Section C - Description/Specifications/Statement of Work

GENERAL SPECIFICATIONS

0415 CONST DARBY CANYON PRECAST SINGLE VAULT TOILET

1.1 SCOPE OF CONTRACT

A. This project includes hauling and installing a single vault precast toilet at the Darby Canyon Wind Caves Trailhead.

B. The work includes excavation, backfill and clean-up for the one-way haul and installation of a single vault precast toilet at the Darby Canyon Wind Caves Trailhead.

C. Quantities associated with these options are identified in the Schedule of Items.

1.2 PROJECT LOCATION

A. The project is located in the Teton Basin Ranger District of the Caribou-Targhee National Forest, Teton County, Wyoming, in Section 14, Township 43 North, Range 118 West. It is located approximately 12.5 miles Southeast of Driggs, Idaho. The project may be accessed from Idaho State Highway 33 and Darby Canyon Road. (43.6865°N, -110.9691°W)

1.3 SITE INFORMATION AND LIMITATIONS

A. The following site conditions are considered incidental to the contract and the contractor will not be paid directly for any of the following items:

1. Construction sites will be closed to the public during construction. The Forest Service will issue a closure order to the public. The Contractor will be responsible for signing and limiting public access.
2. All construction equipment shall be pressure washed before entering National Forest System lands. The removal of mud and debris from treads, tracks and undercarriage, with emphasis on axles, frame, cross-members, motor mounts, and underneath steps, running boards, and front bumper/brushguard assemblies will be required. The purpose is to reduce or eliminate the transportation of noxious weeds, which is required by Federal and State regulations.
3. Utilities are not available at the site for construction purposes.
4. Toilet facilities are not available at the site.

1.4 TRAFFIC CONTROL AND CONSTRUCTION SIGNING

A. No work that endangers, interferes, or conflicts with traffic or access to work sites shall be performed until a plan for satisfactory warning and handling of traffic has been submitted by the contractor and approved by the COR and Wyoming Department of Transportation. Construction signing for traffic control shall conform to the Manual of Uniform Traffic Control Devices (MUTCD). All traffic control signs will be placed in areas adequate for a truck pulling a fifth wheel trailer to be turned around. Contractor

shall not be paid directly for this item, rather it will be considered incidental to other items of work listed in the Schedule of Items.

1.5 WORK CAMPS, STAGING AND STORAGE AREAS

A. Areas for staging operations and storage of materials shall be approved by the CO. The Contractor must request in writing for approval from the CO to stage trailers on site.

B. No overnight camping will be allowed on site.

1.6 INSPECTION OF WORKSITE

A. The contractor acknowledges they have taken the necessary steps to ascertain the nature and location of work, and have investigated and satisfied themselves as to the general and local conditions that can affect the work or its cost. Any failure of the contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from the responsibility of estimating properly the difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expenses to the government.

1.7 SPECIFICATIONS

A. The following specifications are attached. Some sections in the schedule of items refer to other sections not listed and are subsidiary to, or are included in payment for other pay items in this contract. These items are considered incidental and no additional compensation will be made.

SECTION 011250 - MEASUREMENT AND PAYMENT
SECTION 011900 - MOBILIZATION
SECTION 013300 - SUBMITTAL PROCEDURES
SECTION 014100 - QUALITY CONTROL
SECTION 017700 - CLOSEOUT PROCEDURES
SECTION 024100 - WASTE MATERIAL DISPOSAL
SECTION 133402 - PRECAST CONCRETE VAULT RESTROOM BUILDING
SECTION 311000 - CLEARING AND GRUBBING
SECTION 312000 - EARTHWORK
SECTION 321204 - CRUSHED AGGREGATE BASE OR SURFACE COURSE

END OF SECTION C
February 2026

SECTION 011250 - MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Measurement and payment for contract work will be made only for and under those pay items included in the Schedule of Items. All other work, labor, materials, equipment, and incidentals necessary to successfully complete the project will be considered as included in the payment for items shown. This section defines the method of measurements and basis of payment for work items listed in the Schedule of Items.

B. When more than one class, size, type, thickness, etc. is specified in the Schedule of Items for any pay item, suffixes will be added to the item number to differentiate between the pay items.

1.2 DETERMINATION OF QUANTITIES

A. The following measurements and calculations shall be used to determine contract quantities for payment.

1. For individual construction items, longitudinal and lateral measurements for area computations shall be made horizontally or corrected to horizontal measurement unless otherwise specified. Measurements for geotextiles, netting and erosion control blankets shall be along slope lines.
2. For excavation or embankment volumes, the average end area method shall be used to compute volumes. However, if in the judgment of the Contracting Officer (CO), the average end area method is impractical, measurement shall be made by volume in hauling vehicles or by other three-dimensional methods.
3. For Structures, they shall be measured according to neat lines shown on the drawings or as altered by the CO, in writing, to fit field conditions.
4. For items that are measured by the linear foot, such as pipe culverts, fencing, guardrail, piping, utilities, and underdrains, measurements shall be made parallel to the base or foundation upon which the structures are placed.
5. For aggregates weighed for payment, the tonnage shall not be adjusted for moisture content, unless otherwise provided for.
6. For standard manufactured items (such as fence, wire, plates, rolled shapes, pipe conduits) identified by gauge, weight, section dimensions, and so forth, such identifications shall be considered the nominal weights or dimensions. Unless controlled by tolerances in cited specifications, manufacturer's tolerances shall be accepted.

B. Earthwork Tolerances - Adjustments of horizontal or vertical alignment, within the tolerances specified in this contract, or shifts of balance points up to 100 feet shall be made by the contractor as necessary to produce the designed sections and to balance earthwork. Such adjustments shall not be considered as "Changes."

1.3 UNITS OF MEASUREMENT

A. Payment shall be by units defined and determined according to U.S. Standard measure and by the following:

1. Acre: Make longitudinal and transverse measurements for area computations horizontally.
2. 50lb Bag: Measurement will be for the actual number of 50lb bags of standard bentonite grout.
3. 94lb Bag: Measurement will be for the actual number of 94lb bags of standard cement or grout.
4. Cubic Yard (CY): A measurement computed by one of the following methods:

    a. Excavation, Embankment, or Borrow. The measurement computed by the average end area method from measurements made longitudinally along a centerline or reference line.
    b. Material in Place or Stockpile. The measurement computed using the dimensions of the in-place material.
    c. Material in the Delivery Vehicle. The measurement computed using measurements of material in the hauling vehicles at the point of delivery. Vehicles shall be loaded to at least their water level capacity. Leveling of the loads may be required when vehicles arrive at the delivery point.

5. Each (EA): One complete unit, which may consist of one or more parts.
6. Gallons (GAL): The quantity shall be measured by any of the following methods:

    a. Measured volume in container.
    b. Metered volume by approved metering system.
    c. Commercially package volume.

7. Hour (HR): Measurement will be for the actual number of hours (or fraction thereof) ordered by the Contracting Officer and performed by the contractor.
8. Linear Foot (LF): Measurement of work along its length from point-to-point; parallel to the base or foundation. Do not measure overlaps.
9. Lump Sum (LS): One complete unit.
10. Mile: Measured horizontally along the centerline of each roadway, approach, or ramp.
11. Pound (LB): For sacked or packaged material, measurement will be the net weight as packed by the manufacturer.
12. Square Foot (SF): Measured on a plane parallel to the surface being measured.
13. Square Yard (SY): Measured on a plane parallel to the surface being measured.
14. Ton: Measured as a short ton consisting of 2,000 pounds.

1.4 METHOD OF MEASUREMENT

A. One of the following methods of measurement for determining final payment is designated on the Schedule of Items for each pay item:

1. ACTUAL QUANTITIES (AQ) - These quantities are determined from actual measurements of completed work.

2. DESIGNED QUANTITIES (DQ) - These quantities denote the final number or units to be paid for under the terms of the contract. They are based upon the original design data available prior to advertising the project. Original design data include the preliminary survey information, design assumptions, calculations, drawings, and the presentation in the contract. Changes in the number of units shown in the Schedule of Items may be authorized under any of the following conditions:

    a. As a result of changes in the work authorized by the CO.
    b. As a result of the CO determining that errors exist in the original design that cause a pay item quantity to change by 15 percent or more.
    c. As a result of the Contractor submitting to the CO a written request showing evidence of errors in the original design that cause a pay item quantity to change by 15 percent or more. The evidence must be verifiable and consist of calculations, drawings, or other data that show how the designed quantity is believed to be in error.

3. LUMP SUM QUANTITIES (LSQ) - These quantities denote one complete unit of work as required by or described in the contract, including necessary materials, equipment, and labor to complete the job. They shall not be measured.
4. STAKED QUANTITIES (SQ) - These quantities are determined from staked measurements prior to construction.
5. VEHICLE QUANTITIES (VQ) - These quantities are measured or weighed in hauling vehicles.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION (NOT APPLICABLE)

END OF SECTION 011250
February 2026

SECTION 011900 - MOBILIZATION

PART 1 - GENERAL

1.1 SUMMARY

A. This item is intended to compensate the Contractor for operations including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to the project site; for payment of premiums for bonds and insurance for the project; and for any other work and operations which must be performed or costs that must be incurred incident to the initiation of meaningful work at the site and for which payment is not otherwise provided for under the contract.

1.2 MEASUREMENT AND PAYMENT

A. The measurement shall be lump sum for mobilization. Payment shall be as follows:

1. Bond premiums will be reimbursed after receipt of the evidence of payment.
2. 50% of the lump sum, not to exceed 5% of the original contract amount, will be paid following completion of 5% of the original contract amount not including mobilization and bond premiums.
3. Payment of the remaining portion of the lump sum, up to 10% of the original contract amount, will be paid following completion of 10% of the original contract amount not including mobilization and bond premiums.
4. Any portion of the lump sum in excess of 10% of the original contract amount will be paid after final acceptance.
5. Progress payments for mobilization and preparatory work shall be subject to retainage.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION 011900
February 2026

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other miscellaneous submittals. See Table 013300-1 for a summary of required submittals.

B. See other specification section within this package for additional requirements on submittal.

1.2 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities.

1. Coordinate transmittal of different types of submittals for related parts of the Work so processing will not be delayed because of need to review submittals concurrently for coordination.

a. The Contracting Officer (CO) reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.

B. Processing Time: Allow enough time for submittal review, including time for re-submittals, as follows. Time for review shall commence on CO's receipt of submittal.

1. Initial Review: Allow 14 days for initial review of each submittal. Allow additional time if processing must be delayed to permit coordination with subsequent submittals. CO will advise Contractor when a submittal being processed must be delayed for coordination.
2. If intermediate submittal is necessary, process it in same manner as initial submittal.
3. Allow 14 days for processing each re-submittal.
4. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing.

C. Identification: Place a permanent label or title block on each submittal for identification.

1. Indicate name of firm or entity that prepared each submittal on label or title block.
2. Provide a space on label or beside title block to record Contractor's review and approval markings and action taken by CO.
3. Include the following information on label for processing and recording action taken:

a. Project name.
b. Date.

c. Name and address of Contractor.
d. Name of manufacturer.
e. Unique identifier, including revision number.
f. Number and title of appropriate Specification Section.
g. Drawing number and detail references, as appropriate.
h. If more than one item is shown on submittal sheet, identify item.

D. Deviations: Highlight, encircle, or otherwise identify deviations from the Contract Documents on submittals.

E. Additional Copies: Unless additional copies are required for final submittal, and unless CO observes noncompliance with provisions of the Contract Documents, initial submittal may serve as final submittal.

F. Use for Construction: Use only final submittals with mark indicating action taken by CO in connection with construction.

1.3 MEASUREMENT AND PAYMENT

A. No separate measurement and/or payment will be made for this section. Payment shall be included with work shown in the schedule of items.

PART 2 - PRODUCTS

2.1 ACTION SUBMITTALS – (Submittals requiring CO approval)

A. General: Prepare and submit Action Submittals required by individual Specification Sections.

1. Number of Copies: Submit three copies of each submittal, unless otherwise indicated. CO will return two copies. Mark up and retain one returned copy as a Project Record Document.

B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.

1. If information must be specially prepared for submittal because standard printed data are not suitable for use, submit as Shop Drawings, not as Product Data.
2. Mark each copy of each submittal to show which products and options are applicable.
3. Include the following information, as applicable:

a. Manufacturer's written recommendations.
b. Manufacturer's product specifications.
c. Manufacturer's installation instructions.
d. Manufacturer's catalog cuts.
e. Wiring diagrams showing factory-installed wiring.
f. Compliance with recognized trade association standards.
g. Compliance with recognized testing agency standards.

C. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data.

1. Preparation: Include the following information, as applicable:

a. Dimensions.
b. Identification of products.
c. Fabrication and installation drawings.
d. Roughing-in and setting diagrams.
e. Wiring diagrams showing field-installed wiring, including power, signal, and control wiring.
f. Notation of dimensions established by field measurement.

2. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

D. Contractor's Construction Schedule: The contractor shall submit a Construction Schedule, for approval by CO, in accordance with the contract provisions within 5 day of commencement of work.

E. Samples: Prepare physical units of materials or products, including the following:

1. Samples for Initial Selection: Submit manufacturer's color charts consisting of units or sections of units showing the full range of colors, textures, and patterns available.

2.2 INFORMATIONAL SUBMITTALS – (Submittals NOT requiring CO approval)

A. General: Prepare and submit Informational Submittals required by other Specification Sections.

1. Number of Copies: Submit three copies of each submittal, unless otherwise indicated. CO will not return copies.
2. Certificates and Certifications: Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
3. Test and Inspection Reports: Comply with requirements in Section 014100 "Quality Control."

B. Material Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements.

C. Field Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements.

D. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment.

E. Manufacturer's Instructions: Prepare written or published information that documents manufacturer's recommendations, guidelines, and procedures for installing or operating a product or equipment. Include name of product and name, address, and telephone number of manufacturer.

PART 3 - EXECUTION

3.1 GENERAL

A. Review each submittal and check for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to CO.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

C. CO will not review submittals that do not bear Contractor's approval stamp and will return them without action.

D. Submittals not required by the Contract Documents will not be reviewed and may be discarded.

E. Substitutions – Whenever materials, products, and equipment are listed by name or brand in the specifications and/or on the drawings, it is used as a measure of quality, utility, or standard. If the Contractor prefers to use any other brand or manufacturer of same quality, appearance and utility to that specified, he shall request substitution as provided below, not less than 30 days before the planned installation of the item. The Contracting Officer will approve or disapprove the request for substitution.

F. Requests for substitutions will only be considered if contractor submits the following:

1. Complete technical data including drawings, complete performance specifications, test data, samples and performance tests of the article proposed for substitution. Submit additional information if required by Contracting Officer. All items in the above information shall be circled, tagged, or marked in some way to indicate all deviations or differences which the proposed item differs from the originally specified item.
2. Similar data as above for item originally specified. All items shall be marked to identify where/how the proposed substitution will differ.
3. A statement by the Contractor that the proposed substitution is in full compliance with the contract documents, applicable codes, and laws.
4. The Contractor shall be responsible for any effect upon related work in the project for any substitution and shall pay any additional costs generated by any substitutions.

3.2 SUBMITTAL SCHEDULE – Submittals shall be made as required by and called for in the drawings and specifications. The following table is a summary of the required

submittals for the project - the table is to assist the Contractor and may not be all inclusive – additional submittals may be required by specific specifications:

TABLE 013000-1

Spec. Section	Section Title	Subsection	Required Submittal
C	General Specifications	1.4A	Traffic Control Plan
013300	Submittal Procedures	2.1D	Construction Schedule
014100	Quality Control	1.3 A	Contractor quality control plan
014100	Quality Control	1.3 B	Permits, Licenses, and Certificates
014100	Quality Control	1.3 C	Test and inspection reports
014100	Quality Control	1.3 D	As-Built drawings
133402	Precast Concrete Vault Restroom Building	1.2A	Manufacturer's Literature
133402	Precast Concrete Vault Restroom Building	1.2B	Shop Drawings
133402	Precast Concrete Vault Restroom Building	1.2C	Design Calculations
133402	Precast Concrete Vault Restroom Building	1.2D	Concrete Delivery Certificates
312000	Earthwork	1.3A	Bedding and Backfill Certification
312000	Earthwork	1.3A	Sieve Analysis
312000	Earthwork	1.3B	Product Data
321204	Crushed Aggregate Base or Surface Course	1.2A	Aggregate Base – Source, Gradation, Material Properties

END OF SECTION 013300
February 2026

SECTION 014100 - QUALITY CONTROL

PART 1 - GENERAL

1.1 This work shall consist of providing quality control in conformance with the inspection, testing, and product certification requirements of this contract to ensure compliance with the drawings and specifications. The Contractor shall provide all personnel, equipment, tests, and reports necessary to meet the requirements of the contract.

1.2 QUALITY CONTROL

A. The Contractor shall provide and maintain a quality control system that will ensure all services, supplies, and construction work required under this contract conforms to the contract requirements. The Contractor shall perform, or cause to be performed, the sampling, inspection, and testing required to substantiate that all services, supplies, and construction conform to the contract requirements.

B. Special Tests and Inspections: Contractor will engage a testing agency to conduct required special tests and inspections. The Contractor shall authorize the testing agency to perform the required testing and inspections on the work completed. The authority shall include:

1. Testing agency will interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.
2. Testing agency will re-test and re-inspect corrected work.

C. Retesting/Reinspecting: Contractor shall provide quality-control services for retesting and reinspection for replaced construction work or for work that failed to comply with the requirements under the contract.

1.3 SUBMITTALS

A. Contractor Quality Control Plan

B. Permits, Licenses, and Certificates

C. Test and Inspection Reports

D. As-Built Drawings

1.4 MEASUREMENT AND PAYMENT

A. No separate payment will be made for the work included under this section; rather payment shall be considered to be included in the items of work listed in the Schedule of Items.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 QUALITY CONTROL SYSTEM

A. General: Perform required testing, inspections, sampling, and similar services per direction specified in the contract drawings and specifications and in accordance with established industry standards.

3.2 CONTRACTOR QUALITY CONTROL PLAN

A. At the time of the preconstruction conference, the Contractor shall submit for approval a written Contractor Quality Control Plan.

1. If the plan requires any revisions or corrections, the Contractor shall resubmit the plan within 10 days.
2. The Government reserves the right to require changes in the plan during the contract period as necessary.
3. No change in the approved plan may be made without written concurrence by the Contracting Officer.
4. At a minimum, the plan shall include the following:

    a. A list of personnel responsible for quality control and assigned duties. Include each person's qualifications.
    b. A copy of a letter of direction to the Contractor's Quality Control Supervisor outlining assigned duties.
    c. Names, qualifications, and descriptions of laboratories to perform sampling and testing, and samples of proposed report forms.
    d. Methods of performing, documenting, and enforcing quality control of all work.
    e. Methods of monitoring and controlling environmental pollution and contamination as required by all applicable regulations and laws.

3.3 TEST AND INSPECTION REPORTS

A. Submit three copies of complete test results no later than three calendar days after the test was performed.

B. Submit failing test results and proposed remedial actions within four hours of noted deficiency.

C. Testing and Inspection Reports shall include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, and telephone number of testing agency.
4. Dates and locations of samples, tests, or inspections.
5. Names of individuals performing tests and inspections.
6. Reference Specification Section(s).
7. Complete test or inspection data.

8. Test and inspection results and an interpretation of test results.
9. Ambient conditions at time sample was taken, tested, or inspected.
10. Comments or professional opinion on whether tested or inspected work complies with the Contract Document requirements.
11. Name and signature of laboratory inspector.
12. Recommendations on retesting and reinspecting.

3.4 PERMITS, LICENSES, AND CERTIFICATES

A. For Contracting Officer's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations relevant to the on performance of the work.

3.5 AS-BUILT DRAWINGS

A. The Contractor shall maintain a set of the contract drawings depicting as-built conditions. These drawings shall be maintained in a current condition and shall be available for review. All variations from the original contract drawings shall be indicated in red on the drawings. Upon completion of the contract work, as-built drawings shall be submitted to the Contracting Officer.

3.6 SAMPLING, TESTING, AND CERTIFICATION REQUIREMENTS

A. Sampling, testing, and Certification requirements and frequency for specific items shall be as specified in the drawings and specification.

END OF SECTION 014100

February 2026

SECTION 017700 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair work.

1.2 ACTION SUBMITTALS

A. Product Data: For cleaning agents.

B. Contractor's List of Incomplete Items: Initial submittal at Substantial Completion.

C. Certified List of Incomplete Items: Final submittal at Final Completion.

1.3 MAINTENANCE MATERIAL SUBMITTALS

A. Schedule of Maintenance Material Items: For maintenance material submittal items specified in other Sections.

1.4 SUBSTANTIAL COMPLETION PROCEDURES

A. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list).

B. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, final completion construction photographic documentation, and similar final record information.
2. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
3. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by Construction Manager. Label with manufacturer's name and model number where applicable.

4. Submit test/adjust/balance records.
5. Submit sustainable design submittals not previously submitted.
6. Submit changeover information related to Government's occupancy, use, operation, and maintenance.

C. Procedures Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Make final changeover of permanent locks and deliver keys to COR. Advise Government's personnel of changeover in security provisions.
2. Instruct COR in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings.
3. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
4. Complete final cleaning requirements, including touchup painting.
5. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

D. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request the COR will either proceed with inspection or notify Contractor of unfulfilled requirements. The COR will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by the COR, that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the work identified in previous inspections as incomplete is completed or corrected.
2. Results of completed inspection will form the basis of requirements for final completion.

1.5 FINAL COMPLETION PROCEDURES

A. Preliminary Procedures: Before requesting final inspection for determining final completion, complete the following:

1. Submit a final Application for Payment.
2. Certified List of Incomplete Items: Submit certified copy of COR's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by COR. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.
3. Submit pest-control final inspection report and warranty.
4. Instruct Government's personnel in operation, adjustment, and maintenance of products, equipment, and systems. Submit demonstration and training video recordings.

B. Inspection: Submit a written request for final inspection to determine acceptance. On receipt of request, COR will either proceed with inspection or notify Contractor of

unfulfilled requirements. COR will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1. Reinspection: Request reinspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.6 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

A. Organization of List: Include name and identification of each space and area affected by construction operations for incomplete items and items needing correction including, if necessary, areas disturbed by Contractor that are outside the limits of construction.

1. Organize list of spaces in sequential order.
2. Organize items applying to each space by major element, including categories for ceiling, individual walls, floors, equipment, and building systems.
3. Submit list of incomplete items in the following format:

a. MS Excel electronic file. COR will return annotated copy.

1.7 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of COR for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated, or when delay in submittal of warranties might limit Owner's rights under warranty.

B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
2. Provide heavy paper dividers with plastic-covered tabs for each separate warranty. Mark tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product and the name, address, and telephone number of Installer.
3. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project name, and name of Contractor.
4. Provide a flash drive with training videos as a part of the manual.

C. Provide additional copies of each warranty to include in operation and maintenance manuals.

1.8 MEASUREMENT AND PAYMENT

A. There will be no separate measurement or payment for work in this section. Payment will be included at the contract unit price for items shown on the Schedule of Items.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

1. Use cleaning products that comply with Green Seal's GS-37, or if GS-37 is not applicable, use products that comply with the California Code of Regulations maximum allowable VOC levels.
2. Select cleaning agents that are listed in the USDA Bio Preferred website. https://www.biopreferred.gov/BioPreferred/faces/catalog/Catalog.xhtml

PART 3 - EXECUTION

3.1 FINAL CLEANING

A. General: Perform final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.

B. Cleaning: Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit to condition expected in an average commercial building cleaning and maintenance program. Comply with manufacturer's written instructions.

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:

a. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.
c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
d. Remove tools, construction equipment, machinery, and surplus material from Project site.
e. Remove snow and ice to provide safe access to building.
f. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
g. Sweep concrete floors broom clean in unoccupied spaces.
h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
i. Remove labels that are not permanent.

j. Leave Project clean and ready for occupancy.

3.2 REPAIR OF THE WORK

A. Complete repair and restoration operations before requesting inspection for determination of Substantial Completion.

B. Repair or remove and replace defective construction. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment. Where damaged or worn items cannot be repaired or restored, provide replacements. Remove and replace operating components that cannot be repaired. Restore damaged construction and permanent facilities used during construction to specified condition.

1. Remove and replace chipped, scratched, and broken glass, reflective surfaces, and other damaged transparent materials.
2. Touch up and otherwise repair and restore marred or exposed finishes and surfaces. Replace finishes and surfaces that that already show evidence of repair or restoration.

   a. Do not paint over "UL" and other required labels and identification, including mechanical and electrical nameplates. Remove paint applied to required labels and identification.

3. Replace parts subject to operating conditions during construction that may impede operation or reduce longevity.

END OF SECTION 017700
FEBRUARY 2022

SECTION 024100 - WASTE MATERIAL DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the loading, handling, hauling, and placing of excess excavation material, unsuitable excavation material, clearing and grubbing debris, and construction and demolition debris.

1.2 MEASUREMENT AND PAYMENT

A. There will be no separate measurement or payment for work in this Section. Waste material disposal is considered incidental to other items of work shown in the Schedule of Items.

PART 2 - PRODUCTS – NOT APPLICABLE

PART 3 - EXECUTION

3.1 WASTE MATERIAL TO BE HAULED TO A DISPOSAL AREA

A. All excavated material not used in the construction of embankments or backfilling of trenches, or other excess material resulting from the excavation and embankment operation shall be hauled to a disposal area.

B. All stumps, slash and other clearing and grubbing debris shall be hauled to a disposal area.

C. Disposal Area: All waste material above shall be hauled to the disposal area on Government property as designated by the Contracting Officer.

1. Waste material shall be piled and compacted to form a dense layer.
2. The size and shape of the piled waste material shall be designated by the Contracting Officer.
3. The piled material shall be covered with soil to a uniform depth of six inches minimum and sloped to 2:1 or flatter.
4. The disposal site shall be left suitable for seeding.

3.2 WASTE MATERIAL TO BE HAULED TO A LANDFILL

A. All demolition materials, garbage, and other refuse generated shall be removed from the project site and legally disposed off of Government property in an approved landfill.

B. The contractor is responsible for all costs and permits associated with landfill disposal.

C. The Government is not responsible for waste material upon its departure from the project site.

END OF SECTION 024100
February 2026

SECTION 133402 - PRECAST CONCRETE VAULT RESTROOM BUILDING

PART 1 - GENERAL

1.1 SUMMARY

A. This section applies to the fabrication and installation of a precast concrete Vault Restroom building, including shipment to site, all work necessary to completely fabricate, and installation of other manufactured accessories needed or specified in this section for a complete Vault Restroom.

B. Related sections include the following:

1. Section 024100 “Waste Material Disposal.”
2. Section 311000 “Clearing and Grubbing.”
3. Section 312000 “Earthwork.”
4. Section 321204 “Crushed Aggregate Base or Surface Course.”

1.2 SUBMITTALS

A. Manufacturer’s Literature: Submit literature for the following items to the Contracting Officer (CO) for approval within 10 day after award of contract. Drawings and literature must be marked to show the exact model, size, and color proposed.

1. Door, louvered vents, and door hardware.
2. Paint, interior and exterior.
3. Caulk, ground and adhesive.
4. Concrete color additive, stains, concrete curing compound and concrete sealer.

B. Shop Drawings: Submit four sets of shop drawings of the Vault Restroom stamped by a Professional Engineer.

C. Design Calculations: Submit two sets of design calculations showing that the building is designed for the structural loads required, fabrication and transportation loads, and crack prevention and control.

D. Concrete Delivery Certificates: Supplier shall furnish a certificate with each truckload of concrete delivered showing the items in the following list. Submit these certificates to the CO upon delivery of the Vault Restroom.

1. Weight of cement in each load.
2. Weight of fine aggregate in each load.
3. Weight of coarse aggregate in each load.
4. Weight of water in each load.
5. Time of day cement was added to the aggregate and water.

1.3 MEASUREMENT AND PAYMENT

A. Payment will be lump sum for each Pre-cast Concrete Vault Restroom installed including all work within 10 feet of the building as shown on the drawings. Payment shall include all work associated with clearing, excavation, fill, aggregate, backfill and grading necessary to complete the item.

PART 2 - PRODUCTS

2.1 PRECAST VAULT RESTROOM

A. Design criteria

1. Snow Load: 200 lbs/ft2
2. Wind Load: 90 mph, exposure C from 2012 International Building Code
3. Seismic Load: Category E from 2012 International Building Code
4. Designed to meet the requirements of the Americans with Disabilities Act Requirements and Uniform Federal Accessibility Standard including as of the date of these specifications.
5. Design incorporates all design aspects of Sweet Smelling Technology as outlined by Brian Cook for the U.S. Forest Service. ("In Depth Design and Maintenance Manual for Vault Toilets" - July 1991 - Publication No. 9123 1601)

B. Quality: Manufactured in a Precast Concrete Institute (PCI) Certified Plant for the type of product provided.

C. Manufacturers of precast concrete Vault Restrooms include, but are not limited to, the following:

1. CXT Incorporated- Building Division, Spokane, WA, (509) 921-8766, www.cxtinc.com
2. Missoula Concrete Construction, Missoula, MT, (406) 549-9682, www.missoulaconcrete.com

2.2 BUILDING WALLS AND SLAB

A. Floor Slab: 5-inch minimum thickness.

B. Walls: 4-inch average thickness, 3-inch minimum wall thickness at the top of the walls.

C. Roof: 4 ¼ inch minimum concrete thickness

2.3 OPTIONAL POST TENSIONING

A. The contractor may elect to circumferentially post tension reinforcing steel for the floor and roof slabs to protect against leaking and cracking. Should the Contractor elect to post tension reinforcement steel in the roof slab, fluid applied elastomeric roofing may be deleted.

2.4 WALL VENTS

A. Wall vents: Airolite No. 609B, size shown on the drawings, The Airolite Co., Marietta, OH, www.airolite.com; or HEAVY DUTY KICK PROOF VENT by Romtec, Roseburg, OR.; or an approved equal. Only one vent per toilet room should be installed – the contracting officer will specify the location of the vent (to be in a wall or the door – the side of the building with the prevailing wind)

2.5 ROOF

A. Sloped slab shed type or gabled type with a turned down edge to prevent water from migrating down the bottom edge of the roof panel and back into the building.

B. Minimum 6:12 pitch desired

2.6 VENT STACK

A. Vent Stack: shall be a minimum 12 inch diameter HDPE (with a DR of 32.5) and extend from the vault to a minimum of 3 feet higher than the roof peak. Vent Stack shall be black.

2.7 BIRD SCREEN:

A. Provide steel bird screen, secured with stainless steel screws for all stacks to prevent birds from entering the vault. https://tetonraptorcenter.org/our-work/poo-poo-project/ Screen shown in link or equal

2.8 PRECAST CONCRETE FORM WORK

A. Construct forms of plywood, lumber, or steel sheets or plates free of defects. Forms must be removable without injuring the concrete and must be constructed to maintain tolerances between mating surfaces of building components.

B. Form liners

1. Walls: Wood-textured appearance, Symons Corporation's "Random Barnwood," or an approved equal.
2. Roof: Wood shake appearance

C. Form coating: Non-staining type that will not leave residual matter on concrete surface or adversely affect proper bonding of subsequent coatings, caulking, grout or adhesive applied to concrete surfaces.

1. Form release agent or coating: As recommended by form liner manufacturer.
2. Coating containing mineral oils or other nondrying ingredients will not be permitted.

D. Vault:

1. Provide one concrete vault area per toilet riser.
2. Each concrete vault shall hold a minimum of 1,000 gallons of waste.

3. Concrete vault floor shall be sloped a minimum of 1 inch per foot towards the vault cleanout.
4. Vault Liner: Vault shall include a one-piece molded polyethylene (LDPE) liner with a minimum thickness of 0.10 inch and lip over top of vault. Liner shall be secured to sides of vault interior so that there are no voids between liner and sides of vault.

2.9 CONCRETE REINFORCEMENT

A. Reinforcing steel: ASTM A615, Grade 60.

B. Pre-stress strand (if used): ASTM A416, Grade 270.

C. All reinforcement shall be new, free from dirt, oil, paint, grease, loose mill scale, and loose or thick rust when placed.

2.10 CONCRETE MIX

A. Concrete supplier: Ready-mix or another approved precast concrete product firm.

B. Proportion cement, aggregate, and water to obtain concrete with good workability.

C. Concrete design

1. Aggregate: Coarse No. 67 (Table 2, ASTM C33)
2. Minimum cement content: 6.5 sacks per yd3
3. Cement type: ASTM C150 Type II, IIA, or III for building
4. Maximum water-cement ratio: 0.45
5. Slump: 3 to 5 inches by ASTM C143
6. Air content: 4-7% by ASTM C231
7. Minimum strength concrete: 4,500 psi at 28 days
8. Water: Potable
9. Admixtures:

    a. Air-entraining agent: ASTM C260
    b. Water reducing agent: ASTM C494, Type A
    c. Use of other admixtures is subject to approval by the Contracting Officer

2.11 COLORED CONCRETE

A. Color additives: ASTM C979. Provide a 12”x 12”x 1” color sample to the Contracting Officer for approval. The following components shall contain colored concrete:

1. Building roof panels
2. Building wall panels

2.12 CONCRETE CURING COMPOUND AND ROOFING

A. Curing compound: Colorless, ASTM C309, Type 1 or 1-D.

B. Fluid Applied Elastomeric Roofing: Acrylic latex resin-base elastomeric roofing material applied in fluid form suitable for use over concrete roof slabs. If manufacturer elects to post-tension roof panel, the roofing material may be deleted.

1. Color: Brown.
2. Material: "Rapid Roof" as manufactured by the Conclin Company or an approved equal.

2.13 CAULKING, GROUT, ADHESIVE, AND MORTAR

A. Caulking shall remain flexible and non-sag at temperatures from -50° to 140° Fahrenheit.

1. Exterior, roof peak joint: 100% silicone caulk, clear; GE Silicone II or an approved equal.
2. Exterior joints (including roof/wall and wall panel joints): Tripolymer sealant caulk which compliments exterior color and has a minimum 5-year guarantee.
3. Interior joints: Paintable silicone-based caulking with a minimum 5-year guarantee.

B. Grout: Non-shrink type matching color of surrounding concrete as closely as possible.

C. Epoxy concrete adhesive: Two component, rigid, non-sag gel adhesive for bonding to dry or damp surfaces, moisture insensitive. Color to match surrounding concrete as closely as possible.

D. Portland cement mortar: One part Portland cement, three parts sand, and enough water to make a workable mixture.

2.14 FINISHES AND PAINTS

A. Paint and accessory materials: Similar to the "top-of-the-line" products of the manufacturer's listed below.

1. Benjamin-Moore and Company, www.benjaminmoore.com
2. Columbia Paint Company, www.columbiapaint.com

B. Maximum lead content: 0.06 % by weight of lead.

C. Type of Paint

1. Metal, interior and exterior

a. Waterborne acrylic bonding primer, Columbia 04-022, or an approved equal.
b. Alkyd-oil Based Enamel, semi-gloss, Columbia 03-241, or an approved equal.

2. Exterior Concrete

a. Stain- pure acrylic water repellent penetrating stain
b. Sealer- clear acrylic anti-graffiti sealer

3. Interior Concrete

a. Floors- 1 part water based epoxy with a silica sand suspension to provide a uniform texture.
b. Interior walls and ceiling- modified acrylic, penetrating pigment followed by a clear acrylic anti-graffiti sealer.

D. Paint colors

1. Metal window and door frames, louvered vents, and doors (interior and exterior): Java Brown
2. Exterior concrete walls and floor: Sand Beige
3. Exterior concrete roof: Java Brown
4. Interior concrete walls: White
5. Interior concrete floor: Gray

2.15 STEEL DOORS

A. Doors: Flush panel type, 1 ¾ inch thick, minimum gauge zinc-coated steel panels, with minimum 18-gauge internal bracing channels, equal to Steelcraft L-16 of size shown on the drawings.

B. Door frames shall be knockdown or welded type, single rabbet, minimum 16-gauge zinc-coated steel, width to suit wall thickness, equal to Steelcraft.

1. Three (3) rubber door silencers shall be provided on latch side of frame

C. Door frame anchors

1. Provide three (3) anchors per jamb located approximately at the same level as hinge locations.
2. Use anchor type suitable for fastening to precast concrete and designed for future removal of frame.
3. Anchors may be omitted if frame is cast in panel.

D. Door hinges

1. One (1) pair shall be 4 ½ inch spring hinges
2. One-half (½) pair shall be standard butt hinge
3. Top and bottom hinge shall have an adjustable tension spring and be adjusted to a 5 lb. maximum pull.
4. Finish shall be US26D (dull chrome)

E. Deadbolt shall be Mortised type, operated by key from outside only, which will receive the Forest Service cylinder; similar and equal to Yale 1152. Finish shall be US26D (dull chrome).

F. Door sweep shall be an adjustable brush type placed at bottom of door.

G. Door stop shall be a cast metal base, US26D (dull chrome) finish with gray rubber 2 3/8 inch diameter bumper with a 1-inch projection

H. Threshold shall be extruded aluminum with neoprene seal, Pemco #170, or an approved equal.

2.16 INTERIOR HARDWARE

A. Grab Bars: Grab bars shall be 18-guage type 304 stainless steel, 1 ½ inch diameter with 1 ½ inch clearance; minimum of length required for accessibility standards. Able to withstand 300-pound top load.

B. Toilet Paper Dispenser: Constructed of ¼" thick, type 304 stainless steel. Holds three (3) standard rolls of toilet paper. Fastening system able to withstand 300-pound top loading.

C. Double Coat Hook: Formed construction, type 304 stainless steel (Satin Finish), 16-guage minimum.

D. Toilet riser: Toilet riser shall be molded, smooth one-piece constructed of HDPE polyethylene, cross linked polyethylene, or stainless steel. With heavy duty seat and lid (Color: White); Meeting ADA standards. Apply Butyl rubber adhesive sealant to the top surface of the concrete vault before placing the structure on the vault.

2.17 SIGNS

A. Signs: Signs to have raised pictograms, letters, and braille to meet ADA. Signs shall designate standard unisex symbol for single units or separate mens & womens for double units. All signs to be securely anchored into concrete with tamper resistant anchors.

2.18 WINDOWS

A. Window frames shall be constructed from steel tubing and fasten water-tight to building with vandal resistant fasteners.

B. Window glazing shall be translucent pebble finished mar-resistant Lexan polycarbonate. Minimum thickness of ¼ inch.

2.19 VAULT CLEANOUT

A. Frame: shall be constructed from steel frame poured integral with the concrete slab.

B. Cover/Lid: shall be constructed of minimum ¼ inch steel. Shall be hinged to the steel frame. Configured with a locking mechanism that will receive a government furnished padlock.

C. Gasket: Cover/Lid shall be gasketed around the entire perimeter of the lid to provide an airtight seal.

2.20 CRUSHED AGGREGATE LEVELING COARSE

A. According to Section 3212004 "Crushed Aggregate Base or Surface Course" Grading E.

PART 3 - EXECUTION

3.1 BUILDING CONSTRUCTION

A. Concrete

1. Support and brace forms sufficiently to prevent distortion of forms due to pressure of the concrete during vibrating of concrete and the curing period.
2. Vertical grooves in the form liner pattern shall be continuous except for openings for doors.

    a. Horizontal butt joints between liner panels will not be allowed.
    b. Vertical butt joints between form liner panels shall be made at vertical groove in liner pattern except at outside corners.
    c. Vertical grooves in form liner pattern shall be arranged so that there is equal space between vertical doorframe edges and the adjacent vertical grooves at each opening.

3. Form ties will not be allowed.
4. Thoroughly clean forms and form liners before each use.
5. Apply form coating and form release agent on all forms and form liners in accordance with the manufacturer's recommendations
6. The Contractor shall assume all responsibility for determining when to remove the concrete components from the forms without causing structural damage to the components. Vault Restrooms constructed with damaged components will be rejected.

B. Concrete Reinforcement

1. Details of reinforcement: ACI 318.
2. Center steel reinforcement in the cross-sectional area of the walls. Provide at least 1 inch of concrete cover on the under surface of roof and floor. Provide diagonal reinforcement at openings.
3. Accurately place and adequately support reinforcing steel or strand in final position prior to starting placement of concrete. The maximum allowable variation for center-to-center spacing of reinforcing steel is ½ inch.
4. Use full length reinforcing steel whenever possible and keep the number of splices to a minimum. When splices are necessary on long runs, alter splices from opposite sides of the component for adjacent steel bars.

    a. No. 4 or smaller shall be lapped a minimum of 12 inches;
    b. Larger than No. 4 shall be lapped a minimum of 24 bar diameters.

5. Bend bars cold. Do not bend bars partially embedded in concrete

C. Cold Weather Concrete

1. Cold weather concrete: ACI 306 and as follows:

    a. Do not place concrete if ambient temperature is expected to be below 35°F during the curing period unless heating equipment is readily available to maintain temperature of at least 45°F.
    b. Use no materials containing frost or lumps of frozen.

D. Hot Weather Concrete

1. The temperature of the concrete shall not exceed 80°F at the time of placement, and when the ambient temperature reaches 90°F, the concrete shall be protected with moist covering or other methods approved by the Contracting Officer.

E. Mixing And Delivery Of Ready Mix Concrete: ASTM C94, Section 11.5 through 11.9.

F. Placing And Consolidating Concrete

1. Notify the Contracting Officer at least 24 hours before any concrete placement to permit inspection
2. Place layers not more than 24 inches deep. Do not move concrete with vibrators or tampers
3. Consolidate the concrete with suitable mechanical vibrators operating within the concrete or attached steel forms. Vibrate at any point sufficiently to accomplish compaction, but do not prolong to a point where segregation occurs.

G. Finishing Concrete

1. Interior Floor and Exterior Slab

   a. Strike flush to within 1/8-inch variation in 6 feet.
   b. Float and trowel slabs smooth until no marks remain.
   c. Apply final light broom finish to exterior slabs only.

2. Interior Wall Surfaces and Ceiling

   a. Finish shall be that provided by smooth steel form or smooth trowel finish with no trowel marks.

3. Exterior Wall Surfaces: Barnwood texture provided by approved form liner.
4. Exterior Roof Surface: Shake texture provided by approved form liner.
5. Cracks and Patching

   a. Cracks in concrete components caused by Contractor fabrication, shrinkage during curing, handling, shipping, and installation shall be cause for rejection if the Government determines that the crack will affect the serviceability or structural integrity of the component.
   b. Fill small holes, depressions, and air or rock pockets in all surfaces with non-shrinking Portland cement based patching material while concrete is still green and within one day of form removal. Patch shall match the color, finish, and texture of surrounding surface.
   c. Patching will not be allowed on any component with holes, chips, or exposed reinforcement totaling more than 18 in3 or with any defects more than 2 inches deep. Those components will be rejected and must be replaced at Contractor's expense.

H. Curing And Hardening Concrete

1. Keep all concrete surfaces moist for at least six days after being placed. Acceptable methods include ponding, wet burlap, curing paper, plastic sheets, and membrane curing compound. Other methods are subject to the approval of the Contracting Officer.

2. Membrane curing compounds will not be allowed where curing compound will interfere with penetration or adhesion of final finish

I. Colored Concrete

1. Use the same type and brand of cement, coloring agent, aggregates, and other additives throughout the building. Use ingredients from the same lot or manufacturing process. Use aggregates from only one source.
2. Use uniform batches of concrete to ensure consistency of the finished concrete color. Weigh all ingredients. Add color by weight as recommended by manufacturer of the concrete color. Uniformly disperse the color throughout each batch during the mixing operation.

    a. Wash and thoroughly clean the mixer and transporting equipment before mixing colored concrete. Repeat each time a change is made to a different color.

J. Structural Joints

1. Joining details other than those detailed below will not be allowed unless shown on shop drawings that are stamped by a Professional Engineer and approved by the Contracting Officer prior to manufacture of buildings.
2. Anchor weld plates into concrete panels and weld together with a continuous weld. Thoroughly clean welds prior to application of caulk or paint.
3. Join wall components together with two welded plate pairs at each joint.

    a. Weld plate: 6 inches long; with one pair located in the top quarter and one pair in the bottom quarter of the seam.
    b. Seal inside seams with paintable caulk.
    c. Seal outside seams with caulk to match building color or clear.

4. Join walls and roof with weld plates, minimum 3” x 6”, at each building corner.

    a. Where the Contracting Officer determines that the joint between walls and the roof is true enough to prevent point loadings on the walls, seal the joint between walls and roof gas-tight with paintable caulk.
    b. Where the joint between the walls and roof is not true enough to prevent point loading, grout the joint with approved rigid non-shrinking grout that will distribute the weight of the roof evenly around the perimeter of the building walls.
    c. Seal exterior seams with caulk that is clear or matches building color.

5. Join the floor slab and walls with a grout mixture on the interior and two weld plate pairs for each wall component, one near each end of each wall panel, or each corner on each side, whichever is greater.

    a. Weld plate: 6 inches long
    b. Grout: Provide smooth cover between walls and floor

K. Finishes And Paint

1. Apply materials in accordance with manufacturer’s recommendations.

2. Examine surfaces to ensure all are properly prepared to receive finish.

   a. Allow a minimum of 14 days curing time for concrete before paints are applied to concrete. Allow longer time when recommended by paint manufacturer.
   b. If needed to ensure uniform application, prepare concrete surface for paint application by acid etching with 30% H=hydrochloric acid. Flush with water and allow to thoroughly dry.

3. Painting shall not be done under the following conditions:

   a. Temperature is 50°F or below.
   b. Surfaces are damp.
   c. Dusty areas.

4. Schedule of Finishes

   a. Metalwork (steel doors, door vents and frames, and roof posts)

      1) One coat metal primer
      2) Two coats alkyd oil enamel in Java Brown

   b. Exterior surfaces of building walls and roof, unless concrete color manufacturer recommends a different procedure:

      1) Two coats of stain
      2) Linseed oil (may be applied and allowed to cure for brown buildings)
      3) One coat of clear sealer

   c. Interior Concrete Surfaces

      1) Walls and ceiling of building: Two coats of pigment followed by one coat of clear sealer.
      2) Interior floor: One coat of epoxy with a silica sand suspension.

L. Fluid Roofing

1. Apply a minimum of two coats of elastomeric roofing on top of the roof slab.

   a. Prepare concrete surface and apply and cure roofing in accordance with manufacturer's recommended procedures.
   b. Minimum coverage: 3 gallons per square (100 ft2)
   c. Apply joint tape to hairline cracks between applications of the two coats of elastomeric roofing.

2. This item may be deleted if there are no cracks.

M. Metal Doors And Frames

1. Install steel doorframe in accordance with manufacturer's recommendations.

   a. Fit door accurately in frame

2. Install hardware in accordance with manufacturer's instructions after finish painting is completed.
3. Install sweep on bottom of door and adjust so it contacts the threshold when door is closed.

3.2 CLEARING AND GRUBBING

A. Site clearing and grubbing shall be in accordance with Section 311000 "Clearing and Grubbing".

3.3 EXCAVATION, BACKFILL, AND SITE GRADING

A. Excavation, backfill, and site grading shall be in accordance with Section 312000 "Earthwork" and Section 311204 "Crushed Aggregate Base or Surface Course".

B. Coordination with the Building Manufacturer

1. Contractor shall coordinate with the manufacturer of the precast concrete building to accommodate installation at the time of delivery.
2. The Contractor shall be responsible to obtain installation instructions from the manufacturer and perform the excavation, backfill, and site grading in accordance with those instructions.
3. The Contractor must have excavation complete prior to delivery of the precast concrete building. The Contractor will be provided 1-week minimum lead-time to have the excavation work performed.

    a. The excavation shall be over excavated two feet (horizontal measurement) on each side of the slab to allow for compaction and minor adjustments in orientation.
    b. Stockpile excavated material away from the excavation to facilitate crane and delivery truck access. The crane and delivery truck typically need to be side-to-side during placement.
    c. Compact the natural ground at the bottom of the vault excavation with a minimum of three passes with an approved whacker-type mechanical tamper.

4. The Contractor must be on site at the time of delivery to perform the backfill operation as soon as the precast concrete building is in place.

C. Bedding

1. The Contractor shall place a leveling course prior to placement of the vault or building.
2. Compact leveling course with one pass of an approved mechanical tamper.
3. Grade leveling course so there will be no high spots in the middle.
4. Compact with a second pass of a tamper.
5. Slope the top of the bedding one percent from back to front of building.

    a. Minimum compacted leveling course for building slab shall be 6 inches.

D. Backfill

1. Backfill shall be permitted only after the work to be covered has been approved by the Contracting Officer.
2. Backfill shall be placed in 8" thick (loose measurement) lifts and compacted with three complete passes of an approved vibratory compactor.

E. Finish Grading

1. All surfaces and slopes shall be shaped to blend with the original ground line, mounded over or smoothed off, and raked, and left in a uniform and neat condition. Stockpiled topsoil shall be smoothly distributed over disturbed areas and hand raked to blend with ground line. Final grade shall be flush with top of front slab to provide accessibility.
2. The surface of shall be graded and shaped as shown on the drawings. Surface drainage shall be diverted so that water will not enter into the area.

F. Cleanup

1. After backfilling and grading has been completed, the disturbed area shall be finished to present as near a natural appearance as possible and cleaned up by removing all debris and materials not utilized.
2. Clean building walls, floors, and roof using soapy water.

G. Disposal

1. All unsuitable excavated material, oversize boulders, stumps, small limbs, brush, sod and other construction refuse shall be disposed of off-site at a State-approved disposal site.

END OF SECTION 133401
February 2026

SECTION 311000 - CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SUMMARY

A. This work shall consist of clearing, grubbing, trimming, removing, and disposing of or treatment of timber, construction slash, and debris. This work shall also include preservation of vegetation and objects designated to remain from injury or defacement.

1.2 RELATED SECTIONS

A. Section 024100 “Waste Material Disposal.”

1.3 DEFINITIONS

A. Areas to be Cleared and Grubbed - The limits of clearing and grubbing will be established by this specification, by other specification items, or on contract Drawings. The clearing and grubbing limits will normally coincide with the designated working limits; however, the Contracting Officer may also designate individual trees and snags outside the clearing limits for selective removal and disposal, or he may designate areas within the working limits where clearing and grubbing is not required or allowed within the provisions of this specification.

1. Grading Limits - Area that is to be excavated or covered with additional materials during construction.
2. Working Limits - Area consisting of the grading limits plus room for equipment to maneuver to perform the necessary clearing and grubbing. These limits, to be held to a minimum, will be designated for each project.
3. Clearing Limits - Area consisting of the working limits plus any additional area to operate a boom or other above-ground clearance requirement.

1.4 MEASUREMENT AND PAYMENT

A. There will be no separate measurement or payment for work in this Section. Clearing and Grubbing is considered incidental to other items of work shown in the Schedule of Items.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLEARING AND GRUBBING

A. All trees, brush, shrubs, stumps, roots, and other vegetative material and debris within the designated clearing limits, shall be cleared, grubbed, removed, and disposed of except the following condition:

1. Those items designated to remain by the Contract or Contracting Officer.
2. Undisturbed stumps outside the roadway, trailway, and parking area, provided they do not extend more than 12 inches above the original ground (measured from the uphill side) and are not closer than 2 feet from the edge of road or parking area, are not in the cut or fill slopes, and they do not interfere with the placement or compaction of embankments.

B. Clearing slash shall be treated in accordance with "Slash Treatment" paragraph below.

C. Branches on remaining trees or shrubs shall be trimmed to give a clear height of 14 feet above the roadbed unless otherwise shown on the Drawings. Tree limbs shall be trimmed as near flush with the trunk as practicable.

3.2 UTILIZATION OF TIMBER (Not Applicable)

3.3 PIONEER

A. Pioneering operations shall be done in a manner that prevents undercutting of final excavation slopes, maintains materials within the road, trail, or parking limits, and controls runoff.

3.4 SLASH TREATMENT

A. Treatment of construction slash larger than 3-inches in diameter and 3-feet in length shall be accomplished by the following methods as Designated by the Contracting Officer:

1. Removal: Construction slash shall be removed or hauled to locations designated on the ground.

B. Construction slash less than 3 inches in diameter and 3 feet in length may be scattered within the clearing limits.

C. No construction slash shall be deposited in lakes, meadows, streams, or streambeds. Construction slash that interferes with drainage structures shall be removed immediately.

3.5 CLEARING OR CLEARING AND GRUBBING REQUIREMENTS FOR VARIOUS ITEMS:

A. Roadways and Parking Areas in Campgrounds and Recreation Sites: Clearing and grubbing limits will normally be 4 feet from the edge of asphalt (or edge of the travel lane for aggregate roads) on both sides of the road, or the distance from the edge of asphalt/travel lane to the cut/fill catch lines, whichever is greater.

B. Campground Spurs: Clearing and grubbing limits will normally be 2 feet from the edge of asphalt (or edge of the travel lane for aggregate roads) on all sides of the spur, or the

distance from the edge of asphalt/travel lane to the cut/fill catch lines, whichever is greater.

C. Buildings - Construction work shall disturb a minimum of the existing terrain and plant life adjacent to the building site. Only trees, shrubs, stumps, and major roots which interfere may be removed. When excavation reveals the major roots of a live and significant tree nearby, the Contractor shall not remove the tree unless it interferes with the construction and removal is authorized by Contracting Officer.

1. Comfort Stations, Pumphouse, and Sewage Lift Stations - Maximum clearing limits shall be confined to an area 20 feet outside the outside structure foundation wall on two sides and to an area 10 feet outside the outside structure foundation wall on the other two sides, unless otherwise shown on Drawings.

3.6 OLD GROWTH TREES AND OTHER TREES DESIGNATED TO REMAIN

A. Applies to:

1. "Old Growth Trees:" Trees that have a diameter at breast height (DBH) of ≥ 30 inches or an age of ≥ 150 years, and exhibit mature characteristics such as large limbs, thick bark, and potential cavities.
2. Any tree designated to remain on the plans.
3. Any other tree designated to remain by the Contracting Officer.

B. Applicable trees shall be protected to the greatest extent possible. Some trees may not be shown on the plans. Do not remove any applicable trees within the project area unless shown on the plans or approved by the Contracting Officer.

C. Where applicable trees are located within or near the clearing limits of a roadway or campsite spur, the following conditions shall apply:

1. Root Zone Avoidance: Avoid cutting into the roots or placing fill over roots within the dripline/critical root zone to the maximum extent practical. If roots must be cut, make clean cuts perpendicular to the root. Tearing roots with buckets or rippers is prohibited.
2. Cut Slopes:

   a. Within 5 feet of the trunk: the 12-inch shoulder taper may be reduced or eliminated, and cut slopes may be steepened to avoid cutting below natural grade.

3. Fill Slopes:

   a. Within 5 feet of the trunk, the fill slope may be steepened to 1:1 and/or rockery retaining walls may be installed according to the Drawings to retain the fill slope.

3.7 TEMPORARY EROSION AND SEDIMENTATION CONTROL (Not used)

3.8 WASTE DISPOSAL

A. Debris and refuse shall be disposed of in accordance with Section 024100 “Waste Material Disposal”.

END OF SECTION 311000
February 2026

SECTION 312000 - EARTHWORK

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Excavating and backfilling for buildings and structures.
2. Sub-surface drainage.

B. Related Sections include the following:

1. Section 133402 “Precast Concrete Vault Restroom Building.”

1.2 DEFINITIONS

A. Backfill: Soil materials used to fill an excavation.

B. Borrow or Select Borrow: Satisfactory soil material used for embankment, backfill, or fill construction that is either imported from off-site or excavated from designated locations at the site.

C. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Contracting Officer. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction of the Contracting Officer. Unauthorized excavation, as well as remedial work directed by Contracting Officer, shall be without additional compensation.
3. Unclassified Excavation: Excavation to subgrade elevation and to lines and dimensions indicated regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.

D. Fill: Soil materials used to raise existing grades.

E. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

F. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, aggregate base, drainage fill, initial or subsequent backfill, or topsoil materials.

1.3 SUBMITTALS

A. Contractor shall submit to the Contracting Officer for approval source of aggregates and backfill materials and certified sieve analysis. Materials from Government Sources are exempt from this requirement.

1.4 PROJECT CONDITIONS

1.5 MEASUREMENT AND PAYMENT

A. There will be no separate measurement or payment for work in this Section. Payment will be included in the contract unit price as shown on the Schedule of Items.

PART 2 - PRODUCTS

2.1 BACKFILL MATERIALS, GENERAL

A. Excavated material may be processed and used for backfill if the Contractor can show compliance with the material specified herein to the satisfaction of the Contracting Officer. If excavated material is not sufficient to meet requirements, Contractor shall import needed material.

B. Satisfactory Soils: ASTM D 2487 soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches (75 mm) in any dimension, debris, waste frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: ASTM D 2487 soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Backfill and Fill: Satisfactory soil materials.

1. Remove rocks over 8 inches in maximum dimension, ice or frozen earth, muck, debris, and earth with high void content.
2. Remove rocks over 4 inches in maximum dimension for backfill placed within 12 inches of foundation.

2.2 ENGINEERED FILL

A. Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1 1/2 inch sieve and not more than 12 percent passing a No. 200 sieve.

PART 3 - EXECUTION

3.1 LOCATION, ALIGNMENT AND GRADE

A. The location of all structures shall be staked out and grades established by the Contractor. Locations shall be approved by the Contracting Officer before excavation is started.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.4 EXPLOSIVES

A. Do not use explosives.

B. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards that could develop during excavation.

C. Design, furnish, install, monitor, and maintain excavation support and protection system capable of supporting excavation sidewalls and resisting soil and hydrostatic pressures and superimposed and construction loads.

D. The contractor shall meet State General Safety Orders and the provisions of the Occupational Safety and Health Administration (OSHA) pertaining to excavation support and protection, including 29 CFR 1926 Subpart P.

E. Walls of excavations 5 feet or more in depth shall be supported by shoring and bracing methods or the walls shall be sloped at one and a half to one.

F. Remove excavation support and protection systems when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities.

3.5 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for removal of obstructions.

1. backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

B. Topsoil shall be removed from the area to be excavated and from the area where excavated material will be piled, prior to excavation. Topsoil shall be stored as specified below.

C. Maintain the excavations to guard against and prevent injury to employees and the public. Provide adequate shoring and bracing as required by OSHA and other local governing regulations.

D. Excavations left open at the end of the working day shall be fenced to protect the public.

3.6 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
2. Excavation for Underground Tanks, Basins, Pump Houses and Utility Boxes: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended for bearing surface.

3.7 APPROVAL OF SUBGRADE

A. Notify Contracting Officer when excavations have reached required subgrade.

B. If Contracting Officer determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

3.8 STORAGE OF SOIL MATERIALS

A. Stockpile, borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

B. Topsoil shall be kept separate from trench-excavated material by either stockpiling or by windrowing on the opposite side of the trench from which the trench excavated material will be placed. Topsoil will be reused after backfilling on those areas from which it came.

3.9 STRUCTURE BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, damp proofing, waterproofing, and perimeter insulation.
2. Removing concrete formwork.
3. Removing trash and debris.
4. Removing temporary shoring and bracing, and sheeting.
5. Installing permanent or temporary horizontal bracing on horizontally supported walls.

B. Place and compact fills and backfills adjacent to structures in such a manner as to prevent wedging action or eccentric lodging upon or against the structures.

C. Place backfill in horizontal layers not more than 12 inches thick with proper moisture content for the required degree of compaction. Flooding or puddling is not allowed. Compact each layer as specified. Backfill layers under concrete flatwork shall be not more than 6 inches thick

D. Do not place backfill against any concrete footings or structure without prior permission of the Contracting Officer and in no case less than 7 days after placement of concrete.

E. Heavy equipment shall not be operated within four feet of any structure.

F. Provide for anticipated settlement and shrinkage of the backfill and for the finished grades required.

G. Surface Restoration in Areas Other Than Roads

1. All surfaces shall be restored to the required grade (usually original ground line), mounded over or smoothed off as directed, and left in a uniform and neat condition, to the satisfaction of the Contracting Officer. Surface drainage shall be diverted so that it will not flow along a trench. In areas where natural revegetation is designated (no planting to be done), the Contractor shall scarify all disturbed or compacted areas and right-of-ways such that the surface of the ground is loose to a depth of at least one inch. In areas to be seeded, the area shall be prepared in accordance with Section 329206 “Seeding.”

H. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.

I. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

J. Place and compact fill material in layers to required elevations as follows:

1. Under building slabs, use engineered fill.
2. Under utility buildings, use engineered fill or fill according to Section 133400 "Precast Concrete Utility Building."
3. Under footings and foundations, use engineered fill.

3.10 MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.11 COMPACTION OF BACKFILLS AND FILLS

A. The minimum degree of compaction required shall be a percent of the maximum laboratory density obtained by the standard proctor test AASHTO T99 or ASTM D698. The in-place field density shall be determined by AASHTTO T238 or ASTM D2922. The minimum compaction requirements are:

1. Under structures, water and septic tanks, utility boxes, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 95 percent.
2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 90 percent.
3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 85 percent.

3.12 GRADING

A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Lawn or Unpaved Areas: Plus or minus 1 inch (25 mm).
2. Walks: Plus or minus 1 inch (25 mm).
3. Pavements: Plus or minus 1/2 inch (13 mm).

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch (13 mm) when tested with a 10-foot (3-m) straightedge.

D. Finishing Slopes: Finished slopes shall conform reasonably to the lines staked on the ground or shown on the drawings. The finished slope shall be left in a roughened condition to facilitate the establishment of vegetative growth. The finish associated with template and stringline or hand-raking methods will not be allowed.

3.13 AGGREGATE BASE COURSE [SUBBASE AND BASE COURSES]

A. Under pavements and walks, place subbase course on prepared subgrade and as follows:

1. Place base course material over subbase.
2. Subbase and base course compaction required shall be 95 percent of the maximum laboratory density obtained by the standard proctor test AASHTO T99 or ASTM D698. The in-place field density shall be determined by AASHTTO T238 or ASTM D2922.
3. Shape subbase and base to required crown elevations and cross-slope grades.
4. When thickness of compacted subbase or base course is 6 inches (150 mm) or less, place materials in a single layer.
5. When thickness of compacted subbase or base course exceeds 6 inches (150 mm), place materials in equal layers, with no layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick when compacted.

3.14 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified independent geotechnical engineering testing agency to perform field quality control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work complies with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design-bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Contracting Officer.

D. Testing agency will test compaction of soils in place according to ASTM D 2922. Tests will be performed at the following locations and frequencies:

E. When testing agency reports that subgrades, fills or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

F. Excessive settlement or other evidence of improper backfill shall be corrected by reopening the trench or excavation to the depth required for proper compaction and then shall be refilled and satisfactorily compacted.

G. The correction and retesting of unacceptable work shall be paid by the Contractor at no expense to the Government.

3.15 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specify tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Contracting Officer, reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.16 SURFACE FINISH

A. In unpaved areas all surfaces shall be restored to the original ground line or elevations shown on the drawings and left in a uniform and neat condition. Any stockpiled topsoil shall be smoothly distributed over disturbed areas to elevations shown on the drawings.

3.17 WASTE MATERIAL

A. According to Section 024100 “Waste Material Disposal.”

END OF SECTION 312000
February 2026

SECTION 321204 - CRUSHED AGGREGATE BASE OR SURFACE COURSE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes furnishing, hauling and placing one or more courses of aggregate base or surface course material on roadways, campground spurs, parking areas, concrete pads, and pathways. In addition, may include furnishing, hauling, and placing crushed aggregate for bedding and backfill.

1.2 SUBMITTALS

A. Aggregate source, gradation, and material properties.

1. Submit target values within the gradation ranges shown in Table 321204-1 and /or 321204-2 for the required grading. After reviewing the Contractor's proposed target values the CO will determine the final values for the gradation and notify the Contractor in writing.

B. Compaction density test results and proctor.

1.3 MEASUREMENT AND PAYMENT

A. Crushed Aggregate: Number of tons of material supplied and installed. Measurement shall be vehicle weight tickets. Batch masses may be acceptable for determination of pay quantities when an approved automatic weighing, cycling, and monitoring system is included as part of the batching equipment. Crushed aggregate shall be used for the construction of roadways, campground spurs, parking areas, concrete pads, sidewalks, pathways and other items as shown on the Drawings.

B. No adjustment in a contract unit price will be made for variations in quantity due to differences in the specific gravity or moisture content.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. General: Furnish aggregate Subbase, Base, or Surface Courses meeting the gradation ranges shown in Table 321204-1 and Table 321204-2. Aggregate grade selection shall be as shown on the Drawings and in the Schedule of Items.

B. Materials shall be obtained from an approved source. Furnish aggregates that consist of hard, durable particles or fragments of crushed stone, crushed slag, or crushed gravel meeting the appropriate gradation and conforming to the following:

1. Los Angeles abrasion, AASHTO T 96 …...…….……... 40% max
2. Sodium sulfate soundness loss (five cycles), AASHTO T 104 …….. 12% max
3. Durability index, AASHTO T 210 ……. 35 min
4. Fractured faces, ASTM D 5821 (Subbase or Base)……. 50% min
5. Fractured faces, ASTM D 5821 (Surface Course).……. 75% min
6. Free from organic matter and lumps or balls of clay.

C. Obtain the aggregate gradation by crushing, screening, and blending processes as necessary.

2.2 AGGREGATE GRADATION

Table 321204-1, Crushed Aggregate Grading Requirements for Subbase and Base.

Percent Passing (AASHTO T27 and T11)					
Sieve	Grading A (Subbase)	Grading B (Subbase)	Grading C (Base)	Grading D (Base)	Grading E (Base)
2 1/2 -inch	100				
2-inch	97-100	100	100		
1-1/2-inch		97-100			
1-inch	65-79 (6)		80-100 (6)	100	
3/4-inch			60-94 (6)	86-100 (6)	100
1/2-inch	45-59 (7)				
3/8-inch			40-69 (6)	51-82 (6)	62-90 (6)
No. 4	28-42 (6)	40-60 (8)	31-54 (6)	36-64 (6)	36-74 (6)
No. 40	9-17 (4)			12-26 (4)	12-26 (4)
No. 200	4-8 (3)	4-12 (4)	4-7 (3)	4-7 (3)	4-7 (3)

() The value in the parentheses is the allowable deviation (+ / -) from the target values.

Liquid Limit, AASHTO T89 = 25 max. Plastic Limit, AASHTO T-90 = nonplastic.

Table 321204-2, Crushed Aggregate Grading Requirements for Surface Course.

Percent Passing (AASHTO T27and T11)		
Sieve	Grading F (Surface Course)	Grading G (Surface Course)
1-1/2-inch	100	
1-inch	97-100	100
3/4-inch	76-89 (6)	97-100
1/2-inch		
3/8-inch	56-68 (6)	70-80 (6)
No. 4	43-53 (7)	51-63 (7)
No. 8		
No. 16	23-32 (6)	28-39 (6)
No. 40	15-23 (5)	19-27 (5)
No. 200	10-16 (4)	10-20

() The value in the parentheses is the allowable deviation (+ / -) from the target values.

Liquid Limit, AASHTO T 89 = 35 max, Plastic Index, AASHTO T90 = 2 to 9 if percent passing the No. 200 sieve is less than 12% and less than 2 if the percent passing the No. 200 sieve is greater than 12%.

If the plasticity index (PI) is greater than 0, the TV range for the No. 200 sieve size is 8-12 (4).

PART 3 - EXECUTION

3.1 GENERAL

A. Verify that subgrade is dry and in suitable condition, locate areas that are unstable or that require further compaction.

B. Proceed with aggregate placement only after unsatisfactory conditions have been corrected and subgrade is approved in writing by the Contracting Officer (CO).

3.2 PREPARATION OF SUBGRADE

A. The subgrade shall be prepared in accordance with requirements of other specifications sections.

B. The subgrade shall conform to the lines and grades shown on the Drawings. Suitable material shall be utilized in the preparation of the subgrade. When embankment or fill is necessary, subgrade shall be placed in compacted layers not exceeding 6 inches. Unless specified otherwise, subgrade shall be compacted to 95 percent of AASHTO T 99, method C or D.

C. Suitable material for subgrade shall be granular material or fine compatible soil free of excess moisture, muck, frozen lumps, roots, sod, and other deleterious material. Remove all rock particles and hard earth clods larger than 3 inches in the longest dimension.

3.3 MIXING AND SPREADING

A. Mix the aggregate and adjust the moisture content to obtain uniform moisture. Spread and shape the mixture on the prepared surface in a uniform layer not to exceed 6 inches in compacted thickness.

B. Route hauling equipment uniformly over the full width of the surface to minimize rutting or uneven compaction.

3.4 COMPACTING

A. Compact each layer of aggregate full width. Compact each layer to a density of at least 95 percent of the maximum density as determined by AASHTO T 99 method C or D.

B. Testing shall be at intervals specified in tables shown in Section 014100 “Quality Control.”

3.5 SURFACE AND CONSTRUCTION TOLERANCES

A. Aggregate shall be placed as shown on the drawings and as staked. Tolerance for thickness of aggregate shall be +/– ½-inch and for width shall be + 1-foot.

3.6 ACCEPTANCE

A. Aggregate shall be accepted following placement when shown to meet material quality, gradation, compaction requirements, required depth and width, and finish blading.

END OF SECTION 321204
February 2026