, and supplier's name, address(es) and telephone number(s); submittal name; specification or drawing reference; and similar information to distinguish it from other submittals. Submittal identification shall include space to receive the review action by the Contracting Officer.

1.4.2 Data Format

Required data submittals for each specific material, product, unit of work, or system shall be collected into a single submittal and marked for choices, options, and portions applicable to the submittal. Marking of each copy of product data submitted shall be identical. Partial submittals will not be accepted for expedition of construction effort.

1.4.3 Samples

Samples shall be physically identical with the proposed material or product to be incorporated in the work, fully fabricated and finished in the specified manner, and full scale. Where variations in color, finish, pattern, or texture are inherent in the material or product represented by the sample, multiple units of the sample, showing the near-limits of the variations and the "average" of the whole range (not less than 3 units), shall be submitted. Each unit shall be marked to describe its relation to the range of the variation. Where samples are specified for selection of color, finish, pattern, or texture, the full set of available choices shall be submitted for the material or product specified. Sizes and quantities of samples shall represent their respective standard unit.

1.5 SUBMISSION REQUIREMENTS

1.5.1 Schedules

Within 10 days of notice to proceed, the Contractor shall provide, for approval by the Contracting Officer, the following schedule of submittals:

a. A schedule of shop drawings and technical submittals required by the specifications and drawings. Schedule shall indicate the specification or drawing reference requiring the submittal; the material, item, or process for which the submittal is required; the "SD" number and identifying title of the submittal; the Contractor's anticipated submission date and the approval need date.

b. A separate schedule of other submittals required under the contract but not listed in the specifications or drawings. Schedule will indicate the contract requirement reference; the type or title of the submittal; the Contractor's anticipated submission date and the approved need date (if approval is required).

c. Submittals called for by the contract documents will be listed on one of the above schedules. If a submittal is called for but does not pertain to the contract work, the Contractor shall include it in the applicable schedule and annotate it "N/A" with a brief explanation. Approval of the schedules by the Contracting Officer does not relieve the Contractor of supplying submittals required by the contract documents but which have been omitted from the schedules or marked "N/A".

d. Copies of both schedules shall be re-submitted monthly annotated by the Contractor with actual submission and approval dates. When all items on a schedule have been fully approved, no further re-submittal of the schedule is required.

1.5.2 Data Submittals

Four (4) complete sets of indexed and bound product data shall be submitted. One set, marked with review notations by the Contracting Officer, will be returned to the Contractor.

1.5.3 Samples

One set of identified samples shall be submitted. A copy of the transmittal form, marked with review notations including selections by the Contracting Officer, will be returned to the Contractor. Samples that are intended or permitted to be returned and actually incorporated in the work are so indicated in the individual technical sections. These samples will be returned to the Contractor, at his expense, to be clearly labeled, with installation location recorded. Samples shall be in undamaged condition at the time of installation.

Where mockups and similar large samples are required by individual technical sections, it is recognized that these are a special type of sample which cannot be readily "transmitted" as specified for submittal of samples. Otherwise, and except as indicated in the individual technical sections, the requirements for samples shall be complied with and a transmittal form shall be processed for each mockup, to provide a record of the activity.

1.6 GOVERNMENT'S REVIEW

1.6.1 Review Notations

Contracting Officer will review submittals and provide pertinent notation within 10 calendar days after date of submission. Submittals will be returned to the Contractor with the following notations:

a. Submittals marked "approved" authorize the Contractor to proceed with the work covered.

b. Submittals marked "approved as noted" authorize the Contractor to proceed with the work covered provided he takes no exception to the corrections. Notes shall be incorporated prior to submission of the final submittal.

c. Submittals marked "return for correction" require the Contractor to make the necessary corrections and revisions and to re-submit them for approval in the same routine as before, prior to proceeding with any of the work depicted by the submittal.

d. Submittals marked "not approved" or "disapproved" indicate noncompliance with the contract requirements and shall be re-submitted with appropriate changes. No item requiring a submittal shall be accomplished until the submittals are approved or approved as noted.

e. Contractor shall make corrections required by the Contracting Officer. If the Contractor considers any correction or notation on the returned submittals to constitute a change to the contract drawings or specifications; notice as required under the clause entitled, "Changes" shall be given to the Contracting Officer. Approval of the submittals by the Contracting Officer shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is satisfactory. Contractor shall be responsible for the dimensions and design of connection details and construction of work. Failure to point out deviations may result in the Government requiring rejection and removal of such work at the Contractor's expense.

f. If changes are necessary to approved submittals, the Contractor shall make such revisions and submission of the submittals in accordance with the procedures above. No item of work requiring a submittal change shall be accomplished until the changed submittals are approved.

1.6.2 Sample Approval

Contractor shall furnish, for the approval of the Contracting Officer, samples required by the specifications or by the Contracting Officer. Shipping charges shall be paid by the Contractor.

Materials or equipment requiring sample approval shall not be delivered to the site or used in the work until approved in writing by the Contracting Officer.

Each sample shall have a label indicating:

a. Name of project

b. Name of Contractor

c. Material or equipment

d. Place of origin

e. Name of producer and brand

f. Specification section to which samples applies

g. Samples of furnished material shall have additional markings that will identify them under the finished schedules.

Contractor shall submit to the Contracting Officer one sample of materials where samples are requested. Contractor shall transmit with each sample a letter, original and two copies, containing the above information.

Approval of a sample shall be only for the characteristics or use named in such approval and shall not be construed to change or modify any contract requirements. Before submitting samples, the Contractor shall assure that the materials or equipment will be available in quantities required in the project. No change or substitution will be permitted after a sample has been approved.

Materials and equipment incorporated in the work shall match the approved samples. If requested, approved samples, including those which may be damaged in testing, will be returned to the Contractor, at his expense, upon completion of the contract. Samples not approved will also be returned to the Contractor at its expense, if so requested.

Failure of any materials to pass the specified tests will be sufficient cause for refusal to consider, under this contract, any further samples of the same brand or make of that material. Government reserves the right to disapprove any material or equipment which previously has proved unsatisfactory in service.

Variations from contract requirements shall be specifically pointed out in transmittal letters. Failure to point out deviations may result in the Government requiring rejection and removal of such work at no additional cost to the Government.

Samples of various materials or equipment delivered on the site or in place may be taken by the Contracting Officer for testing. Samples failing to meet contract requirements will automatically void previous approvals. Contractor shall replace such materials or equipment to meet contract requirements.

Approval of the Contractor's samples by the Contracting Officer shall not relieve the Contractor of his responsibilities under the contract.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 GENERAL

The Contractor shall make submittals as required by the specifications. The Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work covered in the respective sections. Units of weights and measures used on all submittals shall be the same as those used in the contract drawings. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements. Proposed deviations from the contract requirements shall be clearly identified. Submittals shall include items such as: Contractor's, manufacturer's, or fabricator's drawings; descriptive literature including (but not limited to) catalog cuts, diagrams, operating charts or curves; test reports; test cylinders; samples; O&M manuals (including parts list); certifications; warranties; and other such required submittals. Submittals requiring Government approval shall be scheduled and made prior to the acquisition of the material or equipment covered thereby. Samples remaining upon completion of the work shall be picked up and disposed of in accordance with manufacturer's Material Safety Data Sheets (MSDS) and in compliance with existing laws and regulations.

3.2 SUBMITTAL REGISTER REFER TO ATTACHED SUBMITTAL LIST

3.3 SCHEDULING

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of 14 calendar days exclusive of mailing time) shall be allowed and shown on the register for review and approval. No delay damages or time extensions will be allowed for time lost in late submittals.

3.4 TRANSMITTAL FORM (AF FORM 3000)

The sample transmittal form (AF Form 3000) attached to this section shall be used for submitting both Government approved and information only submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care shall be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

3.5 SUBMITTAL PROCEDURE

Submittals shall be made as follows:

3.5.1 Procedures

All submittals, except warranties and operating instructions, shall be made using AF Form 3000 no later than 10 days after receipt of the notice to Proceed, or as specified by the Contracting Officer. Four (4) copies of all submittals are required to be sent to the Contracting Officer. The Contracting Officer will return one (1) copy of the submittals approved or disapproved within 10 days working after receipt, using AF Form 3000. If submittals cannot be made within 10 days after Notice to Proceed, or as specified by the Contracting Officer, the Contracting Officer shall be advised of the difficulty and an extension of time required. The attached Submittal List is an itemized list of materials requiring drawings, wiring diagrams, certificates, manufacturers literature, data brochures, technical data and samples as noted to be submitted to the contracting Officer by the Contractor using AF Form 3000. Approval of submittals does not relieve the Contractor from performance in strict accordance with the contract specifications and drawings, nor does such approval constitute "acceptance" under other provisions of this contract. Warranties and operating instructions are required at the completion of the

contract work and no later than 30 days after final acceptance. Four (4) copies for all warranties andoperating instructions shall be provided unless otherwise specified. Note: Concrete mix design submittal and Proportioning Studies will require a 30 day review period.

3.5.2 Disapproved Submittals

The Contracting Officer will return the disapproved submittals to the Contractor within ten (10) days afterreceipt of submittal. The Contractor shall make all corrections required by the Contracting officer and promptly furnish a corrected submittal within Ten (10) days of receipt of the notice of disapproved materials. If the Contractor considers any correction indicated on the submittals to constitute a change tothe contract, a notice in accordance with the Contract Clause “Changes” shall be given promptly to the Contracting Officer.

3.5.3 Deviations

For submittals which include proposed deviations requested by the Contractor, the column "variation"of shall be checked. The Contractor shall set forth in writing the reason for any deviations and annotate such deviations on the submittal - The Government reserves the right to rescind inadvertentapproval of submittals containing unnoted deviations.

3.6 CONTROL OF SUBMITTALS

The Contractor shall carefully control his procurement operations to ensure that each individualsubmittal is made on or before the Contractor scheduled submittal date.

3.7 GOVERNMENT APPROVED SUBMITTALS

Upon completion of review of submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. Three (3) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned tothe Contractor.

3.8 INFORMATION ONLY SUBMITTALS

Normally submittals for information only will not be returned. Approval of the Contracting Officer is notrequired on information only submittals. The Government reserves the right to require the Contractorto resubmit any item found not to comply with the contract. This does not relieve the Contractor from the obligation to furnish material conforming to the plans and specifications; will not prevent the Contracting Officer from requiring removal and replacement of nonconforming material incorporated inthe work; and does not relieve the Contractor of the requirement to furnish samples for testing by the Government laboratory or for check testing by the Government in those instances where the technicalspecifications so prescribe.

--End – of -Section--

SECTION 01 42 00

SOURCES FOR REFERENCE PUBLICATIONS
02/19

PART 1 GENERAL

1.1 REFERENCES

Various publications are referenced in other sections of the specifications to establish requirements for the work. These references are identified in each section by document number, date and title. The document number used in the citation is the number assigned by the standards producing organization (e.g., ASTM B564 Standard Specification for Nickel Alloy Forgings). However, when the standards producing organization has not assigned a number to a document, an identifying number has been assigned for reference purposes.

1.2 ORDERING INFORMATION

The addresses of the standards publishing organizations whose documents are referenced in other sections of these specifications are listed below, and if the source of the publications is different from the address of the sponsoring organization, that information is also provided.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
444 North Capital Street, NW, Suite 249
Washington, DC 20001
Ph: 202-624-5800
Fax: 202-624-5806
E-Mail: info@aashto.org
Internet: https://www.transportation.org/

AMERICAN CONCRETE INSTITUTE (ACI)
38800 Country Club Drive
Farmington Hills, MI 48331-3439
Ph: 248-848-3700
Fax: 248-848-3701
Internet: https://www.concrete.org/

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)
520 N. Northwest Highway
Park Ridge, IL 60068
Ph: 847-699-2929
E-mail: customerservice@assp.org
Internet: https://www.assp.org/

ASTM INTERNATIONAL (ASTM)
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959
Ph: 610-832-9500
Fax: 610-832-9555
E-mail: service@astm.org
Internet: https://www.astm.org/

INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI)
1000 Westgate Drive, Suite 252
St. Paul, MN 55114
Ph: 651-366-6095
Fax: 651-290-2266
E-mail: info@icri.org
Internet: https://www.icri.org/

NATIONAL READY MIXED CONCRETE ASSOCIATION (NRMCA)
Manager, Customer Service
900 Spring Street
Silver Spring, MD 20910
Ph: 240-485-1165
E-mail: jjenkins@nrmca.org (Jacques Jenkins)
Internet: https://www.nrmca.org/

U.S. AIR FORCE (USAF)
E-mail: usaf.pentagon.saf-aa.mbx.AFDPO-PPL@mail.mil
Internet: https://www.e-publishing.af.mil/

U.S. ARMY CORPS OF ENGINEERS (USACE)
CRD-C DOCUMENTS available on Internet:
http://www.wbdg.org/ffc/army-coe/standards
Order Other Documents from:
Official Publications of the Headquarters, USACE
E-mail: hqpublications@usace.army.mil
Internet: http://www.publications.usace.army.mil/
or
https://www.hnc.usace.army.mil/Missions/Engineering-Directorate/TECHINFO/

U.S. FEDERAL AVIATION ADMINISTRATION (FAA)
Order for sale documents from:
Superintendent of Documents
U.S. Government Publishing Office (GPO)
732 N. Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800 or 866-512-1800
Bookstore: 202-512-0132
Internet: https://www.gpo.gov/
Order free documents from:
U.S. Department of Transportation
Federal Aviation Administration
800 Independence Avenue, SW
Washington, DC 20591
Ph: 866-835-5322
Internet: https://www.faa.gov/

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)
1200 New Jersey Ave., SE
Washington, DC 20590
Ph: 202-366-4000
E-mail: ExecSecretariat.FHWA@dot.gov
Internet: https://www.fhwa.dot.gov/
Order from:
Superintendent of Documents
U.S. Government Publishing Office (GPO)
732 N. Capitol Street, NW
Washington, DC 20401

Ph: 202-512-1800 or 866-512-1800
Bookstore: 202-512-0132
Internet: https://www.gpo.gov/

U.S. GENERAL SERVICES ADMINISTRATION (GSA)
General Services Administration
1800 F Street, NW
Washington, DC 20405
Ph: 1-844-472-4111
Internet: https://www.gsaelibrary.gsa.gov/ElibMain/home.do
Obtain documents from:
Acquisition Streamlining and Standardization
Information System(ASSIST)
Internet: https://assist.dla.mil/online/start/;
accountregistration required

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)
8601 Adelphi Road
College Park, MD 20740-6001Ph: 866-272-6272
Internet: https://www.archives.gov/
Order documents from:
Superintendent of Documents
U.S. Government Publishing Office (GPO)
732 N. Capitol Street, NW
Washington, DC 20401
Ph: 202-512-1800 or 866-512-1800
Bookstore: 202-512-0132
Internet: https://www.gpo.gov/

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

-- End of Section --

SECTION 01 78 00

CLOSEOUT SUBMITTALS
05/19

PART 1 GENERAL

1.1 DEFINITIONS

1.1.1 As-Built Drawings

As-built drawings are the marked-up drawings, maintained by the Contractor on-site, that depict actual conditions and deviations from the Contract Documents. These deviations and additions may result from coordination required by, but not limited to: contract modifications; official responses to submitted Requests for Information (RFI's); direction from the Contracting Officer; design that is the responsibility of the Contractor, and differing site conditions. Maintain the as-builts throughout construction as[red-lined hard copies on site]. These files serve as the basis for the creation of the record drawings.

1.1.2 Record Drawings

The record drawings are the final compilation of actual conditions reflected in the as-built drawings.

1.2 SOURCE DRAWING FILES

Request the full set of electronic drawings, in the source format, for Record Drawing preparation, after award and at least 30 days prior to required use.

1.2.1 Terms and Conditions

Data contained on these electronic files must not be used for any purpose other than as a convenience in the preparation of construction [drawings and]data for the referenced project. Any other use or reuse shall be at the sole risk of the Contractor and without liability or legal exposure to the Government. The Contractor must make no claim and waives to the fullest extent permitted by law, any claim or cause of action of any nature against the Government, its agents or sub consultants that may arise out of or in connection with the use of these electronic files. The Contractor must, to the fullest extent permitted by law, indemnify and hold the Government harmless against all damages, liabilities or costs, including reasonable attorney's fees and defense costs, arising out of or resulting from the use of these electronic files.

These electronic CAD drawing files are not construction documents. Differences may exist between the CAD files and the corresponding construction documents.The Government makes no representation regarding the accuracy or completeness of the electronic CAD files, nor does it make representation to the compatibility of these files with the Contractor hardware or software. In the event that a conflict arises between the signed and sealed construction documents prepared by the Government and the furnished Source drawing files, the signed and sealed construction documents govern. The Contractor is responsible for determining if any conflict exists. Use of these Source Drawing files does not relieve the

Contractor of duty to fully comply with the contract documents, including and without limitation, the need to check, confirm and coordinate the work of all contractors for the project. If the Contractor uses, duplicates or modifies these electronic source drawing files for use in producing construction [drawings and]data related to this contract, remove all previous indicia of ownership (seals, logos, signatures, initials and dates).

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification identifies the office that will review the submittal for the Government.] Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Warranty Management Plan

Warranty Tags

Spare Parts Data

SD-08 Manufacturer's Instructions

Posted Instructions

SD-10 Operation and Maintenance Data

Operation and Maintenance Manuals; G

SD-11 Closeout Submittals

As-Built Drawings; G

Record Drawings; G

As-Built Record of Equipment and Materials

Certification of EPA Designated Items; G

Certification Of USDA Designated Items; G

1.4 WARRANTY MANAGEMENT

1.4.1 Warranty Management Plan

Develop a warranty management plan which contains information relevant to FAR 52.246-21 Warranty of Construction. At least 30 days before the planned pre-warranty conference, submit one set of the warranty management plan. Include within the warranty management plan all required actions and documents to assure that the Government receives all warranties to which it is entitled.The plan narrative must contain sufficient detail to render it suitable for use by future maintenance and repair personnel, whether tradesmen, or of engineering background, not necessarily familiar with this contract. The term "status" as indicated below must include due date and whether item has been submitted or was accomplished. Submit

warranty information, made available during the construction phase, to the Contracting Officer for approval prior to each monthly pay estimate. Assemble approved information in a binder and turn over to the Government upon acceptance of the work. The construction warranty period must begin on the date of project acceptance and continue for the full product warranty period. Conduct a joint 4 month and 9 month warranty inspection, measured from time of acceptance; with the Contractor, Contracting Officer and the Customer Representative. The warranty management plan must include, but is not limited to, the following:

a. Roles and responsibilities of personnel associated with the warranty process, including points of contact and telephone numbers within the organizations of the Contractors, subcontractors, manufacturers or suppliers involved.

b. For each warranty, the name, address, telephone number, and e-mail of each of the guarantor's representatives nearest to the project location.

c. A list and status of delivery of Certificates of Warranty for extended warranty items, including roofs, HVAC balancing, pumps, motors, transformers, and for commissioned systems, such as fire protection and alarm systems, sprinkler systems, and lightning protection systems.

d. As-Built Record of Equipment and Materials list for each warranted equipment, item, feature of construction or system indicating:

(1) Name of item.
(2) Model and serial numbers.
(3) Location where installed.
(4) Name and phone numbers of manufacturers or suppliers.
(5) Names, addresses and telephone numbers of sources of spare parts.
(6) Warranties and terms of warranty. Include one-year overall warranty of construction, including the starting date of warranty of construction. Items which have warranties longer than one year must be indicated with separate warranty expiration dates.
(7) Cross-reference to warranty certificates as applicable.
(8) Starting point and duration of warranty period.
(9) Summary of maintenance procedures required to continue the warranty in force.
(10) Cross-reference to specific pertinent Operation and Maintenance manuals.
(11) Organization, names and phone numbers of persons to call for warranty service.
(12) Typical response time and repair time expected for various warranted equipment.

e. The plans for attendance at the 4 and 9 month post-construction warranty inspections conducted by the Government.

f. Procedure and status of tagging of equipment covered by warranties longer than one year.

g. Copies of instructions to be posted near selected pieces of equipment where operation is critical for warranty or safety reasons.

1.4.2 Performance Bond

The Performance Bond must remain effective throughout the construction and

warranty period.

a. In the event the Contractor fails to commence and diligently pursue any construction warranty work required, the Contracting Officer will have the work performed by others, and after completion of the work, will charge the remaining construction warranty funds of expenses incurred by the Government while performing the work, including, but not limited to administrative expenses.

b. In the event sufficient funds are not available to cover the construction warranty work performed by the Government at the Contractor's expense, the Contracting Officer will have the right to recoup expenses from the bonding company.

c. Following oral or written notification of required construction warranty repair work, respond in a timely manner. Written verification will follow oral instructions. Failure to respond will be cause for the Contracting Officer to proceed against the Contractor.

1.4.3 Pre-Warranty Conference

Prior to contract completion, and at a time designated by the Contracting Officer, meet with the Contracting Officer to develop a mutual understanding with respect to the requirements of this section. At this meeting, establish and review communication procedures for Contractor notification of construction warranty defects, priorities with respect to the type of defect, reasonable time required for Contractor response, and other details deemed necessary by the Contracting Officer for the execution of the construction warranty In connection with these requirements and at the time of the Contractor's quality control completion inspection, furnish the name, telephone number and address of a licensed and bonded company which is authorized to initiate and pursue construction warranty work action on behalf of the Contractor. This point of contact must be located within the local service area of the warranted construction, be continuously available, and be responsive to Government inquiry on warranty work action and status. This requirement does not relieve the Contractor of any of its responsibilities in connection with other portions of this provision.

1.4.4 Warranty Tags

At the time of installation, tag each warranted item with a durable, oil and water resistant tag approved by the Contracting Officer. Attach each tag with a copper wire and spray with a silicone waterproof coating. Also, submit two record copies of the warranty tags showing the layout and design. The date of acceptance and the QC signature must remain blank until the project is accepted for beneficial occupancy. Show the following information on the tag.

Type of product/material	
Model number	
Serial number	

Contract number	
Warranty period from/to	
Inspector's signature	
Construction Contractor	
Address	
Telephone number	
Warranty contact	
Address	
Telephone number	
Warranty response time priority code	
WARNING - PROJECT PERSONNEL TO PERFORM ONLY OPERATIONAL MAINTENANCE DURING THE WARRANTY PERIOD.	

PART 2 PRODUCTS

2.1 CERTIFICATION OF EPA DESIGNATED ITEMS

Submit the Certification of EPA Designated Items as required by FAR 52.223-9 Estimate of Percentage of Recovered Material Content for EPA Designated Items and FAR 52-223-17 Affirmative Procurement of EPA designated items in Service and Construction Contracts. Include on the certification form the following information: project name, project number, Contractor name, license number, Contractor address, and certification. The certification will read as follows and be signed and dated by the Contractor. ["I hereby certify the information provided herein is accurate and that the requisition/procurement of all materials listed on this form comply with current EPA standards for recycled/recovered materials content. The following exemptions may apply to the non-procurement of recycled/recovered content materials:

a. The product does not meet appropriate performance standards;

b. The product is not available within a reasonable time frame;

c. The product is not available competitively (from two or more sources);

d. The product is only available at an unreasonable price (compared with a comparable non-recycled content product)."][_____]

2.2 CERTIFICATION OF USDA DESIGNATED ITEMS

Submit the Certification of USDA Designated Items as required by FAR

52-223-1 Bio-based Product Certifications and FAR 52.223-2 Affirmative Procurement of Biobased Products Under Service and Construction Contracts. Include on the certification form the following information: project name, project number, Contractor name, license number, Contractor address, and certification. The certification will read as follows and be signed and dated by the Contractor. ["I hereby certify the information provided herein is accurate and that the requisition/procurement of all materials listed on this form comply with current USDA standards for biobased materials content. The following exemptions may apply to the non-procurement of biobased content materials:

a. The product does not meet appropriate performance standards;

b. The product is not available within a reasonable time frame;

c. The product is not available competitively (from two or more sources);

d. The product is only available at an unreasonable price (compared with a comparable bio-based content product)."][_____]

PART 3 EXECUTION

3.1 AS-BUILT DRAWINGS

Provide and maintain two black line print copies of the PDF contract drawings for As-Built Drawings. Maintain the as-builts throughout construction as red-lined hard copies on site[and][or] red-lined PDF files. Submit As-Built Drawings 30 days prior to Beneficial Occupancy Date (BOD).

3.1.1 Markup Guidelines

Make comments and markup the drawings complete without reference to letters, memos, or materials that are not part of the As-Built drawing. Show what was changed, how it was changed, where item(s) were relocated and change related details. These working as-built markup prints must be neat, legible and accurate as follows:

a. Use base colors of red, green, and blue. Color code for changes as follows:

(1) Special (Blue) - Items requiring special information, coordination, or special detailing or detailing notes.

(2) Deletions (Red) - Over-strike deleted graphic items (lines), lettering in notes and leaders.

(3) Additions (Green) - Added items, lettering in notes and leaders.

b. Provide a legend if colors other than the "base" colors of red, green, and blue are used.

c. Add and denote any additional equipment or material facilities, service lines, incorporated under As-Built Revisions if not already shown in legend.

d. Use frequent written explanations on markup drawings to describe changes. Do not totally rely on graphic means to convey the revision.

e. Use legible lettering and precise and clear digital values when marking prints. Clarify ambiguities concerning the nature and application of change involved.

f. Wherever a revision is made, also make changes to related section views, details, legend, profiles, plans and elevation views, schedules, notes and call out designations, and mark accordingly to avoid conflicting data on all other sheets.

g. For deletions, cross out all features, data and captions that relate to that revision.

h. For changes on small-scale drawings and in restricted areas, provide large-scale inserts, with leaders to the applicable location.

i. Indicate one of the following when attaching a print or sketch to a markup print:

   1) Add an entire drawing to contract drawings

   2) Change the contract drawing to show

   3) Provided for reference only to further detail the initial design.

j. Incorporate all shop and fabrication drawings into the markup drawings.

3.1.2 As-Built Drawings Content

Show on the as-built drawings, but not limited to, the following information:

a. The actual location, kinds and sizes of all sub-surface utility lines. In order that the location of these lines and appurtenances may be determined in the event the surface openings or indicators become covered over or obscured, show by offset dimensions to two permanently fixed surface features the end of each run including each change in direction on the record drawings. Locate valves, splice boxes and similar appurtenances by dimensioning along the utility run from a reference point. Also record the average depth below the surface of each run.

b. The location and dimensions of any changes within the building structure.

c. Layout and schematic drawings of electrical circuits and piping.

d. Correct grade, elevations, cross section, or alignment of roads, earthwork, structures or utilities if any changes were made from contract plans.

e. Changes in details of design or additional information obtained from working drawings specified to be prepared or furnished by the Contractor; including but not limited to shop drawings, fabrication, erection, installation plans and placing details, pipe sizes, insulation material, dimensions of equipment, and foundations.

f. The topography, invert elevations and grades of drainage installed or affected as part of the project construction.

g. Changes or Revisions which result from the final inspection.

h. Where contract drawings or specifications present options, show onlythe option selected for construction on the working as-built markup drawings.

i. If borrow material for this project is from sources on Government property, or if Government property is used as a spoil area, furnish acontour map of the final borrow pit/spoil area elevations.

j. Systems designed or enhanced by the Contractor, such as HVAC controls,fire alarm, fire sprinkler, and irrigation systems.

k. Changes in location of equipment and architectural features.

l. Modifications.

m. Actual location of anchors, construction and control joints, etc., inconcrete.

n. Unusual or uncharted obstructions that are encountered in the contractwork area during construction.

o. Location, extent, thickness, and size of stone protection particularlywhere it will be normally submerged by water.

-- End of Section --

SECTION 02 41 00

DEMOLITION
05/10, CHG 2: 02/19

PART 1 GENERAL

1.1 REFERENCES

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

AMERICAN SOCIETY OF SAFETY PROFESSIONALS (ASSP)

ASSP A10.6	(2006) Safety & Health Program Requirements for Demolition Operations - American National Standard for Construction and Demolition Operations

U.S. ARMY CORPS OF ENGINEERS (USACE)

EM 385-1-1	(2014) Safety and Health Requirements Manual

U.S. FEDERAL AVIATION ADMINISTRATION (FAA)

FAA AC 70/7460-1	(2016; Rev L; Change 2) Obstruction Marking and Lighting

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

40 CFR 61	National Emission Standards for Hazardous Air Pollutants

1.2 PROJECT DESCRIPTION

1.2.1 Definitions

1.2.1.1 Demolition

Demolition is the process of wrecking or taking out any load-supporting structural member of a facility together with any related handling and disposal operations.

1.2.1.2 Deconstruction

Deconstruction is the process of taking apart a facility with the primary goal of preserving the value of all useful building materials.

1.2.1.3 Demolition Plan

Demolition Plan is the planned steps and processes for managing demolition activities and identifying the required sequencing activities and disposal mechanisms.

1.2.1.4 Deconstruction Plan

Deconstruction Plan is the planned steps and processes for dismantling all or portions of a structure or assembly, to include managing sequencing activities, storage, re-installation activities, salvage and disposal mechanisms.

1.2.2 Demolition/Deconstruction Plan

Prepare a Demolition Plan and submit proposed [salvage,] [demolition,] [deconstruction,] and removal procedures for approval before work is started. Include in the plan procedures for careful removal and disposition of materials specified to be salvaged, coordination with other work in progress[, a disconnection schedule of [utility services,] [and] [airfield lighting,] a detailed description of methods and equipment to be used for each operation and of the sequence of operations]. Coordinate with Waste Management Plan in accordance with Section 01 74 19 CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL. Provide procedures for safe conduct of the work in accordance with EM 385-1-1. Plan shall be approved by Contracting Officer prior to work beginning.

1.2.3 General Requirements

Do not begin demolition until authorization is received from the Contracting Officer. Remove rubbish and debris from the project site; do not allow accumulations on airfield pavements. The work includes demolition, salvage of identified items and materials, and removal of resulting rubbish and debris. Remove rubbish and debris from Government property daily, unless otherwise directed. Store materials that cannot be removed daily in areas specified by the Contracting Officer. In the interest of occupational safety and health, perform the work in accordance with EM 385-1-1, Section 23, Demolition, and other applicable Sections.

1.3 ITEMS TO REMAIN IN PLACE

Take necessary precautions to avoid damage to existing items to remain in place, to be reused, or to remain the property of the Government. Repair or replace damaged items as approved by the Contracting Officer. Coordinate the work of this section with all other work indicated. Construct and maintain shoring, bracing, and supports as required. Ensure that structural elements are not overloaded. Increase structural supports or add new supports as may be required as a result of any cutting, removal, deconstruction, or demolition work performed under this contract. Do not overload pavements to remain. Provide new supports and reinforcement for existing construction weakened by demolition, deconstruction, or removal work. Repairs, reinforcement, or structural replacement require approval by the Contracting Officer prior to performing such work.

1.3.1 Existing Construction Limits and Protection

Do not disturb existing construction beyond the extent indicated or necessary for installation of new construction. Provide temporary shoringand bracing for support of building components to prevent settlement or other movement. Provide protective measures to control accumulation and migration of dust and dirt in all work areas. Remove dust, dirt, and debris from work areas daily.

1.3.2 Utility Service

Maintain existing utilities indicated to stay in service and protect against damage during demolition operations.

1.4 BURNING

The use of burning at the project site for the disposal of refuse and debris will not be permitted.

1.5 QUALITY ASSURANCE

Submit timely notification of demolition projects to Federal, State, regional, and local authorities in accordance with 40 CFR 61, Subpart M. Notify the State's environmental protection agency and the Contracting Officer in writing 10 working days prior to the commencement of work in accordance with 40 CFR 61, Subpart M. Comply with federal, state, and local hauling and disposal regulations. In addition to the requirements of the "Contract Clauses," conform to the safety requirements contained in ASSP A10.6. Comply with the Environmental Protection Agency requirements specified. Use of explosives will be permitted.

1.5.1 Dust and Debris Control

Prevent the spread of dust and debris on airfield pavements] and avoid the creation of a nuisance [or hazard] in the surrounding area. Do not use water if it results in hazardous or objectionable conditions such as, but not limited to, ice, flooding, or pollution. Vacuum and dust the work area daily. Sweep pavements as often as necessary to control the spread of debris that may result in foreign object damage potential to aircraft.

1.6 PROTECTION

1.6.1 Traffic Control Signs

a. Where aircraft safety is endangered in the area of removal work, use traffic barricades with flashing lights. [Anchor barricades in a manner to prevent displacement by wind, jet or prop blast.] Notify the Contracting Officer prior to beginning such work.

[Provide a minimum of 2 FAA type L-810 steady burning red obstruction lights on temporary structures (including cranes) over 100 feet, but less than 200 ft, above ground level. The use of LED based obstruction lights are not permitted. For temporary structures (including cranes) over 200 ft above ground level provide obstruction lighting in accordance with FAA AC 70/7460-1. Light construction and installation shall comply with FAA AC 70/7460-1. Lights shall be operational during periods of reduced visibility, darkness, and as directed by the Contracting Officer. Maintain the temporary services during the period of construction and remove only after permanent services have been installed and tested and are in operation.]

1.7 FOREIGN OBJECT DAMAGE (FOD)

Aircraft and aircraft engines are subject to FOD from debris and waste material lying on airfield pavements. Remove all such materials that may appear on operational aircraft pavements due to the Contractor's operations. If necessary, the Contracting Officer may require the Contractor to install a temporary barricade at the Contractor's expense to

control the spread of FOD potential debris. The barricade shall include afence covered with a fabric designed to stop the spread of debris. Anchorthe fence and fabric to prevent displacement by winds or jet/prop blasts. Remove barricade when no longer required.

1.8 RELOCATIONS

Perform the removal and reinstallation of relocated items as indicated with workmen skilled in the trades involved. Repair or replace items to be relocated which are damaged by the Contractor with new undamaged itemsas approved by the Contracting Officer.

1.9 EXISTING CONDITIONS

Before beginning any demolition work, survey the site and examine the drawings and specifications to determine the extent of the work. Record existing conditions in the presence of the Contracting Officer showing thecondition of structures and other facilities adjacent to areas of alteration or removal. Photographs sized 4 inch will be acceptable as a record of existing conditions. Include in the record the elevation of thetop of foundation walls, finish floor elevations, possible conflicting electrical conduits, plumbing lines, alarms systems, the location and extent of existing cracks and other damage and description of surface conditions that exist prior to before starting work. It is the Contractor's responsibility to verify and document all required outages which will be required during the course of work, and to note these outages on the record document. Submit survey results.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 DISPOSAL OF REMOVED MATERIALS

3.1.1 Regulation of Removed Materials

Dispose of debris, rubbish, scrap, and other nonsalvageable materials resulting from removal operations with all applicable federal, state and local regulations as contractually specified in the Waste Management Plan.Storage of removed materials on the project site is prohibited.

3.1.2 Burning on Government Property

Burning of materials removed from demolished and deconstructed structureswill not be permitted on Government property.

-- End of Section --

SECTION 32 01 11.51

RUBBER AND PAINT REMOVAL FROM AIRFIELD PAVEMENTS
11/23

PART 1 GENERAL

1.1 UNIT PRICES

1.1.1 Measurement

Removal of rubber is measured by the number of square feet of rubber to be removed, based on type and percentage of removal.

1.1.2 Payment

Removal of rubber is paid for at the contract unit price per square feet of rubber to be removed, based on the type and percentage of removal.

1.2 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM D1005	(1995; R 2020) Standard Test Method for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards

1.3 DEFINITIONS

1.3.1 Pavement Damage

Scarring is defined as the erosion of the pavement fine aggregate and binder that leaves some of the aggregate exposed. Pavement damage occurs when more than 25 percent of the depth (vertical dimension) of the nominal-sized aggregate diameter is uniformly exposed and aggregate could loosen.

1.4 ADMINISTRATIVE REQUIREMENTS

Submit a schedule of work to the Contracting Officer. Describe the work to be accomplished; noting the location of work, distances from the ends of runways, touchdown areas, taxiways, buildings, and other structures; and indicating dates and hours during which the work is to be accomplished. Schedule the work to conform to aircraft operating schedules. The Government will try to schedule aircraft operations so

as to permit the maximum amount of time for the Contractor's work. However, in the event of any emergency, intense operational demands, adverse wind conditions, and other unforeseen difficulties, discontinue all work at locations in the aircraft operational area. Keep the approved schedule of work current and notify the Contracting Officer of any changes prior to beginning each day's work.

1.5 DELIVERY, STORAGE, AND HANDLING

Deliver detergents and chemicals required for rubber removal in original manufacturer's containers labeled with appropriate EPA, OSHA, or other agency warnings, if applicable, and Safety Data Sheets. Protect materials from degrading until their use is required during execution of the work.

1.6 PROJECT/SITE CONDITIONS

1.6.1 Environmental Requirements

Ensure pavement surface is free of snow, ice or slush. Ensure surface temperature is at least 40 degrees F and rising at the beginning of operations [except those involving sandblasting for which a lower surface temperature may be approved]. Do not permit chemical rubber removal operations to begin if rain is predicted within 24 hours. Cease operation during thunder and lightning storms. Cease operation during rainfall except for waterblasting and removal of previously applied chemicals. Cease waterblasting where surface water accumulation alters the effectiveness of material removal.

1.6.2 Airfield Traffic Control

Coordinate performance of all work in the controlled zones of the airfield with the Contracting Officer and with the Flight Operations Officer or Airfield Manager. Neither equipment nor personnel can use any portion of the airfield without permission of these officers unless the runway is closed. Runways will be closed during the following times:

Day or Date	Runway Closing Time	Runway Opening Time	Important Notes
[_____]	[_____]	[_____]	[_____]

1.6.3 Radio Communication

Do not allow personnel or equipment to enter the controlled zones of the airfield until radio contact has been made with the control tower and permission is granted by the control tower. A radio for this purpose will be provided by the Government. The Contractor is responsible for the radio and must reimburse the Government for repair or replacement of the radio if it is lost, damaged, or destroyed. Always maintain contact with the control tower at all times during work in vicinity of the airfield. Notify the control tower when work is completed and all personnel, equipment and materials have been removed from all aircraft operating surfaces.

1.6.4 Emergency Landing and Takeoff

Emergencies take precedence over all operations. Upon notification from the Control Tower of an emergency landing or imminent takeoff, stop all operations immediately and evacuate all personnel and equipment to an area not utilized for aircraft traffic which is at least 250 feet measured perpendicular to and away from the near edge of the runway unless otherwise authorized by the Contracting Officer or the Contracting Officer's Representative. Clear the work area of equipment, chemicals or detergents, and excess water within 15 minutes.

1.6.5 Airfield Lighting

When night operations are necessary, provide all necessary lighting and equipment. Direct or shield lighting to prevent interference with aircraft, the air traffic control tower, and other base operations. Provide lighting and related equipment capable of being removed from the runway within 15 minutes of notification of an emergency. Night work must be coordinated with the Flight Operations Officer or Airfield Manager and approved in advance by the Contracting Officer or authorized representative.

1.6.6 Water

Water to be used for high-pressure water equipment will be made available from Government hydrant[s] at no cost. Furnish equipment and labor for delivery of water from the hydrant to the job site. Notify the Government on location of fire hydrant[s] to be used and the respective times of use. The Contracting Officer will notify the Fire Department of fire hydrants to be used and designated times of use. Connections to a fire hydrant are subject to inspection and approval. Provide and use a backflow prevention device for filling water tanks. Test, treat, and filter the water to verify it will not interfere with the rubber removal or damage or clog the rubber removal equipment.

1.7 SAFETY

Comply with OSHA 29 CFR 1910.

1.8 ACCEPTANCE

1.8.1 Tolerances

Acceptance of the removal of rubber is based on compliance with the tolerances presented in the following Table. Reclean any area representing a failing test.

RUBBER REMOVAL	
Pavement Surface	Tolerance
RUBBER REMOVAL	
Portland Cement Concrete Pavement	Minimum 90 percent
Asphalt Pavement	Minimum 85 percent

1.8.2 Test Section

Prior to the start of work, remove not less than 50 feet in length of rubber on designated runways and touchdown areas. Use procedures, equipment, and movement rate to achieve the required degree of removal in accordance with the Table above. Use methods in paragraph COMPLIANCE TESTING to determine if the rubber was successfully removed from the test section. Submit the test section results for approval before conducting any further removal work. Provide photos of the four random locations within the test area taken before and after the removal. The Government will compare the surface texture of the cleaned demonstration area to that of the non-trafficked areas to determine satisfactory completion of the removal operation. After approval of the operations, the cleaned sample area will become the standard for rubber removal and final surface texture for the remainder of work.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 REMOVAL OF RUBBER

Prior to any work being completed, submit a Rubber Removal Process Plan for approval by the Contracting Officer.

a. Prior to commencing any work, inspect the pavement where rubber removal will be conducted. Inspect pavements, joints, lights, etc. to identify any pre-existing conditions. Mark areas and take pictures where joint seal, crack seal, and pavements are already compromised. Submit a Pre-Existing Conditions Inspection Report for approval.

b. The pavement surface type is portland cement concrete.

c. Remove rubber on portland cement concrete pavements to within the tolerances of paragraph ACCEPTANCE.

d. Chemical methods used must be compatible with pavement materials, the environment and working personnel.

e. Exercise close control of water pressure and blasting time/duration to prevent damage to joint sealants, existing markings that are not intended for removal, or the wearing surface. Neither hydroblasting or abrasive blasting may be used for rubber removal on porous friction courses.

f. Demonstrate the ability to remove rubber at a touchdown area of the runway selected by the Contracting Officer; at least one site per runway will be chosen. Rubber removal must not damage the pavement surface. The surface texture of the cleaned demonstration area will be compared to that of non-rubber traffic areas to determine satisfactory completion of the removal operation.

g. Protect light fixtures and runway surface sensors from damage throughout the removal operations.

h. Compliance testing for the amount of rubber to be removed must conform to the requirements in paragraph COMPLIANCE TESTING.

3.2 RATE OF REMOVAL

Remove rubber at an expected rate of 10,000 square feet per hour. Do not permit high-pressure water application to remove the existing pavement surface, joint seals or crack seals.

3.3 WATER PRESSURE

Provide water pressure impact upon the indicated pavement areas sufficient to remove the designated rubber to the required degree of removal without damaging the existing pavement, joint sealant, or other airfield appurtenances. Determine the optimum water pressure for removal from the test section. The Contractor is responsible for repairing any damage caused by the removal work.

3.4 CLEANUP AND WASTE DISPOSAL

Keep the worksite clean of by-products, debris and waste from rubber removal operations. Perform cleanup operations continuously. Remove all residue from the pavement. Obtain the approval of residue removal and disposal method from the Contracting Officer prior to beginning work. Prior to the start of work, submit a Waste Collection, Identification and Disposal Plan for approval, describing proposed actions regarding waste collection, control, identification, and disposal. Address disposal methods and requirements for hazardous and non-hazardous wastes.

3.5 COMPLIANCE TESTING

a. Compliance with the rubber removal requirements must be determined by direct testing within the designated work area.

b. Divide each work area designated for rubber removal into at least four equal zones for the purpose of compliance testing, as approved. Evaluate a minimum of seven random locations within each of the four equal zones.

c. Use a one square foot section of transparent material inscribed with a grid of 100 equal squares as a tool for quantitative measurement of the percent removal. Place the grid pattern on the pavement surface and count the squares which contain rubber deposits. Compare the percentage of rubber removed at each of the test locations to the tolerances described in paragraph ACCEPTANCE. Do not permit the number of squares containing rubber deposits in each of the randomly selected locations to exceed the allowed percentage in paragraph ACCEPTANCE. Reclean zones not meeting the required percentage.

3.6 DAMAGE REPAIR

Repair any damage to the pavement surface, joint, joint and crack seals, or other Government property caused during the performance of the work at

the Contractor's expense. Submit a damage repair plan to include methods and material to the Contracting Officer's Representative for approval prior to performance of the repairs. Complete the repairs within the performance period of the Contract.

-- End of Section --

SECTION 32 01 19.61

SEALING OF JOINTS IN RIGID PAVEMENT
11/19

PART 1 GENERAL

1.1 UNIT PRICES

1.1.1 Measurement

Determine the quantity of each sealing item to be paid for by actual measurement of the number of linear ft of in-place material that has been approved.

1.1.2 Payment

Make payment at the Contract unit bid prices per linear foot for the sealing items scheduled. Include the cost of labor, materials, and the use of equipment and tools required to complete the work in the unit bid price.

1.2 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM C603	(2014; R 2019) Standard Test Method for Extrusion Rate and Application Life of Elastomeric Sealants
ASTM C639	(2015; R 2020)Standard Test Method for Rheological (Flow) Properties of Elastomeric Sealants
ASTM C661	(2015) Indentation Hardness of Elastomeric-Type Sealants by Means of a Durometer
ASTM C679	(2015) Tack-Free Time of Elastomeric Sealants
ASTM C719	(2014; R 2019) Standard Test Method for Adhesion and Cohesion of Elastomeric Joint Sealants Under Cyclic Movement (Hockman Cycle)
ASTM C792	(2015; R 2020) Effects of Heat Aging on Weight Loss, Cracking, and Chalking of Elastomeric Sealants
ASTM C793	(2005; R 2017) Standard Test Method for Effects of Laboratory Accelerated Weathering on Elastomeric Joint Sealants

ASTM C920	(2018) Standard Specification for Elastomeric Joint Sealants
ASTM C1016	(2014) Standard Test Method for Determination of Water Absorption of Sealant Backing (Joint Filler) Material
ASTM C1193	(2013) Standard Guide for Use of Joint Sealants
ASTM D412	(2016) Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension
ASTM D789	(2015) Determination of Relative Viscosity and Moisture Content of Polyamide (PA)
ASTM D903	(1998; R 2017) Standard Test Method for Peel or Stripping Strength of Adhesive Bonds
ASTM D5249	(2010; R 2016) Standard Specification for Backer Material for Use with Cold-and Hot-Applied Joint Sealants in Portland-Cement Concrete and Asphalt Joints
ASTM D5893/D5893M	(2016) Standard Specification for Cold Applied, Single Component, Chemically Curing Silicone Joint Sealant for Portland Cement Concrete Pavements
ASTM D6690	(2021) Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Sealants

Submit catalog cuts, specifications, Safety Data Sheets and other information documenting conformance to Contract requirements.

Manufacturer's Recommendations

SD-04 Samples

Sealants

Provide for testing a 5-gal sample of each sealant with associated primer to the Contracting Officer a minimum of 60 days prior to its use on the job. Provide factory-sealed containers with a factory applied label showing the following information:

Name of sealant

Identification of component, or primer

Specification number and type

Manufacturer's name

Manufacturer's lot and batch number

Date of Manufacture (month and year)

Shelf life retest date (month and year)

List of hazardous components

Quantity of material in container (volume)

Storage instructions

Instructions for use

Blocking Media/Backup Materials

Backer Rod

Bond Breaking Tapes

SD-06 Test Reports

[Sealants

] SD-07 Certificates

Equipment List

SD-08 Manufacturer's Instructions

Sealants

Provide instructions that include, but not limited to: storage requirements, ambient temperature and humidity ranges, and moisture condition of joints for successful installation; requirements for preparation of joints; safe heating temperature; mixing instructions; installation equipment and procedures; application and disposal requirements; compatibility of sealant with filler material; curing requirements; and restrictions to be adhered to in order to reduce hazards to personnel or to the environment. Submit instructions at least 30 days prior to use.

1.4 QUALITY ASSURANCE

1.4.1 Test Requirements

Test the sealant and backup or separating material for conformance with the referenced material specification. Perform testing of the materials in an approved independent laboratory and submit certified copies of the test reports for approval 2 days prior to the use of the materials at the job site. Submit samples to be retained by the Government for possible future testing if the materials appear defective during or after application. Conformance with the requirements of the laboratory tests specified does not constitute final acceptance of the materials. Base

final acceptance on the performance of the in-place materials. Submit samples of the materials (sealant, primer if required, and backup material), in sufficient quantity for testing and approval 2 days prior to the beginning of work. Do not use material until it has been approved.

1.4.2 Trial Joint Sealant Installation

Prior to cleaning and sealing the joints for the entire project, prepare a test section at least 200 ft long using the specified materials and approved equipment, so as to demonstrate the proposed joint preparation and sealing of the types of joints in the project. Following the completion of the test section and before any other joint is sealed, inspect the test section to determine that the materials and installation meet the requirements specified. Inspect joint seal test section.[Provide written notice of deficiencies and required corrections or adjustments in the joint seal installation procedures.] Correct deficiencies and obtain approval of test section prior to installing joint seals. If it is determined that the materials or installation do not meet the requirements, remove the materials, and reclean and reseal the joints at no cost to the Government. Permit the test section meeting the requirements to be incorporated into the permanent work and paid for at the Contract unit price per linear foot for sealing items scheduled. Prepare and seal other joints in the manner approved for sealing the test section. Notify the Contracting Officer upon completion of the test section.

1.5 DELIVERY, STORAGE, AND HANDLING

Inspect materials delivered to the site for visible damage, and unload and store with a minimum of handling. Deliver joint materials in original sealed containers and protect from freezing or overheating. Provide jobsite storage facilities capable of maintaining temperature ranges within manufacturers recommendations.

1.6 ENVIRONMENTAL REQUIREMENTS

Do not proceed with work when weather conditions detrimentally affect the quality of cleaning joints or applying sealants. Proceed with joint preparation and sealing only when weather conditions are in accordance with manufacturer's instructions. Install joint sealant to dry surfaces and protect sealant and bond breakers from moisture.

1.7 TRAFFIC CONTROL

Do not permit vehicular or heavy equipment traffic on the pavement in the area of the joints being sealed during the protection and curing period of the sealant. Permit traffic on the pavement at the end of the curing period.

PART 2 PRODUCTS

2.1 SEALANTS

Use self leveling, non-acid curing sealant meeting the following requirements in accordance with ASTM C920 or ASTM C1193:

TEST	TEST METHOD	REQUIREMENTS
Weight Loss	ASTM C792 Modified (see Note 1 below)	10 percent max.
Flow	ASTM C639 (Type I)	Smooth and level
Extrusion Rate	ASTM C603	30 sec. max.
Tack Free Time	ASTM C679	5 hours max.
Hardness (Shore 00) (see Note 2 below)	ASTM C661	30 - 80
Tensile Stress at 150 Percent Elongation (see Note 2 below)	ASTM D412 (Die C)	30 psi max.
Percent Elongation (see Note 2 below)	ASTM D412 (Die C)	700 min.
Accelerated Weathering	ASTM C793	Pass 5000 hours
Bond and Movement Capability	ASTM C719	Pass 10 cycles at plus 50 percent movement (no adhesion or cohesion failure)
Peel	ASTM D903	Minimum 20 psi of width with at least 75 percent cohesive failure

NOTES:
Percent weight loss of wet (uncured) sample after placing in forced-draft oven maintained at 158 degrees plus 1 degree F for two hours.

Specimen cured 21 days at 73 degrees plus 1 degree F and 50 percent plus 5 percent humidity.

Jet fuel resistant sealant is required on the airfield aprons.

ACCELERATED WEATHERING FACTORY TEST REPORT. For the Accelerated Weathering test, in lieu of testing of actual sealant to be used on the project, it is permitted to submit a report of a factory test, performed within two years of Contract award.

2.2 PRIMERS

Use primers in accordance with the recommendation of the manufacturer.

2.3 BOND BREAKERS

2.3.1 Blocking Media/Backup Materials

Provide backup (joint filler) material that is a compressible, nonshrinking, nonstaining, nonabsorbing, nonreactive material with the sealant. Use backup material compliant with ASTM D5249. Use material with a melting point at least 5 degrees F greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789.Use material with a water absorption of not more than 5 percent of the sample weight when tested in accordance with ASTM C1016.

Use backup (joint filler) material that is 25 plus or minus 5 percent larger in diameter than the nominal width of the crack. Use blocking media consistent with the sealant manufacturer's installation instructions.

2.3.2 Bond Breaking Tapes

Provide a bond breaking tape or separating material that is a flexible, nonshrinkable, nonabsorbing, nonstaining, and nonreacting adhesive-backed tape. Use material with a melting point at least 5 degrees F greater than the pouring temperature of the sealant being used when tested in accordance with ASTM D789. Use bond breaker tape approximately 1/8 in wider than the nominal width of the joint and that does not bond to the sealant. Use bond breaking tape shall be consistent with the sealant manufacturer's installation instructions.

PART 3 EXECUTION

3.1 EXECUTING EQUIPMENT

Submit equipment list and description of the equipment to be used and a statement from the supplier of the sealant that the proposed equipment is acceptable for installing the specified sealant. Use equipment for heating, mixing, and installing seals in accordance with the instructions provided by the sealant manufacturer. Provide equipment, tools, and accessories necessary to clean existing joints and install liquid joint sealants. Maintain machines, tools, and other equipment in proper working condition. Submit a list of proposed equipment to be used in performance of construction work including descriptive data, 2 days prior to use on the project.

3.1.1 Joint Cleaning Equipment

3.1.1.1 Tractor-Mounted Routing and Plowing Tool

Use routing tools for removing old sealant from the joints, of such shape and dimensions and so mounted on the tractor that do not damage the sides of the joints. Use tools designed to be adjusted to remove the old material to varying depths and widths as required. Use equipment capable of maintaining accurate cutting depth and width control. Use a joint plow equipped with a spring or hydraulic mechanism to release pressure on the tool prior to spalling the concrete. Do not permit the use of V-shaped tools or rotary impact routing devices. Permit the use of hand-operated spindle routing devices to clean and enlarge random cracks.

3.1.1.2 Concrete Saw

Provide a self-propelled power saw, with water-cooled diamond or abrasive saw blades, for cutting joints to the depths and widths specified, for refacing joints, cleaning sawed joints where sandblasting does not provide a clean joint, widening, or deepening existing joints as specified without damaging the sides, bottom, or top edge of joints. Permit single or gang type blades with one or more blades mounted in tandem for fast cutting. Select saw adequately powered and sized to cut specified opening with not more than two passes of the saw through the joint.

3.1.1.3 Sandblasting Equipment

Include with the sandblasting equipment an air compressor, hose, and long-wearing venturi-type nozzle of proper size, shape and opening. Do not permit the maximum nozzle opening to exceed 1/4 in. Use a portable

air compressor capable of providing not less than 150 cfm and maintaininga line pressure of not less than 90 psi at the nozzle while in use. Demonstrate compressor capability, under job conditions, before approval. Use a compressor equipped with traps that maintain the compressed air freeof oil and water. Use a nozzle with an adjustable guide that holds the nozzle aligned with the joint approximately 1 in above the pavement surface. Adjust the height, angle of inclination and the size of the nozzle to secure satisfactory results.

3.1.1.4 Waterblasting Equipment

Include with the waterblasting equipment a trailer-mounted water tank, pumps, high-pressure hose, wand with safety release cutoff control, nozzle, and auxiliary water resupply equipment. Provide water tank and auxiliary resupply equipment of sufficient capacity to permit continuousoperations. Use a nozzle with an adjustable guide that holds the nozzlealigned with the joint approximately 1 in above the pavement surface. Adjust the height, angle of inclination and the size of the nozzle to obtain satisfactory results. Use a pressure gauge mounted at the pumpthat shows the pressure in psi at which the equipment is operating.

3.1.1.5 Air Compressor

Use a portable air compressor capable of operating the sandblasting equipment and capable of blowing out sand, water, dust adhering to sidewalls of concrete, and other objectionable materials from the joints.Use a compressor that provides air at a pressure not less than 90 psi anda minimum rate of 150 cubic ft of air per minute at the nozzles and free of oil.

3.1.1.6 Vacuum Sweeper

Use a self-propelled, vacuum pickup sweeper capable of completely removingloose sand, water, joint material, and debris from pavement surface.

3.1.1.7 Hand Tools

Permit the use of hand tools, such as brooms and chisels, when approved, for removing defective sealant from a crack and repairing or cleaning thecrack faces.

3.1.2 Sealing Equipment

Use joint sealing equipment of a type required by the sealant manufacturer's installation instructions. Use equipment capable of installing sealant to the depths, widths and tolerances indicated. Do notproceed with joint sealing when malfunctions are noted until the malfunctions are corrected.

3.1.2.1 Cold-Applied, Single-Component Sealing Equipment

Use equipment for installing ASTM D5893/D5893M single component joint sealants that consists of an extrusion pump, air compressor, following plate, hoses, and nozzle for transferring the sealant from the storage container into the joint opening. Use a nozzle with dimensions that allows the tip of the nozzle to extend into the joint to allow sealing from the bottom of the joint to the top. Maintain the initially approved equipment in good working condition, serviced in accordance with the

supplier's instructions, and unaltered in any way without obtaining prior approval. Use lined hoses and seals to prevent moisture penetration and withstand pumping pressures. Use equipment free of contamination from previously used or other type sealant. Permit use of small hand-held air-powered equipment (i.e., caulking guns) for small applications.

3.1.2.2 Hot-Poured Sealing Equipment

Use mobile unit applicators equipped with a double-boiler, agitator-type kettle with an oil medium in the outer space for heat transfer for eating and installing ASTM D6690 joint sealant materials; a direct-connected pressure-type extruding device with a nozzle shaped for inserting in the joint to be filled; positive temperature devices for controlling the temperature of the transfer oil and sealant; and a recording thermometer for indicating the temperature of the sealant. Use an applicator unit designed so that the sealant circulates through the delivery hose and returns to the inner kettle when not in use.

3.2 PREPARATION OF JOINTS

Unless otherwise indicated, remove existing material, saw, clean and reseal joints. Do not proceed with final cleaning operations by more thanone working day in advance of sealant. Clean joints by removing existing joint sealing compound, bond-breakers, dirt, laitance, curing compound, filler, and protrusions of hardened concrete from the sides and upper edges of the joint space to be sealed and other foreign material with the equipment. Do not permit cleaning procedures that damage joints or previously repaired patches by chipping or spalling. Remove existing sealant to the required depth. Precise shape and size of existing joints vary, and conditions of joint walls and edges vary and include but are notlimited to rounding, square edges, sloping, chips, voids, depressions, andprojections.

3.2.1 Sawing

3.2.1.1 Refacing of Joints

Accomplish refacing of joints using a concrete saw as specified in paragraph EQUIPMENT to saw through sawed and filler-type joints to loosenand remove material until the joint is clean and open to the full specified width and depth. Provide exposure of newly clean concrete through removal. Remove burrs and irregularities from sides of joint faces. Stiffen the blade with a sufficient number of dummy (used) bladesor washers. Clean, immediately following the sawing operation, the jointopening using a water jet to remove saw cuttings and debris and adjacent concrete surface. Protect adjacent previously cleaned joint spaces from receiving water and debris during the cleaning operation.

a. Joint Widening (Except Expansion Joints): Saw joints having grooves less than 3/8 in wide and less than 1 in deep to a minimum width of [1/2]in and to the minimum depth, [of] [1 in].

3.2.1.2 Refacing of Random Cracks

Accomplish sawing of the cracks using a power-driven concrete saw as specified in paragraph EQUIPMENT. Use a saw blade 6 in or less in diameter to enable the saw to follow the trace of the crack. Stiffen theblade with dummy (or used) blades or washers. Immediately following the sawing operation, clean the crack opening using a water jet to

remove sawcuttings and debris.

3.2.2 Final Cleaning of Joints

3.2.2.1 Sandblasting

Following removal of existing sealant, and sawing, and immediately before resealing, clean newly exposed concrete joint faces and pavement surface extending to a minimum of 1/2 in up to 2 in from each joint edge by sandblasting until concrete surfaces in the joint space are free of sealants, dust, dirt, water and other foreign materials that prevent bonding of new sealants to the concrete.Use sand particles of the proper size and quality for the work. Perform sandblasting with specified nozzles, air compressor, and other appurtenant equipment. Position nozzles to clean the joint faces. Make at least two passes; one for each joint face. Make as many passes as required for proper cleaning. Immediately prior to sealing the joint, blow out the joint spaces with compressed air until completely free of sand, water, and dust. Install joint sealants to dry joints. Replace expansion joint filler material damaged in performing the work with new materials of the same type and dimensions as the existing material, or with appropriate blocking media.

3.2.3 Bond Breaker

At the time the joints receive the final cleaning and are dry, install bond breaker material as indicated with a steel wheel or other approveddevice.

3.2.3.1 Blocking Media (Backer Rod) (Except for Expansion Joints)

When the joint opening is of a greater depth than indicated for the sealant depth, plug or seal off the lower portion of the joint opening using a blocking media/back-up material to prevent the entrance of the sealant below the specified depth. Take care to ensure that the blockingmedia/backup material is placed at the specified depth and is not stretched or twisted during installation.

3.2.3.2 Bond Breaking Tape

Where inserts or filler materials contain bitumen, or the depth of the joint opening does not allow for the use of a backup material, insert a bond breaker separating tape to prevent incompatibility with the filler materials and three-sided adhesion of the sealant. Bond the tape to thebottom of the joint opening to prevent it from floating up into the new sealant.

3.2.4 Rate of Progress of Joint Preparation

Limit the stages of joint preparation, including sandblasting, air pressure cleaning and placing of the back-up material to only that linealfootage that can be sealed during the same day.

3.2.5 Disposal of Debris

Sweep pavement surface to remove excess joint material, dirt, water, sand,and other debris by vacuum sweepers or hand brooms. Remove the debris immediately to a designated area.

3.3 PREPARATION OF SEALANT

3.3.1 Hot-Poured Sealant

Heat hot-poured sealing materials in accordance with ASTM D6690and with safe heating temperature ranges recommended by the manufacturer. Withdraw and waste sealant that has been overheated or subjected to heating forover 3 hours or that remain in the applicator at the end of the day's operation. Heat sealant in specified equipment.

3.3.2 Single-Component, Cold-Applied Sealants

Inspect the ASTM D5893/D5893Msealant and containers prior to use. Reject materials that contain water, hard caking of any separated constituents, nonreversible jell, or materials that are otherwise unsatisfactory. Do not reject sealants that exhibit settlement of constituents in a soft mass that can be readily and uniformly remixed in the field with simple tools.

3.4 INSTALLATION OF SEALANT

3.4.1 Time of Application

After approval of the test section, seal joints immediately following final cleaning and placing of bond breakers. Commence sealing joints whenwalls are dust free and dry, and when weather conditions meet sealant manufacturer's instructions. If the above conditions cannot be met, or when rain interrupts sealing operations, reclean and permit the joints to dry prior to installing the sealant.

3.4.2 Sealing Joints

Do not install joint sealant until joints to be sealed have been inspectedand approved. Install bond breaker just prior to pouring sealant. Fill the joints with sealant from bottom up until joints are uniformly filled solid from bottom to top using the specified equipment for the type of sealant required. Fill joints to 1/8 in plus or minus 1/16 in below top of pavement, and without formation of voids or entrapped air. Do not permit gravity methods or pouring pots to be used to install the sealant material. Except as otherwise permitted, tool the sealant immediately after application to provide firm contact with the joint walls and to formthe indicated sealant profile below the pavement surface. Remove excess sealant that has been inadvertently spilled on the pavement surface. Do not permit traffic over newly sealed pavement until authorized. When a primer is recommended by the manufacturer, apply it evenly to the joint faces in accordance with the manufacturer's recommendations. Check sealedjoints frequently to ensure that newly installed sealant is cured to a tack-free condition within the specified time. Protect new sealant from rain during curing period.

3.5 INSPECTION/FIELD QUALITY CONTROL

3.5.1 Joint Cleaning

Inspect joints during the cleaning process to correct improper equipment and cleaning techniques that damage the concrete pavement in any manner. Approve cleaned joints prior to installation of the separating or back-upmaterial and joint sealant.

3.5.2 Sampling Sealant

Obtain a one gal sample of each type of sealant on the project from

material used for each 10,000 linear ft or less of joints sealed. Store samples according to sealant manufacturer's instructions. Retain samplesuntil final acceptance of the work.

3.5.3 Sealant Application Equipment

Inspect the application equipment to ensure conformance to temperature requirements, proper proportioning and mixing (if two-component sealant) and proper installation. Suspend operations if there is evidences of bubbling, improper installation, or failure to cure or set until causes ofthe deficiencies are determined and corrected.

3.5.4 Joint Sealant

Inspect the joint sealant for proper rate of cure and set, bonding to the joint walls, cohesive separation within the sealant, reversion to liquid, entrapped air and voids. Remove sealants exhibiting these deficiencies prior to the final acceptance of the project from the joint, wasted, and replace at no additional cost to the Government. Obtain approval for eachjoint seal installation.

3.6 ACCEPTANCE

Reject sealer that fails to cure properly, or fails to bond to joint walls, or reverts to the uncured state, or fails in cohesion, or showsexcessive air voids, blisters, surface defects, swelling, or other deficiencies, or is not properly recessed within indicated tolerances. Remove rejected sealer and reclean and reseal joints. Perform removal andreseal work promptly by and at the expense of the Contractor.

3.7 CLEAN-UP

Upon completion of the project, remove unused materials from the site andleave the pavement in a clean condition.

-- End of Section --

SECTION 32 01 29.61

PARTIAL DEPTH PATCHING OF RIGID PAVING
05/17, CHG 1: 08/17

PART 1 GENERAL

1.1 UNIT PRICES

1.1.1 Measurement

The quantity of concrete and proprietary repair products to be paid for is the number of square feet placed in the completed and accepted patched areas.

1.1.2 Payment

The quantity of concrete and proprietary repair products, measured as specified, is paid for at the contract unit price. The unit price includes full compensation for furnishing labor; materials; and for performing work involved in patching the pavements as specified.

1.2 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM C31/C31M	(2019a) Standard Practice for Making and Curing Concrete Test Specimens in the Field
ASTM C33/C33M	(2018) Standard Specification for Concrete Aggregates
ASTM C39/C39M	(2020) Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
ASTM C94/C94M	(2020) Standard Specification for Ready-Mixed Concrete
ASTM C131/C131M	(2020) Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM C136/C136M	(2019) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
ASTM C143/C143M	(2020) Standard Test Method for Slump of Hydraulic-Cement Concrete
ASTM C150/C150M	(2020) Standard Specification for Portland Cement

ASTM C192/C192M	(2019) Standard Practice for Making and Curing Concrete Test Specimens in the Laboratory
ASTM C231/C231M	(2017a) Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
ASTM C260/C260M	(2010a; R 2016) Standard Specification for Air-Entraining Admixtures for Concrete
ASTM C267	(2020) Standard Test Methods for Chemical Resistance of Mortars, Grouts, and Monolithic Surfacings and Polymer Concretes
ASTM C469/C469M	(2014) Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression
ASTM C494/C494M	(2019) Standard Specification for Chemical Admixtures for Concrete
ASTM C531	(2018) Standard Test Method for Linear Shrinkage and Coefficient of Thermal Expansion of Chemical-Resistant Mortars, Grouts, and Monolithic Surfacings, and Polymer Concretes
ASTM C579	(2018) Standard Test Methods for Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
ASTM C580	(2018) Standard Test Method for Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes
ASTM C617/C617M	(2015) Standard Practice for Capping Cylindrical Concrete Specimens
ASTM C666/C666M	(2015) Resistance of Concrete to Rapid Freezing and Thawing
ASTM C685/C685M	(2017) Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing
ASTM C881/C881M	(2020a) Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C882/C882M	(2020) Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear
ASTM C884/C884M	(2016) Standard Test Method for Thermal Compatibility between Concrete and Epoxy-Resin Overlay

ASTM C1260	(2014) Standard Test Method for Potential Alkali Reactivity of Aggregates (Mortar-Bar Method)
ASTM C1581/C1581M	(2018) Standard Test Method for Determining Age at Cracking and Induced Tensile Stress Characteristics of Mortar and Concrete under Restrained Shrinkage
ASTM C1602/C1602M	(2018) Standard Specification for Mixing Water Used in Production of Hydraulic Cement Concrete
ASTM D75/D75M	(2019) Standard Practice for Sampling Aggregates
ASTM D1751	(2004; E 2013; R 2013) Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)
ASTM D1752	(2018) Standard Specification for Preformed Sponge Rubber, Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction
ASTM D5023	(2015) Standard Test Method for Plastics: Dynamic Mechanical Properties: In Flexure (Three-Point Bending)

U.S. ARMY CORPS OF ENGINEERS (USACE)

COE CRD-C 300	(1990) Specifications for Membrane-Forming Compounds for Curing Concrete

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910	Occupational Safety and Health Standards

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

[Shop Drawings; G]

SD-03 Product Data

Concrete Mix Design; G
Rigid Proprietary Repair Products; G
Polymeric Proprietary Repair Products; G
Pigmented Liquid Membrane-Forming Compound; G
Aggregate Service Record

SD-04 Samples

Absorbent Curing Material; G
Joint Filler; G
Joint Sealant; G

SD-05 Design Data

Concrete Mix Design; G

SD-06 Test Reports

Laboratory Test Results
Aggregate Gradation
Cement
Concrete Slump
Concrete Air Content
Concrete Compressive Strength (cylinder)
Mixer Calibration and Efficiency
Concrete Uniformity
Bond Strength
Polymeric Proprietary Repair Products; G

SD-07 Certificates

Cement
Aggregate
Admixtures
Absorbent curing material
Pigmented Liquid Membrane-Forming Compound

Joint Filler
Joint Sealant

1.4 QUALITY ASSURANCE

1.4.1 Preconstruction Testing Of Materials

Submit proposed concrete mix design at least 30 days prior to placement. Provide mix design evaluation and certification by a Government approved engineering testing laboratory, and indicate the weight of each ingredient of the mixture, aggregate gradation, slump, air content, water-cement ratio, time of trafficking and 3-day and 28-day compressive strength test results. Include a complete list of materials including admixtures and applicable reference specifications. Place no concrete prior to Government approval of the proposed mix design. No deviation from the approved mix design is permitted without prior Contracting Officer approval.

Within 24 hours of physical completion of laboratory testing, submit copies of laboratory test results for Contracting Officer approval.

1.4.1.1 Cement

Test cement as prescribed in the referenced specification under which it is furnished. Cement may be accepted on the basis of mill tests and the manufacturer's certification of compliance with the specification.

1.4.1.2 Aggregate

Take aggregate gradation samples for laboratory testing in conformance with ASTM D75/D75M.

1.4.1.3 Proprietary Repair Products

At least 30 days before the repair material is used, submit certified copies of test results for the specific lots or batches to be used on the project, not more than 6 months old prior to use in the work.

Manufacturer's certifications may be submitted rather than laboratory test results for proprietary repair products. Include in the submittals details for substrate preparation, mixing, placing, finishing, curing and testing of the material, as applicable. Include a minimum of three case histories documenting the use of the product in a similar freeze-thaw environment and pavement condition. Certify compliance with the appropriate specification referenced herein. Place no materials without prior approval from the Contracting Officer.

1.4.2 Equipment; Approval, Maintenance, and Safety

Provide and use only dependable and well maintained equipment that is appropriate to accomplish the work specified. Allow sufficient time for assembly of equipment requiring such at the work site to permit thorough inspection, calibration of weighing and measuring devices, adjustment of parts, and the making of any repairs that may be required prior to the start of work.

a. Submit volumetric mixer calibration and efficiency test results in accordance with the requirements of ASTM C685/C685M within 6 months of concrete placement. If applicable, submit concrete uniformity test data for the first load of the ready-mixed concrete to be used as the repair material.

b. Provide Safety Data Sheets (SDS) and Personal Protection Equipment (PPE) per 29 CFR 1910.

1.5 DELIVERY, STORAGE, AND HANDLING

1.5.1 Cement

Deliver cement in bulk or in suitable bags used for packaging cements and store in a manner to prevent absorption of moisture.

1.5.2 Aggregate

Deliver, handle, and store aggregates in a manner to avoid breakage, segregation, inter-mingling or contamination by foreign materials.

1.5.3 Other Materials

Deliver epoxy-resin, chemical admixtures and proprietary repair products to the site in such manner as to avoid damage or loss. Provide storage areas in a windowless and weatherproof, but ventilated, insulated noncombustible building, with provision nearby for conditioning the material to 70 to 85 degrees F for a period of 48 hours prior to use. Keep the ambient temperature in the storage area no higher than 100 degrees F.

1.6 Project/Site Conditions

Do not place concrete or other repair products when weather conditions detrimentally affect the quality of the finished product. Do not place concrete when the air temperature is below 40 degrees F in the shade. When air temperature is likely to exceed 90 degrees F, provide concrete having a temperature not exceeding 90 degrees F when deposited. Keep the surface of placed concrete damp with a water fog until the approved curing medium is applied. Take similar precautions for placing other repair products, as directed by the product vendor's instructions. Do not place concrete or other repair products if the weather forecast indicates that the air temperature is expected to drop below 40 degrees F over the next 7 days.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Coarse Aggregate

2.1.1.1 Composition

Provide coarse aggregate consisting of gravel, crushed gravel, crushed stone, or a combination thereof.

2.1.1.2 Quality

Provide aggregate , as delivered to the mixers, consisting of clean, hard, unweathered, and uncoated particles. Remove dust and other coatings from the coarse aggregate by adequate washing. Meet the requirements of ASTM C33/C33M, Class 5S. Provide aggregates with an abrasion loss, when tested in accordance with ASTM C131/C131M, not exceeding 40 percent; the maximum allowable percentage for clay lumps and friable particles is 1.5 percent. Provide documentation of aggregate conforming to ASTM C136/C136M.

2.1.1.3 Particle Shape

Provide spherical or cubical shaped coarse aggregate particles. Remove all course aggregates with the largest dimension that is equal to or larger than three times the smallest dimension.

2.1.1.4 Gradation

The maximum nominal size of the coarse aggregate is 1/2 inch. Provide well graded coarse aggregate conforming to gradation size 7 in Table 3 of ASTM C33/C33M when tested in accordance with ASTM C136/C136M as delivered to the batching hoppers.

2.1.1.5 Alkali Silica Reactivity

Evaluate coarse aggregate in accordance with Section 32 13 14.13, paragraph: Alkali-Silica Reactivity, with mitigation of reactive aggregate in accordance with the referenced paragraph.

For proprietary repair products, provide documentation from the supplier that the repair product combination with the aggregates selected will not exhibit alkali-silica reactivity.

2.1.2 Fine Aggregate

2.1.2.1 Composition

Provide fine aggregate consisting of either natural sand, manufactured sand, or a combination of natural and manufactured sand, and composed of clean, hard, durable particles; conforming to Table 2 of ASTM C33/C33M.

2.1.2.2 Particle Shape

Ensure particles of the fine aggregate are generally spherical or cubical in shape.

2.1.2.3 Grading

Provide fine aggregate as delivered to the mixer conforming to the gradation in Table 1 of ASTM C33/C33M when tested in accordance with ASTM C136/C136M.

In addition, provide fine aggregate, as delivered to the mixer, with a fineness modulus of not less than 2.40 nor more than 2.90, when calculated in accordance with ASTM C136/C136M.

2.1.2.4 Alkali Silica Reactivity

Evaluate and test fine aggregate to be used in all concrete for alkali-silica reactivity in accordance with Paragraph ALKALI SILICA REACTIVITY.

2.1.3 Admixtures

2.1.3.1 Air-Entraining Admixtures

Provide air-entraining admixtures conforming to ASTM C260/C260M.

2.1.3.2 Chemical Admixtures

ASTM C494/C494M. Where not shown or specified, the use of admixtures is subject to written approval of the Contracting Officer.

2.1.4 Cement

Provide portland cement conforming to ASTM C150/C150M. Provide low alkali cement if the proposed fine or coarse aggregate are found to have greater than 0.08 percent expansion when tested in accordance with ASTM C1260, as per paragraph: Alkali Silica Reactivity.

2.1.4.1 Portland Cement ConcreteMix Design

Design the concrete mixture to produce a minimum compressive strength of 3,000 psi at 72 hrs from the time the material is screeded and finished in the repair area and a minimum compressive strength of 5,000 psi at 28 days of age, determined in conformance with ASTM C39/C39M and ASTM C192/C192M, using standard 6 by 12 inch cylinder specimens; and providing an air content by volume of 6 percent, plus or minus 1.5 percent, based on measurements made on concrete immediately after discharge from the mixer

in conformance with ASTM C231/C231M.

The allowable range of slump is 1/2 to 2 inches when tested in accordance with ASTM C143/C143M. To minimize drying shrinkage, the maximum water-cement ratio by weight is limited to 0.45.

2.1.5 Curing Materials

2.1.5.1 Pigmented Liquid Membrane-Forming Compound

Provide pigmented liquid membrane-forming compound conforming to COE CRD-C 300.

2.1.6 Bonding-Agents

2.1.6.1 Epoxy-Resin

Provide two component epoxy-resin material formulated to meet the requirements of ASTM C881/C881M, Type III, grade and class as approved, for use in bond coat applications and as a component of epoxy-resin concrete or mortar.

Mix epoxy-resin grout components in the proportions recommended by the manufacturer. Condition the components to 70 to 85 degrees F for 48 hours prior to mixing. Mix the two epoxy components with a power-driven, explosion-proof stirring device in a metal or polyethylene container having a hemispherical bottom. Add the curing-agent component gradually to the epoxy-resin component with constant stirring until a uniform mixture is obtained. Stir such that the amount of entrained air is a minimum.

2.1.7 Joint Sealant

Provide joint sealant as specified in Section 32 01 19.61 SEALING OF JOINTS IN RIGID PAVING.

2.1.8 Joint Filler

Provide joint filler material conforming to ASTM D1751 or ASTM D1752, Type II[or 100 percent recycled material meeting ASTM D1752, subparagraphs 5.1 to 5.4].

2.1.9 Water

Test water that is not approved by Public Health authorities for domestic consumption in accordance with ASTM C1602/C1602M and only use water that meets the acceptance criteria of Table 1 or 2 of ASTM C1602/C1602M or provide documentation that the water does meet the acceptance criteria of Table 2 of ASTM C1602/C1602M.

2.1.10 RigidProprietary Repair Products

A rigid proprietary repair product is defined as a rigid material in its hardened state with an elastic modulus greater than 1,000,000 psi. For partial depth repairs do not extend the product with aggregates that are or can be retained on a 3/4 inch sieve. Test the product in accordance with the following test series. Replicate each test on three specimens. Report all three results for each test and use the average value for comparison with the specification requirements. Report the curing

conditions for each test type.

2.1.10.1 Compressive Strength

Cast 3 by 6 inch cylinder specimens in accordance with ASTM C192/C192M and test in accordance with ASTM C39/C39M, using bonded or unbonded caps, after 72 hours and 3 day curing period. Use only materials with a minimum compressive strength of 3,000 psi at the time traffic is returned to the repair.

2.1.10.2 Bond Strength

Cast 3 by 6 inch cylinder specimens and test in accordance with ASTM C882/C882M. Cast the candidate material against a 30-degree wedge specimen consisting of the candidate material itself or an ordinary portland cement mixture. Test specimens, using bonded caps, after 1 day curing period. For a bond consisting of the candidate material bonded to OPC mortar, a minimum bond strength of 850 psi is required at 1 day of age. For a bond consisting of the candidate material bonded to itself, a minimum bond strength of 1,000 psi is required at 1 day of age.

2.1.10.3 Modulus of Elasticity

Cast 6 by 12 inch cylinder specimens in accordance with ASTM C192/C192M and test in accordance with ASTM C469/C469M, using bonded caps, after 3 day curing period. A maximum chord modulus of elasticity of 4,000,000 psi is required at 3 days of age.

2.1.10.4 Coefficient of Thermal Expansion

Cast 1 by 1 by 10-inches prismatic bar specimens and test in accordance with ASTM C531, after 3 days curing period. Use repair product with a coefficient not exceeding 7 by 10^{-6} inch per inch per degree F at 3 days of age. Also, determine the coefficient of thermal expansion of the existing pavement concrete by testing a core or by estimating based on material composition. Use a repair product with a coefficient of expansion within 20 percent of the coefficient of the existing pavement concrete.

2.1.10.5 Shrinkage Potential

Cast 13 inch I.D. by 16 inch O.D. by 6 inch tall restrained toroidal specimens and test in accordance with ASTM C1581/C1581M. Start measuring strain after completion of casting. Use repair products with shrinkage not exceeding 40 microstrain is required at 14 days of age. No cracking is permitted at 28 days of age.

2.1.10.6 Freeze-Thaw Resistance

Use aggregate with a satisfactory service record in freezing and thawing environments of at least 5 years of sucessful service in three concrete paving projects. Provide aggregate service record certified by an independent third party professional engineer, petrographer, or concrete materials engineer along with their resume. Otherwise, cast prismatic specimens in accordance with ASTM C192/C192M and test in accordance with ASTM C666/C666M, Procedure A. Begin freeze-thaw testing after specimens have been immersed in saturated lime-water for 3 days. Report the Durability Factor (DF) and the number of cycles to failure.

2.1.11 Polymeric Proprietary Repair Products

Polymeric repair materials include epoxies, methacrylates, and urethanes with or without aggregate. Use only materials that have not reached the manufacturer's published shelf life for the material lot. Ship and store materials in areas with temperature, humidity, solar exposure and packaging integrity in accordance with manufacturer's recommendations. Use and apply primers, bond agents or bond adhesives, in accordance with manufacturer's recommendations. Procure, prepare and use aggregates and fillers in accordance with manufacturer's recommendations.

2.1.11.1 Chemical Reistance

Prepare two sets of three 2-inch cubes cured at 73 Degrees F for seven days. Measure and weigh the specimens before submerging the test solvent, JP8 fuel at 150 Degrees F for 24 hours in accordance with ASTM C267 one set of three specimen. Test compressive strength of the other three specimens for comparison. Measure, test, record and report the weight change and loss of compressive strength. Use only materials that have less than or equal to a 20 percent reduction in the average compressive strength of the three immersed sample compared to the average compressive strength of the non-immersed samples. Use only materials that have a change in weight of 10 percent or less.

2.1.11.2 Compressive Strength

Determine, record and report the compressive strength of the material using procedures contained in ASTM C579. Prepare three sets of three samples, one set per curing interval. Prepare the sample so that no sample dimension is less 2 in or 5 times the maximum aggregate size. The maximum aggregate size is the smallest standard sieve size through which 100 percent or the aggregate will pass. Cure the samples at 73 Degrees F. Test the first set of specimens after a curing period of one hour and a second set after a curing period of four hours. Test the third set of samples at the manufacturer’s published cure or trafficability time for the product at 73 Degrees F. Use only those materials which exceed 500 psi at the time of trafficking of the repair.

2.1.11.3 Flexural Strength and Modulus of Elasticity

Determine, record and report the Flexural strength and tangent modulus of elasticity of the material using procedures contained in ASTM C580 using three-point bending. Prepare three sets of three beam samples, one set per curing interval. Prepare the sample so that no sample dimension is less 2 in or 5 times the maximum aggregate size. The maximum aggregate size is the smallest standard sieve size through which 100 percent of the aggregate will pass. Cure the samples at 73 Degrees F. Test the first set of specimens after a curing period of one hour and a second set after a curing period of four hours. Test the third set of samples at the manufacturer’s published cure or trafficability time for the product at C 73 Degrees F. Use only those materials with a flexural strength which exceeds 350 psi and a tangent modulus greater than 5,000 psi at the time of trafficking of the repair.

2.1.11.4 Bond Strength by Slant Shear

Test, determine, record and report the material bond strength using ASTM C882/C882M, with the following modification. In lieu of the specified testing using a layer of material sandwiched between two PCC

dummies, prepare samples which contain one PCC dummy that represents half of the specimen with repair material use to produce the other half of the sample. Cast 3 by 6 inch cylinder specimens by casting the polymeric repair material against a 30-degree wedge specimen consisting of an ordinary portland cement mixture. Prepare three sets of three cylinder samples, one set per curing interval. Cure the samples at 73 Degrees F. After curing, cap the cylinders according to ASTM C617/C617M. Test the composite cylinder in compression causing a shear failure at the bond line. Test one set of specimens after a curing period of four hours. Test another set after a curing period of 24 hours. Test the other set of samples at the manufacturer's published cure or trafficability time for the product at 73 Degrees F. Use only those materials with a calculated bond strength in excess of 500 psi at the time of traffic.

2.1.11.5 Thermal Compatibility

In accordance with ASTM C884/C884M, prepare two samples by first casting and curing for 28 days two PCC blocks, each measuring 12 in x 12 in x 3 in. After 28 days of curing, apply an overlay of the repair material on each of these two PCC blocks measuring 0.5 in thick. Cure each block for seven days at 73 Degrees F. Expose the composite specimens to five freeze-thaw cycles, each cycle consisting of exposure to -6 Degrees F for 24 hours then 73 Degrees F for 24 hours. Use only those materials that do not have any signs of delamination in either specimen.

2.1.11.6 Dynamic Mechanical Analysis (DMA)

Prepare three sample in accordance with ASTM D5023 using the largest samples that will fit in the test apparatus. Prepare the sample without aggregates if possible. Test, determine, record and report the change in Modulus of Elasticity as a function of temperature at intervals of 5 Degrees C 10 Degrees F . Report any melting of the repair material over the selected temperature range. Test the pavement repair material from -60 Degrees F to 400 Degrees F. Use a sinusoidal three-point bending load on the specimen at a frequency of 0.1 second with a maximum strain of 0.01 percent. Increase the temperature linearly at a rate of 3 Degrees C per minute. Record the storage modulus (modulus of elasticity), loss modulus, and tangent delta as a function of temperature. Test the specimens after curing the specimens for seven days at 73 Degrees F. Report the temperature at which the storage modulus value decreases to 50 percent of the modulus value at 73 Degrees F. Report if the sample melts or combusts at temperatures less than or equal to 400 Degrees F. Use only materials which have 50 percent reduction in modulus at temperatures in excess of 150 Degrees F. Use only materials which do not melt or combust at temperatures less than or equal to 400 Degrees F.

2.1.12 Sand-Cement Mortar for Filling Small Popouts

Sand-cement mortars are not permitted for spall repair. For small popouts, an approved epoxy may the used as the repair material.

PART 3 EXECUTION

3.1 PATCH MATERIAL SELECTION

Use Portland cement concrete (PCC) or approved proprietary product for repair areas more than 600 cubic inches in volume after unsound concrete is removed. Use Portland cement mortar for cavities between 50 and 600 cubic inches in size after unsound concrete is removed.

3.2 BATCHING, MIXING AND PROPORTIONING OF CONCRETE REPAIR MATERIAL

Provide facilities and equipment for the accurate measurement and control of each of the materials entering the concrete, mortar, and grout. Provide free access for the Contracting Officer to the batching and mixing plant at all times. Provide mixing equipment capable of combining the aggregate, cement, admixture, and water into a uniform mixture and discharging this mixture without segregation. The concrete mixing equipment is to meet the applicable requirements of ASTM C94/C94M.

The use of volumetric batching and continous mixing is acceptable, provided all operations are in accordance with ASTM C685/C685M.

3.2.1 Equipment

Assemble dependable and operable equipment, allowing time for thorough inspection, calibration of weighing and measuring devices, adjustment of parts, and the making of any repairs that may be required prior to final approval and the commencement of work. Maintain the equipment in good working condition. Use only equipment that can ensure the water to cement ratio is within 2 percent of required.

3.2.2 Conveying

Convey concrete from mixer to repair area as rapidly as practible by methods which prevent segregation or loss of ingredients.

3.2.3 Facilities for Sampling

Provide facilities for readily obtaining representative samples of aggregate and concrete for test purposes. Furnish necessary platforms, tools, and equipment for obtaining samples.

3.2.4 Concrete Mix Proportions

Use proportions of concrete materials entering into the concrete mixture in accordance with the approved mix design. Revise the mix design whenever necessary to maintain the workability, strength, and standard of quality required, and to meet the varying conditions encountered during the construction; however, make no changes without prior approval. The water to cement ratio cannot exceed 0.45 at any time.

3.2.5 Measurement

Provide equipment necessary to measure and control the amount of each material in each batch of concrete. Weigh bulk cement. Cement in unopened bags as packed by the manufacturer may be used without weighing. One bag of portland cement is considered as weighing kg 94 pounds.

Measure mixing water and air-entraining admixtures by volume or by weight. Consider one gallon of water as weighing 8.33 pounds.

Use only equipment, sensors and measurement controls that ensure the water to cement ratio is accurately controlled within 2 percent of required.

3.2.6 Workability

Maintain the slump of the concrete at the lowest practicable value, not

exceeding the value specified in Paragraph PORTLAND CEMENT CONCRETE MIX DESIGN or the manufacturer's recommendation when proprietary repair materials are used.

3.3 PREPARATION OF EXISTING PAVEMENT

3.3.1 Preparation of Existing Surfaces

In the area to be patched, [except popouts,] remove existing concrete to a minimum depth of 2 inches below the pavement surface adjacent to spalls and to such additional depth where necessary to expose a surface of sound, unweathered, and non-delaminated concrete that is not contaminated by sealants, oils, greases, or deicing salts or solutions. Make a vertical perimeter saw cut at least 2 inches deep and at least 2 inches outside of the area needing repair. Accomplish concrete removal in spalled areas with light, hand-held, high-frequency chipping hammers weighing not more than 30 pounds or other approved hand tools. Do not use jack hammers weighing more than 30 pounds and do not use pavement breaker devices mounted on or pulled by mobile equipment. Use of milling devices such as a cold planer are allowed but require augmentation with concrete saws and jack hammers to generate the required vertical surfaces on edges of the repair which are milled at the curvature of the drum.

Clean the repair area surface by sandblasting and waterblasting, blowing with compressed air, sweeping, and vacuums. Use sandblasting and waterblasting to remove all traces of sealer, oils, grease, rust, and other contaminants.

3.3.2 Preparation of Joints Adjacent to Spalls

Remove existing joint sealing and joint filler materials. Saw as indicated and install insert board, cut to appropriate dimensions, to prevent contact between new patch material and existing concrete at the adjacent joint face. Use insert board with a thickness equal to or slightly larger than the joint width (groove) adjacent to the repair material, as indicated on the drawings. Install a bead of approved caulking material to preclude new patching material from getting around insert and into the joint from the sides and bottom of the insert. Clean up any caulking material accidentally deposited on the prepared spall surface. Repair any sawcut overcuts with an approved epoxy repair material.

3.3.3 Disposal of Debris

Sweep pavement surface to remove excess joint material, dirt, water, sand, and other debris using vacuum sweepers or hand brooms. Remove the debris immediately in accordance with Section 02 41 00 DEMOLITION.

3.3.4 Bonding Agent, Adhesive or Coat

Prior to placing concrete, wash the previously prepared surfaces with a high pressure water jet followed by an air jet to remove free water on the repair surface.

3.3.4.1 Epoxy-Resin

Limit epoxy-resin bonding coat to use on patches with a surface area of less than 2 feet square. Coat the clean and dry surface, including sawed faces, with a 20 to 40 mil thick film of the epoxy-resin bonding coat

Place the epoxy-resin bonding coat in one application, just prior to concrete placement, with the use of mechanical combination, mixing and spraying equipment, or two coat application with stiff brushes. Scrub the first brush coat into the concrete surface, followed by an additional brush coat to obtain the required thickness. Apply the final coat just prior to placement of the concrete.

3.3.4.2 Proprietary Repair Products

Apply in accordance with the manufacturer's written instructions.

3.3.5 Popout Repair

Popouts, as used herein, are pavement surface defects caused by deterioration of unsatisfactory coarse aggregate, decaying of organic material such as wood or roots, mechanical accidents, or other reasons. Most popouts are indicated on the drawings by average diameter but the actual surface configuration will vary from circular to polygonal. Repair popouts as indicated using [epoxy mortar] [approved proprietary repair material]. Clean popout cavities of all dirt and contaminants prior to filling. As indicated on drawings, prepare popout areas by [chipping] [overcoring surface defects in] the concrete to eliminate feather edging of the mortar or concrete repair material. Core out the distressed areas at least 2 inches deep or 1 inch below the depth of the popout.

3.4 PLACING

3.4.1 Portland Cement Concrete

Place concrete within 45 minutes after the introduction of the mixing water to the cement and aggregate or the introduction of the cement to the aggregate and before the concrete has obtained its initial set. The temperature of the concrete, as deposited in the repair area, can not be not less than 50 degrees F nor more than 90 degrees F. Deposit concrete as to require a minimum of re-handling and in such a manner so as to least disturb the sand-cement grout. Place concrete as indicated to maintain existing joints and working cracks. Use an insert or other bond-breaking medium where the spalled area abuts a joint to prevent bond at the joint face and to allow movement of the slabs and to prevent stress concentrations. Do not allow new repair material to infiltrate or span existing joints and cracks indicated to remain. Place concrete continuously in each spall area.Do not allow workmen to walk on the damp repair surface or in the concrete during placing and finishing operations.

Consolidate the concrete by small spud vibrators not greater than one inch in diameter, except that repair areas less than 4 inches deep or one square foot in area may be consolidated by hand tamping or other approved means. To avoid pulling material away from patch edge and to maximize bond strength, work the finishing screed from the center of the patch out to the patch boundary. Fill all saw kerfs extending beyond the repair area with grout. Start finishing operations immediately after placement of the concrete. Match finished surface grade of patched areas to the existing surface grade of the adjacent undisturbed pavement. Keep screeding, floating, or troweling of patch material onto adjacent pavements to a minimum and remove loose or poorly bonded patch material from adjacent surfaces. Before the concrete becomes non-plastic, finish the surface with a burlap drag to approximately match the surface finish

of existing adjacent concrete pavement. Remove repair materials for surfaces adjacent to but outside the repair surface.

Popouts and spalls, both with a maximum dimension less than 6 inches, and not within 4 inches of a joint or working crack, may be prepared by drilling a core 2 inches in diameter greater than the size of the defect, centered over the defect, and 2 inches deep or 1/2 inch into sound concrete, whichever is greater. Repair the core hole as specified above for other spalls.

3.4.2 Epoxy-Resin Concrete and Mortar

Limit epoxy-resin bonding coat to use on patches with a surface area of less than 2 feet square. Place the epoxy resin materials in layers not over 2 inches thick. Make the time interval between placement of additional layers such that the temperature of the epoxy resin material does not exceed 140 degrees F at any time during hardening. Use mechanical vibrators and hand tampers to consolidate the concrete or mortar. Remove any repair material on the surrounding surfaces of the existing concrete before it hardens.

Place the repair material as indicated to maintain existing joints and working cracks. Use an insert or other bond-breaking medium where the spalled area abuts a joint to prevent bond at the joint face. Do not allow new repair material to infiltrate or span existing joints and cracks indicated to remain. Place the repair material continously in each spall area. Finish the repair material to match the grade of the adjacent concrete surface.

Spalls not adjacent to joints and popouts, both less than 6 inches in maximum dimension, may be prepared by drilling a core 2 inches in diameter greater than the size of the defect, centered over the defect, and 2 inches deep or 1/2 inch into sound concrete, whichever is greater. Repair the core hole as specified above for other spalls.

3.4.3 Proprietary Repair Products

Perform placing, consolidating, finishing, and curing operations in accordance with the manufacturer's written instructions.

Place the repair material as indicated to maintain existing joints and working cracks. Use an insert or other bond-breaking medium where the spalled area abuts a joint to prevent bond at the joint face. Do not allow new repair material to infiltrate or span existing joints [and cracks]. Place the repair material continuously in each spall area. Finish the repair material to match the grade of the adjacent concrete surface.

3.5 CURING

Cure the repair concrete by protection against loss of moisture and rapid temperature changes for a period of not less than 3 days from the beginning of the curing operation. Protect unhardened concrete from rain and flowing water. Provide all equipment needed for adequate curing and protection of the concrete on hand and ready to install before actual concrete placement begins. Cure proprietary repair products in accordance with manufacturer's recommendations.Failure to comply with curing requirements will be cause for immediate suspension of concreting operations.

3.5.1 Membrane-Forming Curing Compound

Apply membrane -forming curing compound immediately to exposed concrete surfaces. Apply the curing compound with an overlapping coverage that will give a two-coat application at a coverage of not more than 200 square feet per gallon for both coats. When application is made by hand-operated sprayers, apply the second coat in a direction approximately at right angles to the first coat.

Cure concrete properly at joints, but do not allow absorbent curing compound to enter joints that are to be sealed with a joint-sealing compounds. Provide a uniform, continuous, cohesive compound film that will not check, crack, or peel, and that will be free from pinholes and other imperfections. Respray concrete surfaces that are subjected to heavy rainfall within 3 hours after the curing compound has been applied at the coverage specified above and at no additional cost to the Government. Respray areas covered with absorbent curing material that are damaged by pedestrian and vehicular traffic or by subsequent construction operations within the specified curing period at no additional cost to the Government.

3.6 JOINT RE-ESTABLISHMENT

For joint spall repairs, after the repair material has cured, saw a reservoir for the joint sealant to the dimensions required for other joints. Thoroughly clean and seal the reservoir with the sealer and backer rod specified for the joints. Construct new joints as detailed on the drawings and align with existing joints.

3.7 FINISH TOLERANCE

Provide finished surfaces of patched areas meeting the grade of the adjoining pavements without deviations more than 1/8 inch from a true plan surface within the patched area or at the interface with the adjoining pavement.

3.8 REPAIR AREA PROTECTION

Protect the patched areas against damage prior to final acceptance of the work by the Government. Exclude traffic from the patched areas by erecting and maintaining barricades and signs until the completion of the curing period of the concrete or the curing period of proprietary repair products as per the manufacturer's instructions.

3.9 FIELD QUALITY CONTROL

3.9.1 General Requirements

Test proprietary products in accordance with the manufacturer's written instructions.

3.9.2 Testing for Strength, Slump, and Air Content

Sample concrete in the field and test to determine the slump, air content, and strength of the concrete.

Make cylinders for each shift of placed concrete. Mold each group of test cylinders from the same batch of concrete, consisting of a sufficient

number of specimens to provide two compressive-strength tests at each testage. Make one group of specimens during the first half of the shift, and the other during the last portion of the shift. However, at the start of paving operations and each time the aggregate source, aggregate characteristic, or mix design is changed, make one additional set of test cylinders. Mold and cure test cylinders at the site for the first 24 hours or until the testing is required if less than 24 hours of curing is required and later in the laboratory in conformance with ASTM C31/C31M. Test cylinders in accordance with ASTM C39/C39M.

Determine the air content and slump in accordance with ASTM C231/C231M and ASTM C143/C143M, respectively.

3.9.2.1 Test Results

Remove concrete not meeting strength, consistency, and air content requirements and provide concrete that meets the requirements of this specification. The removal and replacement method or methods are subjectto approval of the Contracting Officer.

3.9.2.2 Acceptance

Within 30 days of spall repair or prior to final acceptance, any spall repair material that cracks, or delaminates, or loses bond partly or completely as indicated by soundings, or causes spalling of adjacent portland cement concrete, or is not separated properly from adjacent slabs at joints, or fails to cure uniformly and completely, or is otherwise defective will be rejected by the Government.

Remove all unacceptable repairs, including new damaged areas adjacent to new spall patches, and provide new repairs meeting the specifications.

-- End of Section --

SECTION 32 17 23

PAVEMENT MARKINGS

PART 1 GENERAL

1.1 UNIT PRICES

1.1.1 Measurement

1.1.1.1 Surface Preparation

The unit of measurement for surface preparation (cleaning) is the number of linear feet of pavement surface prepared for marking and accepted by the Contracting Officer.

1.1.1.2 Pavement Striping and Markings

The unit of measurement for pavement markings is the number of linear feet of reflective and/or nonreflective striping or markings actually completed and accepted by the Contracting Officer.

1.1.2 Payment

The quantities of surface preparation, pavement striping or markings, raised pavement markers, and removal of pavement markings determined as specified in paragraph Measurement, will be paid for at the contract unit price. The payment constitutes full compensation for furnishing all labor, materials, tools, equipment, appliances, and doing all work involved in preparing and marking the pavements as shown on the drawings. Remove and replace any striping or markings which required reflective media, but are placed without it, do not meet the stated minimum retro-reflective requirements, or with other defects, at no cost to the Government. Remove and replace striping or markings which do not conform to the required physical characteristics, alignment or location required at no cost to the Government.

1.2 REFERENCES

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

ASTM INTERNATIONAL (ASTM)

ASTM D476	(2015) Dry Pigmentary Titanium Dioxide Pigments
ASTM D638	(2014) Standard Test Method for Tensile Properties of Plastics
ASTM D695	(2010) Standard Test Method for Compressive Properties of Rigid Plastics
ASTM D711	(2010; R 2015) No-Pick-Up Time of Traffic Paint
ASTM D1652	(2011; E 2012) Standard Test Method for

	Epoxy Content of Epoxy Resins
ASTM D2074	(2007; R2013) Standard Test Methods for Total, Primary, Secondary, and Tertiary Amine Values of Fatty Amines by Alternative Indicator Method
ASTM D2240	(2015; E 2017) Standard Test Method for Rubber Property - Durometer Hardness
ASTM D4060	(2019) Abrasion Resistance of Organic Coatings by the Taber Abraser
ASTM D4061	(2013) Standard Test Method for Retroreflectance of Horizontal Coatings
ASTM D7234	(2012) Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers
ASTM E1347	(2006; R 2020) Standard Test Method for Color and Color Difference Measurement by Tristimulus (Filter) Colorimetry
ASTM E1710	(2011) Standard Test Method for Measurement of Retroreflective Pavement Marking Materials with CEN-Prescribed Geometry Using a Portable Retroreflectometer
ASTM E2177	(2011) Standard Test Method for Measuring the Coefficient of Retroreflected Luminance (RL) of Pavement Markings in a Standard Condition of Wetness
ASTM E2302	(2003; R 2016) Standard Test Method for Measurement of the Luminance Coefficient Under Diffuse Illumination of Pavement Marking Materials Using a Portable Reflectometer

INTERNATIONAL CONCRETE REPAIR INSTITUTE (ICRI)

ICRI 03732	(1997) Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, and Polymer Overlays

U.S. FEDERAL HIGHWAY ADMINISTRATION (FHWA)

MUTCD	(2009; Rev 2012) Manual on Uniform Traffic Control Devices

U.S. GENERAL SERVICES ADMINISTRATION (GSA)

FS TT-B-1325	(Rev D; Notice 1; Notice 2 2017) Beads (Glass Spheres) Retro-Reflective (Metric)

1.3 SUBMITTALS

Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-03 Product Data

Surface Preparation Equipment List; G

Application Equipment List; G

Exterior Surface Preparation

Safety Data Sheets; G

Reflective media for airfields; G

Reflective media for roads; G

Waterborne Paint; G

Solventborne Paint; G

Thermoplastic compound; G

Raised Pavement Markers Primers and Adhesives; G

SD-06 Test Reports

Reflective Media for Airfields; G

Reflective Media for Roads; G

Waterborne Paint; G

Solventborne Paint; G

High Build Acrylic Coating (HBAC); G

Thermoplastic Compound; G

Raised Pavement Markers Primers and Adhesives; G

Test Reports

SD-07 Certificates

Qualifications; G

Reflective Media for Airfields

Reflective Media for Roads

Waterborne Paint

Solventborne Paint

Volatile Organic Compound, (VOC); G

Thermoplastic Compound

SD-08 Manufacturer's Instructions

Waterborne Paint; G

Solventborne Paint; G

Thermoplastic Compound; G

1.4 QUALITY ASSURANCE

1.4.1 Regulatory Requirements

Submit certificate stating that the proposed pavement marking paint meets the Volatile Organic Compound, (VOC) regulations of the local Air Pollution Control District having jurisdiction over the geographical area in which the project is located. Submit Safety Data Sheets for each product.

1.4.2 Qualifications

Submit documentation certifying that pertinent personnel are qualified for equipment operation and handling of applicable chemicals. The documentation should include experience on five projects of similar size and scope with references for all personnel.

1.4.3 Qualifications For Airfield Marking Personnel

Submit documentation of qualifications in resume format a minimum of 14 days before pavement marking work is to be performed showing personnel who will be performing the work have experience working on airfields, operating mobile self-powered marking, cleaning, and paint removal equipment and performing these tasks. Include with resume a list of references complete with points of contact and telephone numbers. Provide certification for pavement marking machine operator and Foreman demonstrating experience successfully completing a minimum of two airfield pavement marking projects of similar size and scope. Provide documentation demonstrating personnel have a minimum of four years of experience operating similar equipment and performing the same or similar work in similar environments, similar in size and scope of the planned project. The Contracting Officer reserves the right to require additional proof of competency or to reject proposed personnel.

1.5 DELIVERY AND STORAGE

Deliver paint materials, thermoplastic compound materials, and reflective media in original sealed containers that plainly show the designated name, specification number, batch number, color, date of manufacture, manufacturer's directions, and name of manufacturer.

Provide storage facilities at the job site, only in areas approved by the Contracting Officer, for maintaining materials at temperatures recommended by the manufacturer. Make available paint stored at the project site or segregated at the source for sampling not less than 30 days prior to date of required approval for use to allow sufficient time for testing. Notify the Contracting Officer when paint is available for sampling.

1.6 PROJECT/SITE CONDITIONS

1.6.1 Environmental Requirements

1.6.1.1 Weather Limitations for Application

Apply pavement markings to clean, dry surfaces, and unless otherwise approved, only when the air and pavement surface temperature is at least 5 degrees F above the dew point and the air and pavement temperatures are within the limits recommended by the pavement marking manufacturer. Allow pavement surfaces to dry after water has been used for cleaning or rainfall has occurred prior to striping or marking. Test the pavement surface for moisture before beginning work each day and after cleaning. Do not commence marking until the pavement is sufficiently dry and the pavement condition has been approved by the Contracting Officer. Employ the "plastic wrap method" to test the pavement for moisture as specified in paragraph TESTING FOR MOISTURE.

1.6.1.2 Weather Limitations for Removal of Pavement Markings on Roads andAutomotive Parking Areas

Pavement surface must be free of snow, ice, or slush; with a surface temperature of at least 40 degrees F and rising at the beginning of operations, except those involving shot or sand blasting or grinding. Cease operation during thunderstorms, or during rainfall, except for waterblasting and removal of previously applied chemicals. Cease waterblasting where surface water accumulation alters the effectiveness of material removal.

1.6.2 Traffic Controls

Place warning signs conforming to MUTCD near the beginning of the worksite and well ahead of the worksite for alerting approaching traffic from both directions. Place small markers along newly painted lines or freshly placed raised markers to control traffic and prevent damage to newly painted surfaces or displacement of raised pavement markers. Mark painting equipment with large warning signs indicating slow-moving painting equipment in operation.

When traffic must be rerouted or controlled to accomplish the work, provide necessary warning signs, flag persons, and related equipment for the safe passage of vehicles.

1.6.3 Airfield Traffic Control

Coordinate performance of all work in the controlled zones of the airfield with the Contracting Officer and with the Flight Operations Officer or Airfield Manager. Neither equipment nor personnel can use any portion of the airfield without permission of these officers unless the runway is closed.

1.6.4 Airfield Radio Communication

No personnel or equipment will be allowed in the controlled zones of the airfield until radio contact has been made with the control tower and permission is granted by the control tower. A radio for this purpose is to be provided by the Contractor as approved by the Contracting Officer.

Maintain contact with the control tower at all times during work in vicinity of the airfield. Notify the control tower when work is completed and all personnel, equipment and materials have been removed from all aircraft operating surfaces.

1.6.5 Airfield Emergency Landing and Takeoff

Emergencies take precedence over all operations. Upon notification from the control tower of an emergency landing or imminent takeoff, stop all operations immediately and evacuate all personnel and equipment to an area not utilized for aircraft traffic which is at least 250 feet measured perpendicular to and away from the near edge of the runway unless otherwise authorized by the Contracting Officer. Equipment and chemicals or detergents as well as excess water must be able to be removed from the work area within 3 minutes.

PART 2 PRODUCTS

2.1 EQUIPMENT

2.1.1 Application Equipment

Submit application equipment list appropriate for the material(s) to be used. Include manufacturer's descriptive data and certification for the planned use that indicates area of coverage per pass, pressure adjustment range, tank and flow capacities, and all safety precautions required for operating and maintaining the equipment. Provide and maintain machines, tools, and equipment used in the performance of the work in satisfactory operating condition, or remove them from the work site. Provide mobile and maneuverable application equipment to the extent that straight lines can be followed and normal curves can be made in a true arc.

2.1.1.1 Reflective Media Dispenser

Attach the dispenser for applying the reflective media to the [paint] [thermoplastic] dispenser and designed to operate automatically and simultaneously with the applicator through the same control mechanism. The bead applicator must be capable of adjustment and designed to provide uniform flow of reflective media over the full length and width of the stripe at the rate of coverage specified in paragraph APPLICATION.

2.2 MATERIALS

2.2.1 Epoxy Paint

2.2.1.1 Formulation

Epoxy pavement marking material will be a two component, 100 percent solids, material formulated to provide simple volumetric mixing ratio of two volumes of component A and one volume of component B unless otherwise recommended by the manufacturer.

2.2.1.2 Composition

The component A of both white and yellow must be within the following limits:

TABLE I		
	White	Yellow
Pigments	Minimum 18 percent by weight Titanium Dioxide (ASTM D476, Type II)	21-27 percent by weight
Epoxy Resin	75-82 percent	73-79 percent

The epoxy resin must be free of lead, cadmium, mercury, hexavalent chromium and other toxic heavy metals as defined by the Environmental Protection Agency. Submit a manufacturer's certification of compliance with this requirement.

2.2.1.3 Epoxide Value

Determine epoxide epoxy number of the epoxy resin in accordance with ASTM D1652 for white and yellow component A on pigment free basis. The epoxide number must be within plus or minus 50 of the published manufacturer's standard.

2.2.1.4 Total Amine Value

Determine the amine number on the curing agent (component B) in accordance with ASTM D2074. The amine number must be within plus or minus 50 of the published manufacturer's standard.

2.2.1.5 Toxicity

Upon heating to application temperature, the material must not produce fumes which are toxic or injurious to persons or property.

2.2.1.6 Daylight Directional Reflectance

Directional reflectance of white and yellow paint (without glass beads) in accordance with ASTM E1347: White 84 percent Yellow 55 percent.

2.2.1.7 Laboratory Drying Time

The epoxy pavement marking material must have a maximum no-pick-up time of 30 minutes when tested in accordance with ASTM D711.

2.2.1.8 Curing

The epoxy material must be capable of fully curing under a constant surface temperature of 45 Degrees F or above.

2.2.1.9 Adhesion to Concrete

The catalyzed epoxy pavement marking material must have a high degree of adhesion to the specified concrete surface (100 percent concrete failure) when tested according to ASTM D7234. The concrete substrate must have a minimum compressive strength of 4,000 psi. Condition prepared specimens at a temperature of 75 plus or minus 2 Degrees F for a minimum of 24 hours and a maximum of 72 hours prior to performance of the test.

2.2.1.10 Hardness

Epoxy pavement marking materials must have a Shore D Hardness between 75 and 100 when tested in accordance with ASTM D2240. Cure the samples at 75 plus or minus 2 Degrees F for a minimum of 72 hours and a maximum of 96 hours prior to performing the tests.

2.2.1.11 Abrasion Resistance

The wear index for a catalyzed sample must not exceed 82 when tested in accordance with ASTM D4060 using a 1000 gram load, CS-17 wheels and a test duration of 1000 cycles. Run the test on cured samples of material which have been applied at a film thickness of 15 plus or minus 0.5 mils to code S-16 stainless steel plates. Cure the samples at 75 plus or minus 2 Degrees F for a minimum of 48 hours prior to performing the tests.

2.2.1.12 Tensile Strength

Epoxy pavement marking materials must have a tensile strength of at least 6,000 psi when tested in accordance with ASTM D638. Cast the Type IV specimens in a suitable mold and pull at the rate of 1/4 inch per minute using a suitable dynamic testing machine. Cure the samples at 75 plus or minus 2 Degrees F for a minimum of 12 hours and a maximum of 48 hours prior to performing the tests.

2.2.1.13 Compressive Strength

Catalyzed epoxy pavement marking materials must have a compressive strength of at least 12,000 psi when tested in accordance with ASTM D695. Condition the cast sample at 75 plus or minus 2 Degrees F for a minimum of 12 hours and a maximum of 48 hours prior to performing the tests. The rate of compression of these samples must not exceed 1/4 inch per minute.

2.2.2 Reflective Media

2.2.2.1 Reflective Media for Airfields

FS TT-B-1325, Type I.

PART 3 EXECUTION

3.1 EXAMINATION

3.1.1 Testing for Moisture

Test the pavement surface for moisture before beginning pavement marking after each period of rainfall, fog, high humidity, or cleaning, or when the ambient temperature has fallen below the dew point. Do not commence marking until the pavement is sufficiently dry and the pavement condition has been approved by the Contracting Officer or authorized representative.

Employ the "plastic wrap method" to test the pavement for moisture as follows: Cover the pavement with a 12 inch by 12 inch section of clear plastic wrap and seal the edges with tape. After 15 minutes, examine the plastic wrap for any visible moisture accumulation inside the plastic. Do not begin marking operations until the test can be performed with no visible moisture accumulation inside the plastic wrap. Re-test surfaces when work has been stopped due to rain.

3.1.2 Surface Preparation Demonstration

Prior to surface preparation, demonstrate the proposed procedures and equipment. Prepare areas large enough to determine cleanliness and rate of cleaning. Approved demonstration area establishes the standard for the remainder of the work.

3.1.3 Test Stripe Demonstration

Prior to paint application, demonstrate test stripe application within the work area using the proposed materials and equipment.

3.1.4 Application Rate Demonstration

During the Test Stripe Demonstration, demonstrate compliance with the application rates specified herein. Document the equipment speed and operating pressures required to meet the specified rates in each configuration of the equipment and provide a copy of the documentation to the Contracting Officer prior to proceeding with the work.

3.1.5 Retroreflective Value Demonstration

After the test stripes have cured to a "no-track" condition, demonstrate compliance with the average retroreflective values specified herein. Take a minimum of ten readings on each test stripe with a Retroreflectometer with a direct readout in millicandelas per square meter per lux (mcd/m2/lx). Perform testing in accordance with ASTM D4061, ASTM E1710, ASTM E2177, and ASTM E2302.

3.1.6 Level of Performance Demonstration

The Contracting Officer will be present at the application demonstrations to observe the results obtained and to validate the operating parameters of the vehicle(s) and equipment. If accepted by the Contracting Officer, the test stripe is the measure of performance required for this project. Do not proceed with the work until the demonstration results are satisfactory to the Contracting Officer.

3.2 EXTERIOR SURFACE PREPARATION

Allow new pavement surfaces to cure for a period of not less than 30 days before application of marking materials. Thoroughly clean surfaces to be marked before application of the paint. Remove dust, dirt, and other granular surface deposits by sweeping, blowing with compressed air, rinsing with water, or a combination of these methods as required.

a. For Portland Cement Concrete pavement, grinding, light shot blasting, or light scarification, to a resulting profile equal to ICRI 03732 CSP 2, CSP 3, and CSP 4, respectively, can be used in addition to water blasting on most pavements, to either remove existing coatings, or for surface preparation.

b. Do not use shot blasting on airfield pavements due to the potential of Foreign Object Damage (FOD) to aircraft. Scrub affected areas, where oil or grease is present on old pavements to be marked, with several applications of trisodium phosphate solution or other approved detergent or degreaser and rinse thoroughly after each application. After cleaning oil-soaked areas, seal with shellac or primer recommended by the manufacturer to prevent bleeding through the new

paint. Do not commence painting in any area until pavement surfaces are dry and clean.

3.2.1 Early Painting of Rigid Pavements

Pretreat rigid pavements that require early painting with an aqueous solution containing 3 percent phosphoric acid and 2 percent zinc chloride. Apply the solution to the areas to be marked.

3.3 APPLICATION

Apply pavement markings to dry pavements only.

3.3.1 Paint

Apply paint with approved equipment at rate of coverage specified herein. Provide guidelines and templates as necessary to control paint application. Take special precautions in marking numbers, letters, and symbols. Manually paint numbers, letters, and symbols. Sharply outline all edges of markings. The maximum drying time requirements of the paint specifications will be strictly enforced, to prevent undue softening of bitumen, and pickup, displacement, or discoloration by tires of traffic. If there is a deficiency in drying of the markings, painting operations must cease until the cause of the slow drying is determined and corrected.

3.3.1.1 Epoxy Paint

Apply paint evenly to the pavement surface at a wet film thickness of 20 mils plus or minus 1 mil to cover 80 plus or minus 4 square feet per gallon. Apply glass spheres uniformly to the wet paint on road and street pavement at a rate of 7 plus or minus 0.5 pounds of glass spheres per gallon.

3.3.2 Cleanup and Waste Disposal

Keep the worksite clean and free of debris and waste from the removal and application operations.[Immediately cleanup following removal operations in areas subject to aircraft traffic.] Dispose of debris at approved sites.

3.4 FIELD QUALITY CONTROL

3.4.1 Sampling and Testing

As soon as the paint [and thermoplastic] materials [and reflective media] are available for sampling, obtain by random selection from the sealed containers, two quart samples of each batch in the presence of the Contracting Officer. [Two quarts will be for sampling and testing by the Contractor and two quarts will be for retention by the Government.] Accomplish adequate mixing prior to sampling to ensure a uniform, representative sample.A batch is defined as that quantity of material processed by the manufacturer at one time and identified by number on the label. Clearly identify samples by designated name, specification number, batch number, project contract number, intended use, and quantity involved.

At the discretion of the Contracting Officer, samples provided may be tested by the Government for verification.

3.4.2 Material Inspection

Examine material at the job site to determine that it is the material referenced in the report of test results or certificate of compliance.Provide test results substantiating conformance to the specified requirements with each certificate of compliance.

3.4.3 Dimensional Tolerances

Apply all markings in the standard dimensions provide in the drawings. New markings may deviate a maximum of 10 percent larger than the standarddimension. The maximum deviation allowed when painting over an old marking is up to 20 percent larger than the standard dimensions.

3.4.4 Bond Failure Verification

Inspect newly applied markings for signs of bond failure based on visualinspection and comparison to results from Test Stripe Demonstration paragraph.

3.4.5 Reflective Media and Coating Application Verification

Use a wet film thickness gauge to measure the application of wet paint. Use a microscope or magnifying glass to evaluate the embedment of glass beads in the paint. Verify the glass bead embedment with approximately 50percent of the individual bead spheres embedded and 50 percent of the individual bead spheres exposed.

3.4.6 Retroreflective Markings

Collect and record readings for white and yellow retroreflective markings at the rate of one reading per 1000 linear feet. The minimum acceptable average for white markings is 200 millicandelas per square meter per lux (mcd/m2/lx) (measured with Retroreflectometer). The minimum acceptable average for yellow markings is 175 millicandelas per square meter per lux (mcd/m2/lx).Compute readings by averaging a minimum of 10 readings takenwithin the area at random locations. Re-mark areas not meeting the retroreflective requirements stated above.

3.4.7 Material Bond Verification and Operations Area Cleanup for Airfields

Vacuum sweep the aircraft operating area before it is opened for aircraft operations to preclude potential foreign object damaged to aircraft engines. Visually inspect the pavement markings and the material capturedby the vacuum. Verify that no significant loss of reflective media has occurred to the pavement marking due to the vacuum cleaning.

-- End of Section --