

**CONSTRUCT COLORADO RIVER DISTRICT  
BARN AND TACK SHED  
ROCKY MOUNTAIN NATIONAL PARK**

ROMO PMIS NO. 316223

**DIVISION 1  
SPECIFICATIONS**



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1.1 DESIGN PROFESSIONALS OF RECORD:

A. CIVIL ENGINEER:

Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly registered Professional Engineer.

License No. 50723

Expiration Date: 10/31/2023

JVA, Inc.



B. LANDSCAPE ARCHITECT:

Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly registered Landscape Architect.

License No. 1346

Expiration Date: 12/2023

DHM Design





C. ARCHITECT:

Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly registered Architect.

License No. C-4154

Expiration Date: JULY 31 2024

ajc architects



D. STRUCTURAL ENGINEER:

Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly registered Professional Engineer.

License No. 50371

Expiration Date: 10/31/23

JVA, Inc.



E. MECHANICAL & PLUMBING ENGINEER:

Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly registered Professional Engineer.

License No. 006513

Expiration Date: 10/31/23

360 Engineering, Inc.



F. ELECTRICAL ENGINEER:

Professional Certification. I hereby certify that these documents were prepared or approved by me and that I am a duly registered Professional Engineer.

License No. 35717

Expiration Date: 10/31/2023

AE Design



END OF SECTION

## SECTION 01 11 00 - SUMMARY OF WORK

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 11 00 “Summary of Work” includes the following:
  - 1. Work covered by the Contract Documents.
  - 2. Government Furnished Materials.
  - 3. Contractor use of site.
  - 4. Public use of site.
  - 5. Work Restrictions.
  - 6. Protection of Existing Vegetation, Structures, Equipment, Utilities and Improvements
  - 7. Special Construction Requirements.
  - 8. Additional Compliance Requirements.
  - 9. References.

#### 1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Location: Rocky Mountain National Park, Colorado River District (CRD) Barn and Tack Shed. North of Grand Lake, Colorado; approximately two (2) miles from intersection of US 34 and County Rd 278 (W Portal Rd) and south of the CRD maintenance building.
- B. The Work includes but is not limited to:
  - 1. Base Contract: The Work includes but is not limited to construction of a new barn/tack shed with conditioned and unconditioned spaces with new mechanical, electrical and plumbing utilities at the barn/tack shed and a new separate hay storage building. Site improvements include: new colored concrete accessible parking and sidewalks at the barn/tack shed, gravel parking and road, site furnishings, and all other site utility improvements including an OWTS system. This project scope includes the clean-up of the existing barn and tack shed debris left by the East Troublesome Wildfire.
  - 2. Bid Options: Refer to 01 27 00 – Definition of Contract Line Items.
- C. Project will be constructed under a single prime contract.

#### 1.3 GOVERNMENT-FURNISHED MATERIALS

- A. Delivery and Storage
  - 1. Contractor is responsible for receiving, unloading, and handling Government-furnished items at Project site.
  - 2. Contractor is responsible for protecting Government-furnished items from damage during storage and handling, including damage from exposure to the elements.

3. If Government-furnished items are damaged as a result of Contractor's operations, Contractor shall repair or replace them.
  4. Contractor shall install and otherwise incorporate Government-furnished items into the Work.
- B. Items to be salvaged by NPS Prior to Construction:
- a. Two Conex boxes
  - b. Timber hitch rack/log horse tether
  - c. Memorial
  - d. Gravel storage pile and additional stockpiled materials (CMPs, lumber, logs)
- C. Government-Furnished Products: Items to be procured by the NPS and installed by the Contractor during construction.
- a. Bicycle Racks
  - b. Commercial grade electric dryer
  - c. Commercial grade washer
- D. Government-Furnished Products: Items to be procured, reinstalled or installed by the NPS Post Construction:
- a. Vegetation
  - b. Accessible bench
  - c. Wood bollards
  - d. Salvaged memorial
  - e. Salvaged boulders
  - f. Salvaged log horse tether
  - g. Salvaged material storage and gravel storage
  - h. Wheel stop
  - i. Soap dispenser

#### 1.4 CONTRACTOR USE OF SITE

- A. General: Contractor shall have full use of the approved designated project area within the approved limits of disturbance and staging areas for construction operations during the construction period, including use of the project site and designated staging area. Contractor's use of the site is limited only by the Government's right to perform work on-site or adjacent to the site and storage of materials/equipment on acceptable surfaces.
1. Limits of disturbance and staging areas are called out in the construction drawing set.
  2. Limit site disturbance to areas within the identified limits of disturbance and staging areas.
  3. To minimize impact to the park's natural and cultural environment, use lowest impact methodologies for trench excavation.
  4. Limits of disturbance to be demarcated by temporary flagging as shown on the drawings, unless indicated otherwise. Provide temporary flagging, spaced every 50' LF along the approved limits of disturbance, set at a survey level of accuracy or greater. Additional flagging may be required around features and as identified by the Contracting Officer. Contractor to coordinate flagging placement schedule with the Contracting Officer. Contractor to provide, install and maintain flagging throughout the construction period and as determined by the Contracting Officer. Written approval is required prior to any limit of disturbance adjustments.
  5. Limits of disturbance adjacent to the wetlands to be demarcated by temporary construction fencing and silt fencing as shown on drawings. Contractor to flag

boundaries set at a survey level of accuracy for Contracting Officer approval prior to fence installation. Provide temporary construction fencing and silt fencing parallel and adjacent to the wetland boundaries; extend fencing 5'-0" past the edge of wetlands in both directions. Set fencing at a survey level of accuracy or greater. Additional fencing may be required as identified by the Contracting Officer. Contractor to coordinate fencing placement schedule with the Contracting Officer. Contractor to provide, install and maintain fencing throughout the construction period and as determined by the Contracting Officer. Written approval is required prior to any limit of disturbance adjustments.

6. Temporary chain link fencing to be provided to protect excavation areas, as required by code.
7. Contractor will be responsible for maintaining emergency access at all times.

B. Staging Areas and Storage of Materials:

1. Confine storage of materials and contractor parking to within the designated limits of disturbance and staging areas, unless directed otherwise by Contracting Officer.
  - a. Staging Areas include:
    - i. The approved designated limits of construction. Upon completion of use restore or improve surface materials as per construction documents.
    - ii. Upon completion of use return all staging and stockpiling areas to pre-construction conditions or better at no additional cost to the Government.
    - iii. Hardscape areas, upon completion of use, return all staging and stockpiling areas to pre-construction conditions or better at no additional cost to the Government.
    - iv. Corrals: to be used for limited storage of self-contained materials only. Contracting Officer to approve use prior to access. Store materials in a manner that will not endanger future use of the corrals. Upon completion of use restore or improve surface materials as per construction documents.
    - v. Western Yard (Cold Storage): to be used for overflow parking of Contractor personal vehicles only, as approved by the Contracting Officer.
2. Locate staging and stockpiling areas in hardened areas.
3. When possible, place soils on asphalt, paved areas, planks or tarps to reduce ground and vegetation disturbance.
4. Equipment will be kept on hardened surfaces, except where needed to perform grading and utility work.
5. All vehicles shall be equipped with absorptive pads or approved spill kits while on park property in order to quickly contain any spills of oil or hydraulic fluid. Any such spills must be reported to the Contracting Officer as soon as is safely possible.
6. Concrete Washout Area(s): Location to be coordinated and approved by the Contracting Officer prior to start of construction. Water containing waste from construction activities shall be discharged into a self-contained, leak-proof wash out system; contractor provided, maintained and disposed of per regulations. The direct or indirect discharge of water containing waste to the storm system, Harbison Ditch and wetlands is prohibited. Washout sites shall be returned to their original, pre-construction condition, at the close of work. Site repair/cleaned washout site(s) shall be reviewed and approved by Contracting Officer. Washout area locations are prohibited near wetlands.

C. Driveways and Entrances: Keep roads clear and available at all times for Government, Government's employees, and emergency vehicles, and public and residents. Do not use these areas for parking or storage of materials.

1. Schedule deliveries to minimize use of driveways and entrances.
  2. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
- D. Construction Camp: Establishment of a camp within the park will not be permitted.
- E. Construction Trailer: to be located within the limits of disturbance, near the building site. Exact location to be approved by the Contracting Officer. Provide utilities as specified in Division 1 Section 01 50 00 "Temporary Facilities and Controls." Keep trailer area neat and clean and return site to previous condition at completion of work.
- F. Construction Equipment:
1. Construction Equipment shall not be stored along open roadways overnight, without prior approval of the Contracting Officer.
  2. Construction equipment shall not be permitted to idle for longer than five (5) minutes.
- G. Hauling Restrictions: Comply with all NPS and CDOT load restrictions in the hauling of materials. Load restrictions on park roads are identical to the state load restrictions with such additional regulations as may be imposed by the Chief of Visitor and Resource Protection. Information regarding rules and regulations for vehicular traffic on park roads may be obtained from the Contracting Officer. A special permit will not relieve Contractor of liability for damage which may result from moving of equipment.

#### 1.5 PUBLIC USE OF SITE

- A. The maintenance area will be open to NPS staff during construction.
- B. Contractor shall at all times conduct their operations to ensure the least inconvenience to the public and NPS staff. Maintain vehicular access to the maintenance yard and staff parking at all times. Night work may be considered to minimize disruption of vehicular access and placement of steel plates over work areas to facilitate vehicular access during non-work hours will be permitted contingent on Contracting Officer approval (see also 1.6 On-Site Work Hours, requirement for Contracting Officer approval for work performed beyond normal working hours).
1. Temporary closures of longer than 10 minutes shall be coordinated in advance with park staff.
  2. Temporary closures of 10-30 minutes shall be discussed during Construction Progress Meetings.
  3. Temporary closures of greater than 30 minutes shall be applied for 72 hours (or 3 business days) in advance of closure date/time.
  4. Contractor shall follow terms for closures detailed in Section 01 50 00 "Temporary Facilities and Controls."
- C. Emergency Vehicle Access is required at all times. Contractor shall coordinate with dispatch to ensure access is provided.
- D. Harbison Ditch Riders: Harbison Ditch runs to the north of the project area. Contractor will assure Harbison Ditch owner/operator has access to the ditch at all times.



## 1.6 WORK RESTRICTIONS

- A. Schedule: Recommended contract length is to start Spring 2024 and complete by Winter 2024. Contractor to coordinate temporary stabilization and permanent seeding window, as per technical specifications.
- B. On-Site Work Hours: Work shall be generally performed during normal business working hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, except as otherwise arranged with Contracting Officer.
  - 1. No work shall be performed beyond normal working hours, on weekends, federal holidays, or in the event of Federal Government Closures (severe weather, etc.) without prior approval of the Contracting Officer.
  - 2. Hours for noisy activity: No noisy activities such as earth moving, jackhammers or similar noisy activities to take place prior to 8:00 a.m. or after 6:00 p.m. without approval from Contracting Officer.
  - 3. Special Construction Restrictions, as provided below.
- C. Existing Utilities: Notify Contracting Officer and utility companies of proposed locations and times for excavation.
  - 1. The utilities shown in the drawings are indicated in accordance with available records. All utilities may not be shown and those which are shown may not be shown accurately. The contractor shall be responsible for field locating all utilities including public utilities and NPS owned utilities to determine exact locations, elevations and sizes.
  - 2. Contractor shall be responsible for calling the Colorado 811, (800) 922-1987 for all public utilities a minimum one week in advance of digging. For all public and NPS owned utilities, the Contractor may be required to use additional methods for utility locations, such as electromagnetic utility locating, acoustic pipe locating, ground penetrating radar or potholing at no additional cost to the Government.
    - a. Public Utilities include:
      - i. Primary Power: Mountain Park Electric
      - ii. Telephone: Comcast
      - iii. Cable/Internet: Comcast
      - iv. Sewer outside the Park: Three Lakes Water and Sanitation District
      - v. Water outside the Park: Town of Grand Lake
    - b. NPS Utilities include:
      - i. Water
      - ii. Sewer
  - 3. Work Near or Affecting Existing Utilities
    - a. Existing Utilities: Notify Contracting Officer and utility companies and park of proposed locations and times for excavation not less than one week in advance.
    - b. Contractor shall be responsible for locating and preventing damage to known utilities. If damage occurs, repair utility at no additional expense to the Government.
    - c. If damage occurs to an unknown utility, repair utility. An equitable adjustment will be made in accordance with the Changes clause of the contract.

- d. Damage to Fiber Optics Cable: Any severing or damage of the fiber optics cabling will be repaired by a reputable fiber optics company using the Fusion splicing method. Line test results will be provided for all damaged fibers once splicing is completed with each fiber having no loss greater than 0.1 Db.
    - 4. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Government or others unless permitted under the following conditions:
      - a. Notify Contracting Officer and park not less than one week in advance of proposed utility interruptions.
      - b. Do not proceed with utility interruptions without Contracting Officer's written permission.
      - c. Hours for Utility Shutdowns: per approval by the Contracting Officer for no longer than 2 hours' maximum in duration. Utility shutdowns are not anticipated.
  - D. Multiple areas of work: Due to the short construction period, this project scope assumes parallel areas of work, such as utility improvements at the same time as construction at the barn and hay storage. The Contractor may propose strategies, alterations, or economies to achieve the documented design intent within the required completion date, which must be reviewed and approved by the Contracting Officer prior to any action being taken to enact any of these.
  - E. Nonsmoking Building: Smoking is not permitted within buildings or within 25 feet of entrances, operable windows, or outdoor air intakes.
  - F. Fire Restrictions: The contractor shall be responsible for keeping informed and informing all on-site staff regarding current fire restrictions at the park. This may include an outdoor smoking prohibition if fire conditions warrant.
  - G. Hot Work Permits:
    - 1. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of the National Park Service Authority Having Jurisdiction.
    - 2. Hot work permits, approved through the Contracting Officer by the park's structural fire coordinator, are required for any hot work. Submittal of permit request is required no less than one week in advance of the work. Do not proceed until notified by the Contracting Officer that the permit has been approved.
- 1.7 PROTECTION OF WETLANDS, EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES AND IMPROVEMENTS
- A. Wetlands are areas where water is present at or near the soil surface permanently or periodically during the year, including the vegetative growing season (see Director's Order 77-1 for a complete definition of wetlands). Wetlands include all types of aquatic habitats including lakes, rivers, streams, swamps, wet meadows and other wetlands that are within the purview of NPS Director's Order #77-1: Wetland Protection.

- B. The barn and hay storage is near wetlands and riparian zone; it is a sensitive and protected ecosystem. All construction activities shall be kept within the defined Limits of Disturbance to avoid impacts.
- C. All construction activities and equipment and people must remain inside the limits of disturbance at all times in order to protect adjacent wetlands. If ground inside the limits of disturbance is wet with standing water, contact the Contracting Officer for instructions.
- D. There shall be no impacts to wetlands. Any construction related activities, such as but not limited to; construction access, grading, fill, tie back grades, trenching and improvements that requires repair or remediation as determined by the Contracting Officer shall be completed at the Contractor's own expense.
- E. Provide temporary barriers, such as chain-link fencing, to protect wetlands. Contractor to coordinate scheduling of a qualified NPS staff member(s) to establish the wetland protection boundary with the Contracting Officer. Contractor to provide, install and maintain staking and temporary barriers as determined by the Contracting Officer. Written approval is required prior to any boundary adjustments.
- F. Construction related activities outside the approved limits of construction are prohibited. Any construction related activities, such as but not limited to; construction access, grading, fill, tie back grades, trenching and improvements outside the approved limits of disturbance that requires repair or remediation as determined by the Contracting Officer shall be completed at the Contractor's own expense.
- G. As required by FAR Clause 52.236-9:
  - 1. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall treat as directed by the Contracting Officer.
  - 2. The Contractor shall protect from damage all existing improvements and utilities (1) at or near the work site, and (2) on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.
- H. Provide temporary barriers to protect existing cultural features, as identified by the Contracting Officer.
- I. Do not remove, injure, or destroy trees or other plants without prior approval. Consult with Contracting Officer and remove agreed-on roots and branches that interfere with construction.
- J. Do not fasten ropes, cables, temporary fence, or guy wires to existing trees.

- K. Carefully supervise excavating, grading, filling, and other construction operations near trees to prevent damage.
- L. No storage, parking, or excavation shall be allowed within the drip line of protected trees without approval from the Contracting Officer.

## 1.8 SPECIAL CONSTRUCTION REQUIREMENTS

### A. Roads

1. Conditions at Trail Ridge Road (US 34) change quickly and road closure may occur at any time based on weather and road conditions. It is closed from the Colorado River Trailhead at the first significant snowfall (usually mid-October) to Memorial Day. Check <https://www.nps.gov/romo> or call (970) 586-1222 for up to date information.
2. The road restrictions in line with general height, weight, and length specs for State of Colorado highways.
  - a. The weight restrictions for the area are: 80,000 lbs. for the roadways.
  - b. No known bridges in the area that would decrease this weight rating.
  - c. The length restriction is 70' total for tractor trailers.
3. If construction vehicles will be traveling to the park from the east side of the park via Trail Ridge Road, pilot cars are required for tractor trailers from the switchbacks of Trail Ridge Road on the west side to Hidden Valley on the east side.
4. Contractor shall review and confirm the above with CDOT prior to construction traffic start, as conditions may have changed.

### B. Construction Projects By Others: there are several on-going construction projects by others in the vicinity of the project area.

1. Colorado River District (CRD) Housing & Utility Work.
2. Entrance Station.
3. Fire Clean-up.
4. Sun Valley Neighborhood Housing (outside the park boundary).

### C. Snow Plowing

1. Contractor to remove snow from within the designated limits of construction as needed for construction operations. Snow storage location(s) to be approved by the Contracting Officer prior to the start of snow removal operations.

### D. Weed Mitigation

1. All borrow, road base, aggregate, crusher fines, bedding, topsoil, hay bales and other fill materials brought into Rocky Mountain National Park and used in this project shall be certified weed free. Without certification, materials shall come from commercial sources that have been inspected by the NPS and approved prior to materials entering the Park.
2. Equipment Cleaning:
  - a. Clean vehicles and construction equipment prior to entry into the Park to minimize the potential for introduction and/or proliferation of invasive non-native weeds through project actions. The contractor is required to wash equipment, with emphasis on undercarriages, with a high pressure spray prior to transporting such equipment to Rocky Mountain National Park.

- b. All vehicles and construction equipment entering Rocky Mountain National Park shall be inspected and approved by the Contracting Officer prior to entering the park. The contractor shall provide at least two business days advance notice to the Contracting Officer and Park prior to equipment inspection.
- c. Equipment not deemed clean by the Contracting Officer will not be allowed to enter the park. The contractor remains liable for additional transportation fees incurred when equipment fails inspection.
- d. Cleaning will not be permitted within the park. Contractor shall be responsible for identifying and using a cleaning location outside the park. Note that this may be some distance from the park and project site.

E. Avoid Soil Compaction

- 1. Avoid compaction from heavy equipment to surrounding area by keeping equipment inside the limits of work.
- 1. Staging and/or storage of materials and equipment shall be kept on hardened surfaces to the maximum extent possible.
- 2. Compacted soils must be ripped or decompacted post construction to enable vegetation.
- 3. All disturbances must be returned to grade and any tracks from equipment must be raked out.

F. Bird Protection Acts

- 1. In order to protect birds under the Migratory Bird Treaty Act (MBTA, 16 U.S.C. 703–712), all construction work performed between February 1 and August 31 requires a site survey, to be performed by trained NPS staff. The survey must be completed within two weeks prior to the start of construction. Additional surveys will be required after periods of no work exceeding two weeks. The Contractor will be required to avoid cutting down trees with active nests, however, other work would be permitted to continue. Some species may also require a buffer around active nests where work cannot occur.
  - a. Contractor shall request a site survey a minimum of one month prior to mobilization.
- 2. In order to protect eagles under the Bald and Golden Eagle Protection Act (BGEPA, 16 U.S.C. 668-668c), all construction work requires a site survey, to be performed by a trained individual. The survey must be completed within two weeks prior to the start of construction and encompass the project location as well as a half mile area surrounding the project. If an active bald eagle or golden eagle nest is found, work that causes disturbance to the eagles will not be permitted. If an active or inactive nest is found, the Contractor will be required to avoid cutting down trees with nests.
  - a. Contractor shall request a site survey from Contracting Officer a minimum of one month prior to mobilization.

G. Reducing Wildlife Interactions

- 1. Do not feed or disturb wildlife within the Park boundaries. Do not approach or remain within 25 yards of any wildlife.
- 2. All construction personnel working in the field must follow park food storage regulations, 36 CFR 2.10. All food, garbage, toiletry, or other bear attractants must not be left unattended for any length of time.

- a. These items shall be stored inside vehicle trunks.
  - b. In vehicles with no trunk, place these items as low in the vehicle compartment as possible and covered from sight, with all windows and doors closed and locked.
- 3. On-site construction personnel are required to report all bear, mountain lion, and/or any unusual sightings in the work area to the Contracting Officer.

H. Archeological Monitoring

- 1. Contractor is responsible for providing archeological monitoring. Contractor is required to comply with information and procedures as specified in Section 01 35 13 "Archeological and Historical Resource Protection" and is required to obtain an ARPA permit.

I. Wetland Protection

- 1. All construction activities and equipment and people must remain inside the limits of disturbance at all times in order to protect adjacent wetlands. If ground inside the limits of disturbance is wet with standing water, contact the Contracting Officer for instructions.

J. Harbison Ditch Riders

- 1. Harbison Ditch runs to the north of the project area. Contractor will assure Harbison Ditch owner/operator has access to the ditch at all times. The ditch routinely overtops in the vicinity of the project area, near the access road to the barn site.

K. Work Within Rocky Mountain National Park and Coordination with Park Employees

- 1. Contractors will coordinate with park staff to reduce disruption to normal park activities.
- 2. Construction workers and job superintendent will be required to attend park resource orientation session lasting no more than two hours to learn about the special sensitivity of park values, regulations, and appropriate litter and trash control measures. The Contracting Officer will coordinate orientation session with the NPS Cultural Resource Specialist and NPS Natural Resource Specialist to develop resource awareness. Work schedule, equipment to be used on project and resource protection plan will be discussed. This training session shall occur prior to the start of work and will be repeated for changes of key personnel.
  - a. Training session shall also include orientation regarding emergency procedures for local safety risks, including but not limited to lightning, flood, fire, wildlife.
- 3. The National Park Service will ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological and/or natural sites and/or historic properties. Contractors and subcontractors will also be instructed on procedures to follow, in case previously unknown archeological and/or natural resources are uncovered during construction.

L. Blasting is not permitted in this project.

M. Contractor to provide all third-party inspections. Contractor to submit inspection reports to the Contracting Officer.

## 1.9 REFERENCES

### A. Industry Standards.

1. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards, and Federal, State and local laws, have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
2. Publication Dates: Comply with standards in effect as of the date of the Contract Documents unless otherwise indicated.

## 1.10 SOILS INVESTIGATION REPORT

- A. The report Geotechnical Engineering and Pavement Design Report, Rocky Mountain National Park, CRD Barn & Tack Shed, Grand Lake, Colorado, April 1, 2022, prepared by Yeh and Associates is **an appendix** with this package.
- B. Requirements for clean-up of the existing barn and tack shed debris left by the East Troublesome Wildfire to be provided by NPS.
- C. In case of conflict between report and drawings or specifications, the drawings and specifications govern.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 11 00 - SUMMARY OF WORK

## SECTION 01 26 01 – CONTRACT MODIFICATION PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 26 01 “Contract Modification Procedures” consists of administrative and procedural requirements for contract modifications.

#### 1.2 DEFINITIONS AND ALLOWANCES

- A. Home Office Overhead: Costs incurred in support of all of a contractor’s projects and not attributable to a specific job. The cost for home office overhead is only allowed as a percentage of all direct work excluding profit. The following items represent allowable home office overhead costs identified in Part 31 of the Federal Acquisition Regulation (FAR):

1. Rent
2. Utilities
3. Furnishings
4. Office equipment
5. Executive and management staff not exclusively assigned to the project
6. Support, accounting, and administrative staff
7. Preparation of cost proposals, estimating, and schedule analyses connected with Modifications
8. Estimating and preconstruction services
9. Mortgage costs
10. Real estate and corporate taxes
11. Automobile maintenance and travel costs for home office personnel
12. Home office insurances i.e. structure, automotive, umbrella, flood, etc.
13. Depreciation of equipment and other assets
14. Home office supplies (paper, staples, etc.)
15. Legal services
16. Accounting and data processing
17. Professional fees/registration

- B. General Conditions (Field Office Overhead): Management and administrative costs incurred on site for the designated project. Costs associated with preparation of modifications will not be allowed. Costs for these items are to be included only in the general conditions of the modification estimate. Only in the case of a contract time extension are additional general conditions included in modifications. The following items, if applicable, are considered allowable costs for calculating General Conditions:

1. Project Manager (PM), Assistant Project Manager
2. Superintendent, Assistant Superintendent
3. Quality Control, Safety Officer, Environmental Manager, etc.
4. Engineers
5. Travel, lodging, and per diem (as established by Federal Travel Regulations)



6. Scheduling
  7. Field Office Trailers and associated temporary utilities
  8. Field office supplies
    - a. Mailing and couriers
    - b. Reproduction costs
    - c. Storage
    - d. Phones
    - e. Computers
    - f. Copiers
  9. Personal vehicles i.e. Superintendent Pickup trucks
- C. General Requirements: Costs directly associated with the project and are necessary to perform the actual work of the modification. These costs shall be shown as direct costs in the estimate. The following items, if applicable, are considered allowable costs for calculating General Requirements:
1. Hoisting
  2. Material handling
  3. Temporary fencing
  4. Port-a-lets
  5. Trash removal, dumpsters
  6. Barricades
  7. Small tools
  8. Safety supplies
  9. Scaffolding
  10. Daily cleaning
  11. Traffic control
  12. Temporary signage
  13. Temporary heating and power
- D. Personnel Costs: Costs included in the modification must only be for General Conditions staff and workers actually present and working on project site. Modification costs for salaried workers are only allowed within the structure of a 40-hour week and no overtime or holiday pay will be allowed.
1. Worker Hourly Rates are costs directly associated with the individual worker and consist of the following:
    - a. Base Rate: The hourly rate paid directly to the worker
    - b. Labor Burden: Employer payments of all applicable burdens; includes insurance and taxes the business must pay on behalf of the worker to government entities and educational forums, such as:
      - 1) Social Security
      - 2) Medicare
      - 3) Workers Compensation – Policy and company calculation to be made available.
      - 4) Federal Unemployment Tax Act (FUTA) - Cap Rate and percentage to be proportionally allocated over one year.

- 5) State Unemployment Tax Act (SUTA) - Cap Rate and percentage to be proportionally allocated over one year.
  - 6) Union agreement costs - Other costs required under an enforceable collective bargaining agreement.
- c. Fringe Benefits: Various non-wage compensations provided to employees such as:
- 1) Health Care Insurance Premiums
  - 2) Cell Phone
  - 3) Clothing
  - 4) 401K and Pensions
  - 5) Vehicle allowances
  - 6) Gas allowance
  - 7) Life insurance premiums
  - 8) Disability insurance
  - 9) Other Fringe Benefits required under an enforceable collective bargaining agreement
- E. Bonuses or Deferred Compensation: No Bonus or Deferred Compensation will be allowed within any components of pricing including Home Office Overhead, General Conditions, General Requirements, Hourly Worker Rates, or the direct costs of work.
- F. General Liability Insurance: An insurance policy that protects Contractor from claims resulting from bodily injury or property damage to a third party. Include as a separate line item within all modification proposals and provide a current insurance quote upon request.
- G. Performance and Payment Bonds: A performance bond is a surety bond issued by an insurance company or bank to guarantee satisfactory completion of a project. The Payment Bond guarantees the Contractor will pay the labor and material costs incurred. Banks and Insurance companies charge a premium for individual project based on a sliding scale related to the size of the project. Include as a separate line item in modification proposals and provide current company bonding rates upon request.
- H. Builder's Risk Insurance: Covers the contractor's loss due to fire, high winds, or other natural forces. Not reimbursed by the National Park Service (NPS) and shall not be included in modification proposals.

### 1.3 MODIFICATION PROPOSAL PRICING REQUIREMENTS

#### A. General:

1. Proposal be received in the format and within the time frame specified in the Request for Proposal (RFP) letter. Costs or delays resulting from failure of contractor to submit within the time frame specified will not be compensable.
2. Proposal shall be detailed with itemized lists of equipment, materials, labor, production rates, overhead, profit, and bond markup for each item. Labor costs must be itemized by craft and hourly rate, including Fringe Benefits and Labor Burden. If the costs of Fringe Benefits and Labor Burden are not itemized, it is assumed they are included in the hourly rate shown, or contractor is not requesting reimbursement. Contractor may

utilize the government provided [Contractor Estimate Form](#), or their own form, provided that it contains the same information and level of detail as the Government's form.

3. Requests for extensions of contract time as a result of change must be justified with a Time Impact Analysis (TIA). Refer to Section 01 32 16 "Construction Schedule", for time impact analysis requirements. TIA and associated costs shall be received with the proposal by the date shown within the Request for Proposal letter. Contractor's failure to submit within the specified time frame will be construed as the Contractor waiving right for additional time and no time extension will be allowed.
4. All supporting documentation used to justify the proposed modification will be made available to the Contracting Officer (CO) upon request.
5. Contractor shall review and approve all subcontractor/supplier pricing in detail for proper format, scope, production rates, and pricing prior to submission to NPS. All delay costs associated with not reviewing and approving subcontractor/supplier pricing will be borne by the Contractor.
6. All pricing and production rates within the estimate must be based on fair and reasonable pricing and cannot include built-in contingency.

B. Labor:

1. Contractor shall estimate cost of labor by itemizing each craft involved, indicating worker hourly rate (base rate + labor burden + fringe benefits) for each and itemizing hours required for each craft directly engaged in modification work. Any work proposed requiring overtime work or premium pay shall be itemized separately. Rates shall be in accordance with the Davis-Bacon Act as incorporated herein. Labor Burden may include payroll taxes, Social Security, unemployment insurances, workers compensation insurance, Federal Insurance Contributions Act (FICA), FUTA, and other direct costs resulting from Federal, State or local laws.
2. Itemize labor costs for equipment operators separate from equipment costs.
3. Labor cost for foremen shall only be costs for related work required for the modification.

C. Materials:

1. Estimated cost for materials shall include quotes from multiple sources. Material prices shall include applicable fees and credits, including but not limited to, sales tax, freight and delivery charges, and tax rebates.
2. No markup shall be applied to any material provided by NPS.

D. Equipment:

1. Equipment used for the project must be appropriately sized for work being performed.
2. Do not include costs for "miscellaneous tools and equipment", in your proposal for a replacement value of \$500 or less. Costs shown in excess of \$500 shall be broken out separately.
3. Regardless of ownership, rates to be used in determining equipment rental costs shall be the lowest cost from one of the following sources:
  - a. United States (U.S.) Army Corps of Engineers, Ownership and Operating Expense Schedule (use latest edition and applicable region)
  - b. Construction Blue Book

- c. Local equipment rental rates, documented by actual invoice charges, or itemized vendor quotes.
4. Estimated equipment rates shall include operating costs of all fuel, oil, lubrication, supplies, small tools, necessary attachments, ground engaging components, tires and tracks, routine repairs and maintenance (cost of major repair and overhaul is not allowed per Federal Acquisition Regulation (FAR) 31.105(d)(2)), depreciation, storage, insurance, and all incidentals. Mobilization, if applicable, may be included for equipment solely used on the modification work but must be listed separately.
5. Estimate full rate for equipment only for duration that equipment will be utilized to accomplish work of the modification.
6. Standby unit rates used in accordance with paragraph 1.3, D, 2, above. If the U.S. Army Corp of Engineers is utilized then their standby rates prevail. If Bluebook or local equipment pricing is accepted, then 1/2 of equipment costs minus any operating costs, major repair and overhaul will be accepted.
7. If equipment is in standby mode due solely to a documented NPS delay, established standby rate shall apply from the first day of the delay.
8. Equipment not used and on job site for up to five consecutive days may be classified at standby rates, provided the equipment is or has been used solely to perform work on the modification and will be necessary to complete additional modification work. Equipment still on the jobsite but not in use after five consecutive days will not be considered in the modification pricing.
9. Requests for compensation for equipment stand by time must be justified, documented and itemized separately.
10. The estimated timeframe (daily, weekly, monthly) for use of the equipment must reflect the lowest cost to the Government.

E. Establishment and Application of Overhead and Profit Percentages:

1. Home Office Overhead and Profit (OH&P) shall be applied to direct costs only. Profit shall not be applied to overhead amounts; and overhead shall not be applied to profit. Home office overhead shall contain only allowable, allocable, and reasonable costs per the contract documents and FAR Part 31. Profit percentages are based on risk factors found in FAR Part 31 which have been applied to the specific type of work included in this project. Negotiated rates shall not exceed the following percentages for OH&P for contractor self-performed work:
 

Overhead.....	10%
Profit.....	8%
2. Total aggregate limit of markup (OH&P) for Contractor and Subcontractors on modification work shall not exceed 25%. The NPS will not be responsible for allocation of percentages between contractor and subcontractors at any tier.
3. If Contractors form a partnership, partnership may only receive home office overhead and profit in same amount as an individual Contractor (refer to paragraph 1.3,E,1 above). It is the responsibility of the partners to decide on division of revenue.
4. Combined Increases and Decreases: On proposals involving both increases and decreases in the Contract Price, overhead and profit mark-ups are required on net increases and deducted on net decreases.
5. At no time can profit be calculated on Overhead or itself, it must be calculated on direct costs of work only.

PART 2 - PRODUCTS

PART 3 - EXECUTION

END OF SECTION 01 26 01 - CONTRACT MODIFICATION PROCEDURES

## SECTION 01 27 00 – DEFINITION OF CONTRACT LINE ITEMS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. The intent of section 01 27 00 “Definition of Contract Line Item” is to explain, in general, what is and what is not included in a contract line item, and the limits or cut-off points where one item ends and another begins.
- B. If no contract line item exists for a portion of the work, include the costs in a related item.

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION

#### 3.1 LIST OF CONTRACT LINE ITEMS - BASE BID

##### A. Contract Line Item No.01: Hay Storage

- 1. The Work includes but is not limited to foundations, slab on grade, pre-engineered metal building with standing seam roof and cementitious horizontal lap and batten-board wainscot siding and HVAC and electrical work.
  - a. Measurement for payment will be percentage of the work completed in the previous month.
  - b. Payment will be made at the contract lump sum price (LS).

##### B. Contract Line Item No.02: CRD Barn and Tack Shed

- 1. The Work includes but is not limited to foundations, slab on grade, custom building with standing seam roof and cementitious horizontal lap and batten-board wainscot siding. Conditioned and unconditioned spaces of the building per the plans and specifications including associated mechanical, plumbing and electrical work.
  - a. Measurement for payment will be percentage of the work completed in the previous month.
  - b. Payment will be made at the contract lump sum price (LS).

##### C. Contract Line Item No.03: Sitework

- 1. The Work includes but is not limited to selective removal of asphalt pavement, gravel/dirt roadway and utility demolition. Improvements include; earthwork, asphalt patching, gravel roadway, colored concrete parking stall and walk, and inclusive of all associated utility work. Electrical site work shall be completed by the local utility company but hired by the prime contractor and cost should be reflected in this line item, see drawings for more specifics. Refer to the drawings for site furnishings.

- a. Measurement for payment will be percentage of the work completed in the previous month.
- b. Payment will be made at the contract lump sum price (LS).

D. Contract Line Item No.04: Clean-Up of Fire Debris

- 1. The Work includes the clean-up of the existing barn and tack shed debris left by the East Troublesome Wildfire; see Statement of Work for East Troublesome Fire Time Critical Removal Action at the end of this section for requirements related to this work.
  - a. Measurement for payment will be percentage of the work completed in the previous month.
  - b. Payment will be made at the contract lump sum price (LS).

3.2 LIST OF CONTRACT LINE ITEMS – BID OPTIONS

A. Contract Line Item No.05: Option A, Lightning Protection

- 1. The Work includes but is not limited to addition of lightning protection on the hay storage and CRD barn and tack shed buildings.
  - a. Measurement for payment will be percentage of the work completed in the previous month.
  - b. Payment will be made at the contract lump sum price (LS).

B. Contract Line Item No.06: Option B, Photovoltaic System

- 1. The Work includes but is not limited to PV array and associated electrical work at the CRD barn and tack shed building.
  - a. Measurement for payment will be percentage of the work completed in the previous month.
  - b. Payment will be made at the contract lump sum price (LS).

C. Contract Line Item No.07: Option C, Heavy Duty Concrete Paving

- 1. The Work includes but is not limited to installation of heavy duty concrete paving in lieu of light duty concrete paving at the exterior stock stall area.
  - a. Measurement for payment will be percentage of the work completed in the previous month.
  - b. Payment will be made at the contract lump sum price (LS).

END OF SECTION 01 27 00 – DEFINITION OF CONTRACT LINE ITEMS

# Contract Price Schedule Template

National Park Service (NPS) - Denver Service Center (DSC) | 3-13-18

**Solicitation Number:****PARK - PMIS: 316223**

(Project Management Information System)

**Developed Area: Rocky Mountain National Park, Colorado River District (CRD)****Project Title: Construct Colorado River District (CRD) Barn and Tack Shed**

Notice: Offerors are required to submit, a minimum, an offer that conforms to the solicitation documents with pricing for Base line items and all option line items. Failure to do so may render the proposal unacceptable. On lump-sum line items, provide the total price only. For all unit-priced line items, provide the unit price and the extended total price. If no specific line item exists for a portion of the work, include the costs in a related item. In case of error in calculation of extended prices, the unit price governs. In case of error in summation, the total of the corrected amounts govern. Round totals and extended prices to whole dollars.

Contract Line Item Number (CLIN)	Contract Line Item (CLI) Title	Quantity	Unit of Measure	Unit Price	Total Price
1	Hay Storage	1	LS		
2	CRD Barn and Tack Shed	1	LS		
3	Sitework	1	LS		
4	Clean-up of Fire Debris	1	LS		
TOTAL BASE PRICE (Contract Line Item Number 1 through 3) -----					
5	OPTION A, Lightning Protection	1	LS		
6	OPTION B, Photovoltaic System	1	LS		
7	OPTION C, Heavy Duty Concrete Paving	1	LS		
TOTAL PRICE FOR ALL OPTIONS (Contract Line Item Number 4 through 6) -----					
TOTAL PROPOSED PRICE - BASE PLUS ALL OPTIONS (Contract Line Item Number 1 through 6) -----					

All measurement and payment information is included in Division 01 Specifications Section 01 27 00 Definition of Contract Line Items.



STATEMENT OF WORK  
EAST TROUBLESOME FIRE TIME CRITICAL REMOVAL ACTION  
ROCKY MOUNTAIN NATIONAL PARK

1. INTRODUCTION.

1.1. The purpose of this specification is to provide Response Activity for the burned Timber Creek Road Camp Barn and Tack Shed buildings at Rocky Mountain National Park (ROMO), Colorado. The Contractor shall provide all management, supervision, labor, tools, and equipment necessary to load, haul, accept, process, record, reduce, and final disposal of disaster related debris and soil. The debris to be removed varies from site to site and may consist of vegetation, ash, wood, contaminated soil, remnant concrete/stone/masonry structures, concrete, metal articles, trees that prohibit work performance, stumps, presumed PCB containing light ballast, chemical containers, aerosol cans, fire extinguishers, compressed gas cylinders, electronic waste, small motorized equipment (generators, chain saws, etc.), white goods (washers, dryers, refrigerators, etc.), etc.. Ash, debris, metal, and concrete at all locations is presumed to contain or be contaminated by friable asbestos, unless otherwise indicated in this SOW or attachments. Ash, small debris, and soil from the Tack Shed site was identified through Toxicity Characteristic Leaching Procedure (TCLP) testing to possess the Toxicity Characteristic for lead and must be managed as Hazardous Waste in accordance with the Resource Conservation and Recovery Act (RCRA). The Contractor shall perform confirmation sampling and analysis in accordance with the Draft Final Sampling and Analysis Plan (SAP) provided and comparison with Removal Goals (RGs).

2. LOCATION and SITE DESCRIPTION

2.1. See Table 1 for estimated quantities of ash/soil, metals, hazardous materials, etc. for the Sites included in this response action.

2.2. See the Rocky Mountain National Park East Troublesome Fire Identification and Quantification of Building Debris Memo for descriptive information regarding each burn site, location maps, and site photographs (Attachment 1). Note, only the Timber Creek Road Camp Barn and Tack Shed are included in this SOW. Quantities of materials included in the removal action do not match those presented in this document. Use Table 1 for estimated quantities.

2.3. Draft Site characterization analytical data is provided as Attachment 2.

3. GENERAL REQUIREMENTS.

3.1. This is a removal action at ROMO's ash, debris, and soil impacted areas resulting from wildfire-caused structural fires and restoration of the sites to a natural condition. The Contractor shall perform all the requirements of this SOW to successfully complete the project, unless specifically identified as the responsibility of NPS or NPS-designated representative.

3.2. Work shall be performed under project-specific plans, developed by the Contractor. The plans and work shall conform to U. S. Environmental Protection Agency (USEPA) document "Guidance on Conducting Non-Time Critical Removal Actions Under CERCLA".

3.3. The Environmental / Remediation Contractor shall comply with 29 CFR 1910.120(b), and all relevant and applicable safety regulations as promulgated by OSHA. Additionally, the Contractor shall adhere to all generally accepted professionally practiced safety standards.

3.4. On-site treatments of hazardous substances are prohibited on park lands.

STATEMENT OF WORK  
EAST TROUBLESOME FIRE TIME CRITICAL REMOVAL ACTION  
ROCKY MOUNTAIN NATIONAL PARK

3.5. The Contractor shall furnish all remediation services, materials, supplies, labor, equipment, investigations, testing, studies, superintendence, and travel, as required, for completing the tasks.

3.6. The Contractor shall, without additional expense to the government, obtain any necessary licenses, permits, perform required notifications, and shall comply with all federal, state, and local laws, regulations, rules, guidance, and codes applicable to the performance of the tasks required for this SOW, to include applicable portions of Colorado Department of Public Health and Environment (CDPHE) Regulation No. 8, Part B and related October 2020 guidance regarding management of ash and debris resulting from the East Troublesome Wildfire (CDPHE ETW Guidance) provided in Attachment 3, unless otherwise articulated in this SOW.

3.7. The Contractor Project Manager shall be responsible for technical oversight of the work, preparation of invoices, monitoring of budgets and schedules, and maintaining timely and appropriate communication with NPS Contracting Officer or their designate. The Contractor Project Manager shall be supported by professional and skilled technicians and laborers with experience in performing tasks/activities for the project as specified in this SOW.

3.8. All draft and final environmental reporting-related submittals shall be in the most current versions of both Microsoft Word and Adobe Acrobat. The Contractor shall provide all maps, plates, graphics, etc. in both Adobe Acrobat and the original source files (Geographic Information System (GIS) shape files, spreadsheets, etc.). All GPS or other location measurements collected by the Contractor to define removal areas or sampling / decision units shall be provided.

3.9. The contractor shall submit final technical documents (Remedial Action Work Plan (RAWP), Remedial Action Completion Report (RACER), etc. to the NPS that meet the accessibility standards per Section 508 of the Rehabilitation Act. The contractor shall utilize the 508-accessibility checker or other similar features, if available in that software, at document inception and use professional judgement throughout document production to best meet 508 accessibility standards.

3.10. All draft and final technical plan or report deliverables (RAWP, RACER, SAP, etc.) shall be signed/stamped by the Environmental Professional before submitting to NPS.

3.11. All files shall be transmitted to the NPS via email or an agreed-upon secure file transfer method to the Contracting Officer, the COR and the ROMO POC.

4. **CONTRACT SUPPORT TASKS.** The procedures/activities associated with the debris and soil removal include the following Contractor tasks.

4.1. **Site-Specific Health and Safety Plan (SSHASP).** The Contractor shall prepare and submit for review/comment/concurrence to the Contracting Officer, Contracting Officer Representative (COR) and ROMO POC a SSHASP prior to undertaking field activities. The SSHASP shall include all applicable Job Hazard Analyses (JHA), and measures to protect personnel from asbestos, heavy metals, dioxin/furans, silica, dust, and other potential chemical exposures, natural, biological, and physical hazards, such as PPE, personal air monitoring, hygiene, medical surveillance, etc. The Contractor's plan and on-site work shall comply with 29 CFR 1910.120(b) and all relevant and applicable safety regulations as promulgated by the OSHA to include HAZWOPER certification for all onsite workers.

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EAST TROUBLESOME FIRE TIME CRITICAL REMOVAL ACTION  
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4.2. Removal Action Work Plan (RAWP). Within 15 days of the Notice to Proceed, the Contractor shall prepare and submit for review a Site-specific RAWP outlining proposed field actions to successfully complete the removal action, including Technical Approach and Methodology, Geographic Area Management, confirmation sampling, and Organizational Structure (management to field supervisory level and division of responsibilities). The RAWP shall include proposed measures to control visible dust emissions during removal activities and shall provide for daily perimeter dust monitoring (upwind and downwind) of each active construction site using real-time field monitoring equipment.

4.2.1. The Contracting Officer shall review and provide comments within 15 days of receipt.

4.2.2. The Contractor shall provide a final RAWP incorporating NPS comments within 10 days of receipt.

4.3. Sampling and Analysis Plan (SAP) Update

4.3.1. The contractor shall implement and adhere to the SAP provided by NPS (Draft Final SAP included as Attachment 4). Minor modifications to the SAP that do not change the overall sample count and analytical methods (e.g. sample naming conventions) may be identified by NPS and incorporated by the Contractor.

4.3.1.1. The Contractor shall update the provided SAP to include information regarding the selected analytical laboratory, detection limits, field and laboratory Standard Operating Procedures.

4.3.1.2. Do not commence confirmation sampling and analysis prior to NPS approval of the SAP updates.

4.4. Daily Environmental Oversight. An employee of an Environmental Consulting or Environmental Remediation contractor, experienced with CERCLA and soil remediation projects and under direction of the Environmental Professional, shall be on-site during all removal activities to monitor compliance with approved project plans, assure proper waste management and accuracy of related documentation, and assure compliance with all applicable federal, state, and local laws and regulations pertaining to the removal action.

4.5. Confirmation Soil Sampling. Perform confirmation soil sampling in accordance with the SAP and Section 6.

4.6. Removal Action Completion Report (RACR). The Contractor shall prepare draft, draft final, and final RACR detailing activities performed, with figures showing site features and sampling locations, site photographs (photographs shall be taken of each Site and surrounding area prior to, during, and after the removal of burn site debris and soil), results, conclusions, recommendations and “lessons learned”.

4.6.1. Submit the draft RACR to the Contracting Officer within 15 days following the completion of field activities or receipt of laboratory data, whichever is later.

4.6.2. NPS will provide comments within 15 days after receipt of draft RACR.

4.6.3. Submit the draft final RACR incorporating NPS comments to the Contracting Officer within 10 days of receiving comments from the NPS.

4.6.4. NPS will provide comments within 15 days after receipt of draft final RACR.

4.6.5. Submit the final RACR incorporating NPS comments within 10 days of receiving comments from NPS.

STATEMENT OF WORK  
EAST TROUBLESOME FIRE TIME CRITICAL REMOVAL ACTION  
ROCKY MOUNTAIN NATIONAL PARK

5. Removal Activities

5.1. Prior to Response Activities, the Contractor shall complete and perform all notifications, permits, and compliance requirements to ensure a safe removal project. The Response Activities areas shall be demarcated as a safe work zones, including delineation of wetlands and utility clearances. The Contractor is required to coordinate with NPS, and state officials on all necessary activities.

5.2. Chain link fencing surrounding burn sites shall be dismantled as necessary to complete the work. Keep fencing in place to ensure visitors do not go into work area. Removed fencing shall be returned to NPS at locations to be designated by park staff after completion of the project.

5.3. The contractor shall implement appropriate and effective control measures to prevent visible ash and dust emissions during performance of the work. Visible ash and dust emissions extending beyond safe work zones shall be grounds for the Contracting Officer to issue a stop work order until effective mitigations are implemented by the Contractor at no additional expense to the Government.

5.4. Waste materials shall be directly placed in approved lines roll-off boxes, dump trucks, or other suitable containers or, if necessary to facilitate the response action, stockpiled within each burn site on thick plastic sheeting, and immediately covered to protect it from the elements (wind and/or rain) with similar plastic sheeting for temporary site storage prior to loading, transport and disposal at a licensed facility.

5.5. Non-hazardous ash, debris, metal, concrete and soil shall be managed in accordance with the CDPHE ETW Guidance and all other applicable federal, state, and local laws.

5.6. Except for RCRA Hazardous Waste, the Contractor shall only dispose of burn-site related wastes at one or more of the landfills specified in the CDPHE ETW Guidance. In addition to the forgoing requirement, the selected landfill(s) for disposal of waste generated during the removal action must meet the requirements of the Off-Site Rule as specified in 40 CFR 300.440 ([Off-Site Rule | US EPA](#)). This does not include metal or concrete that the Contractor proposes to manage by recycling at an off-site recycling facility. The Contractor shall provide the Contracting Officer with confirmatory documentation that the selected landfill(s) meet this requirement.

5.7. RCRA Hazardous Wastes shall be transported to at a RCRA Subtitle C Treatment Storage or Disposal Facility (TSDF) for treatment and/or disposal.

5.8. The Contractor shall provide the Contracting Officer with a list of all proposed waste disposal or recycling facilities. No transportation or disposal of materials shall occur until the facilities are approved by the Contracting Officer.

5.9. Contractor shall conduct waste pre-disposal characterization in accordance with disposal facility requirements.

5.10. The Contractor shall handle, characterize, identify, label and package all waste (including but not limited to hazardous waste) generated as a result of the removal action in accordance with all applicable federal, state and local laws.

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5.11. The Contractor shall also be responsible for packaging, labeling and preparing manifest and other shipping documents and will make all other necessary arrangements for any off-site transportation and disposal of such waste in accordance with such laws.

5.12. The Contractor shall utilize a licensed transport, storage, and disposal (TSD) company, in good standing with the State of Colorado. The prime contractor shall be responsible for verifying the TSD Company's credentials. Send waste manifest/bill of lading to the Contracting Officer within two weeks of disposal and include with invoices.

5.13. The Contractor is responsible for cleaning the entire visibly impacted area of structure-related ash debris within and surrounding each burn site, inclusive of a minimum 5-foot buffer surrounding each building footprint/debris field. In order to control the area of contamination, the Contractor shall not, at any time, extend or stock-pile the contaminated materials outside of the excavation footprint for each burn site without prior approval of the Contracting Officer.

5.14. Segregable Hazardous Materials / Waste Management

5.14.1. Collect, containerize, transport, and properly dispose of segregable hazardous materials/wastes from each burn site. See Attachment 1 for previously identified known or suspected hazardous materials at each burn site.

5.14.2. Site inspections performed by NPS and NPS contractors has identified two 55 gallon drums of unknown content but reported to be used for water storage, a compressed gas cylinder, and a fire extinguisher of unknown discharge status.

5.14.3. Site inspections performed by NPS and NPS contractors have identified fire extinguishers, aerosol cans, portable fuel containers, and a large portable generator but those observed appeared to be discharged or empty. It is presumed empty or discharged articles can be managed as fire-related debris in accordance with the CDPHE ETW Guidance.

5.14.4. Additional hazardous materials/wastes, beyond those identified above, such as but not limited to, batteries, light ballast, electronic waste, non-empty chemical containers, non-discharged aerosols, compressed gases, and non-discharged fire extinguishers may be encountered during removal activities. If identified, such materials shall be collected, wiped clean of ash and dust, segregated, and contained to prevent release. The Contractor shall notify the Contracting Officer of the type and quantity of previously unidentified hazardous materials requiring segregated management within five days of identification. Costs to properly containerize, transport, and dispose of these materials will be negotiated and the Contracting Officer may issue a contract modification for proper management and disposal in accordance with applicable State and Federal regulations.

5.15. Management of Metals:

5.15.1. Large metal items shall be managed in accordance with the CDPHE ETW Guidance and recycled. Recognizable metal items observed at the Sites include storage/shelves/tool boxes, wheelbarrows, metal sheeting, wiring, piles of nails/stakes, garbage bins, piping, fencing, a washing machine, dryer, and hot water tank, etc.

5.15.2. Wash dust from metals before removing from burned site.

5.15.3. Appliances containing refrigerant such as refrigerators and freezers require special handling and removal of the refrigerant if any remains.

5.15.4. See Table 1 for estimated metal quantities, including white goods, at each burn site location.

STATEMENT OF WORK  
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5.16. Management of Ash, Debris and Soil.

5.16.1. Collect, consolidate, and remove/excavate ash, small debris, and soil for disposal. Sweep and/or vacuum ash from all underlying masonry slabs and footings. Pay particular attention to removing ash from cracks and joints in masonry.

5.16.2. Contractor shall sequence removal and excavation to mitigate propagation of surface ash and debris to deeper and adjacent soils.

5.16.3. Excavate soils below the original structure / debris-field footprint and a surrounding 5-foot buffer to a depth of 6-inches, unless otherwise specified in this SOW.

5.16.4. Ash, debris, and soil shall be managed and disposed in accordance with the CDPHE ETF Guidance, unless otherwise specified in this SOW.

5.16.5. Ash, and small debris from the Tack Shed site (Building ID 572) was identified through TCLP testing to possess the Toxicity Characteristic for lead and must be transported and disposed as Hazardous Waste in accordance with RCRA.

5.16.6. The ash debris and soil shall be placed in approved end-dump roll-off boxes, dump trucks, or other suitable transport containers lined with double 6-mil plastic sheeting completely closed over the material and sealed once the container is loaded. Partially loaded containers at the end of a work day will be covered to protect it from the elements. If necessary to facilitate the response action, wastes may be stockpiled on thick plastic sheeting within the excavation area for each burn site, and immediately covered to protect it from the elements (wind and/or rain) with similar plastic sheeting for temporary site storage prior to loading, transport and disposal at a licensed facility.

5.16.7. Large rocks, boulders or bedrock shall be wiped or swept to remove ash and dust and left in place or set aside if in the way of soil removal. No bedrock shall be removed and excavation shall be terminated at bedrock surface if encountered.

5.16.8. Smaller stones, small poured or block concrete piers and footings, and bricks shall be removed and managed as debris.

5.16.9. See Table 1 for estimated quantities of ash, debris and soil.

5.17. Management of Poured Concrete Slabs and Foundations

5.17.1. Poured concrete slabs and foundations shall be managed, transported and disposed or recycled in accordance with the CDPHE ETW Guidance, unless the SOW specifies them to remain in place.

5.17.2. Slabs and foundations shall be demolished prior to final soil excavation to ensure all concrete remnants and particles are removed from the site.

5.17.3. See Table 1 for locations and estimated quantities of poured concrete slabs and foundations.

6. Post-Removal Confirmation Soil Sampling and Laboratory Analysis

6.1. Confirmation sampling and analyses is required, including of metals, dioxins/furans, and asbestos as described in following sections.

6.2. Following the removal of all specified materials, sample and analyze the underlying soil in each Sampling Unit / Decision Unit IAW the SAP.

6.2.1. Metals and Dioxins

6.2.1.1. Collect three replicates from the base of each soil removal area using Incremental Sampling Methodology (ISM) and following the latest ISM sampling Guidance issued by the Interstate Technology Regulatory Council (ITRC 2020 or later).

6.2.1.2. Field sampling staff shall be experienced and skilled in the collection and processing of ISM samples.

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- 6.2.1.3. Quality Assurance / Quality Control (QA/QC) samples (duplicates, equipment blanks, MS/MSD) shall be collected at the frequency specified in the SAP.
- 6.2.1.4. Laboratory sample processing and subsampling shall be IAW with the SAP.
- 6.2.1.5. Samples shall be analyzed by a NELAP certified analytical laboratory using the analytical methods specified in the SAP. California Title 22 total metals (17 metals) shall be analyzed by Method 6020B, mercury by Method 7470A, and Dioxins/Furans by Method 8290. Contractor is responsible for ensuring the analytical methods and laboratory can attain the minimum detections limits (MDLs) specified in the SAP.
- 6.2.1.6. Samples shall be analyzed on a priority rush basis to obtain the quickest possible turn around with consideration of time required for laboratory processing of ISM samples.
- 6.2.1.7. All analytical data shall be reported on a dry weight basis.
- 6.2.1.8. Perform data verification and formal data validation IAW the SAP and accepted industry practices. The Contractor shall qualify or reject data, as indicated by verification and validation process.
- 6.2.1.9. Provide Contracting Officer with tabulated sample results and laboratory reports within five days of receipt from the laboratory.
- 6.2.2. Asbestos Inspection
  - 6.2.2.1. Each Site shall be visually inspected by a CABI to visually verify that all suspect ACM has been removed.
  - 6.2.2.2. The CABI shall sample each Site IAW the SAP.
  - 6.2.2.3. Divide site in to approximate 400 square foot sample grids.
  - 6.2.2.4. Collect a 10-point composite sample from each grid using a systematic random sampling approach.
  - 6.2.2.5. Collect duplicate samples at a frequency of 10%.
  - 6.2.2.6. Submit samples to a National Laboratory Voluntary Accreditation Program (NVLAP) accredited laboratory for analysis by PLM CARB Method B with a reporting limit to 0.1%.
  - 6.2.2.7. Notify Contracting Officer within one-day of visually observing suspect ACM.
  - 6.2.2.8. Notify Contracting Officer within one-day of any detections of asbestos greater than 0.1%.
  - 6.2.2.9. Prepare report summarizing the inspection activities, testing methodologies, analytical results, including summary tables and sample location figures for each site inspected.
  - 6.2.2.10. Submit draft report to Contracting Officer within ten days of receipt of data.
  - 6.2.2.11. Allow ten days for NPS review.
  - 6.2.2.12. Issue final report within five days of receiving NPS comments on draft.
  - 6.2.2.13. Include final asbestos sampling report in RACR.

7. Data Assessment and Additional Soil Removal

7.1. Compare soil test results to Remedial Goals (presently site-specific UCL95 background concentrations for metals and dioxin/furans and <1% for asbestos) or alternative Remedial Goals established through optional human health and ecological risk assessments. If test results meet Remedial Goals, no additional contaminated soil removal and disposal will be required.

7.2. If results are higher than the threshold for Remedial Goals at a building site, the Contracting Officer may direct the Contractor to remove a maximum of six (6) inch deep layer of soil for disposal and conduct re-sampling of the soil only at the location(s) with over threshold test results. Prior to proceeding with this work, the Contractor shall first notify the Contracting Officer with a brief

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description of results and list of building sites requiring additional removal of contaminated surface soil layer and additional follow up testing of surface soils.

7.2.1. The Contracting Officer may authorize additional soil removal, transport and disposal via contract modification, with the Contracting Officer making the final approval of the work.

7.2.2. Additional soil excavation, transportation and disposal, unless found to contain greater than 1% asbestos, will no longer be subject to Colorado Regulation No. 8 or the CDPHE ETW Guidance.

7.2.3. Non-RCRA hazardous soils that are not presumed or known to contain asbestos must be disposed at a landfill that meets the requirements of the CERCLA Off-Site Rule, as specified in Section 5.6.

7.3. Following additional soil removal, each affected Sampling Unit shall be resampled for metals and dioxins/furans IAW the SAP.

7.3.1. Contractor will provide a fully burdened lump sum cost to resample one sampling unit (three replicates) at the site to include all time and materials, equipment, supplies, PPE, transportation, shipping, laboratory analysis, QA/QC samples, data verification, data validation, and other associated expenses. Samples shall be analyzed on a priority rush bases to obtain the fastest possible turn around.

7.3.2. Lump sum costs will be used for each additional sample required.

7.3.3. The Contracting Officer may authorize additional sampling via contract modification, with the Contracting Officer making the final approval of the work.

7.4. If authorized by the Contracting Officer, the removal and re-sampling/analyzing shall be repeated at the over threshold site(s) via the process outlined above until the remaining soil meets project Remedial Goals or as otherwise directed by the Contracting Officer.

8. Environmental Contractor's Staffing Requirements and Employee Qualifications.

8.1. Field Sampling Specialists

8.1.1. The Contractor shall provide a team of no fewer than two Field Sampling Specialists.

8.1.2. Field Sampling Specialists shall have the proper training and certifications needed to conduct the work required for the project and to assure the field procedures are performed properly. All Field Sampling Specialists shall possess 40-hour OSHA hazardous waste operation (HAZWOPER) training/certification.

8.1.3. Field Sampling Specialists shall have previous surface and near-surface soil/sediment sampling experience at other CERCLA, RCRA, or similar cleanup sites high-profile public sites within the CERCLA program.

8.1.4. The experience within the Field Sampling Team shall include Incremental Sample Methodology (ITRC 2020 or later), gridding, collecting GPS coordinates, using hand-held samplers/tools and related equipment, preparing and packaging samples, preserving and shipping samples, recording data in field logbooks, and documenting sample chain-of-custody.

8.2. Asbestos inspections and sampling shall be performed by an Accredited Colorado Asbestos Building Inspector (CABI) in accordance with Colorado Regulation No. 8.

8.3. Key Personnel Requirements

8.3.1. The following positions are designated as key personnel.

8.3.2. All environmental /remediation work must be performed or overseen by these key personnel.

8.3.3. If a person is qualified, they may perform the duties of more than one key personnel position.



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8.3.4. Contractor shall make every reasonable effort to provide advance notice to the Contracting Officer of any changes to key personnel 30 days prior to an anticipated change. Contractor shall provide an equal or better candidate for Contracting Officer review. Recommended key personnel are not allowed to work on the project unless/until the substitution is accepted by the Contracting Officer.

8.4. Environmental Professional as defined by 40 CFR Part 312.10 Paragraph (b)(1) and limited to those in 40 CFR Part 312.10 Paragraph (b)(2)(i) “Hold a current Professional Engineer’s or Professional Geologist’s license or registration in Colorado and have the equivalent of three (3) years of fulltime relevant experience.

8.5. Regulatory Specialist. The regulatory specialist must have all of the following qualifications as a minimum:

- Bachelor’s degree in Environmental Science, Biology, Chemistry, or another relevant field,
- In-depth knowledge of environmental requirements under federal regulations (RCRA, CERCLA, CWA, and CAA) and state regulations (especially for state of Colorado in which the Site is located),
- Documented experience analyzing, interpreting, and applying environmental regulations for a variety of Site types for a minimum of two years, and
- Excellent written and verbal communication skills.

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**Table 1  
Estimated Material Volumes and Weights  
Timber Creek Road Camp Barn and Tack Shed**

Ash/Debris, Soil, Metal and Concrete Removal Volume Estimates												
Site ID	Site Name	Building Footprint (sq. ft.)	Cleanup Footprint (sq. ft.)	Total Estimated Non-RCRA Hazardous Waste Ash/Debris Removal (ton) <sup>1,3</sup>	Total Estimated RCRA Hazardous Waste Ash/Debris Removal (ton) <sup>1,3</sup>	Total Estimated Non-RCRA Hazardous Waste Soil Removal (ton) <sup>2</sup>	Total Estimated Metal Debris (CY)	Total Estimated Metal Debris (tons) <sup>4</sup>	Total Estimate Concrete (ton)	Concrete Slab/Foundation	Observed Potential HAZMAT/WASTE	Notes
Timber Creek Road Camp Barn and Tack Shed												
783	Timber Creek Road Camp Barn	1176	2046	5	0	53	20	2.3	28	Yes - full building footprint	Two 55 gallon drums - unknown contents (RCMO equipment list indicates 55 gallon drums used for water storage). Fire extinguisher - discharge status unknown One compressed gas cylinder Numerous fuel containers (empty) Generators (5) Numerous aerosol cans - discharged Potential for portable tool batteries	Significant metal debris.
572	Timber Creek Road Camp Barn Tack Shed	312	792	0	4	21	4	0.5	7	Yes - full building footprint	Not observed - discharged aerosol spray cans	Ash and small debris Hazardous - TCLP lead
Area Total				5	4	74	24	3	35			

1. Includes full volume of ash/debris, if present.

2. Includes 6 inches of soil to be removed beneath ash/debris and slab, if present.

3. Poured concrete slabs/foundations and metal not included in ash/debris tonnage.

4. Metal volume includes white goods.

**Attachment 1**  
**Final Identification and**  
**Quantification of Debris Memo**

Date: 12/29/2022

Paul Torcoletti  
NPS – Rocky Mountain National Park  
Contract Number: 140D0419A0020  
Task Order: 140P1221F0008

**Subject: Rocky Mountain National Park East Troublesome Fire Identification and Quantification of Building Debris Memo**

Dear Mr. Torcoletti:

BB&E, Inc. (BB&E) completed an inspection of 26 burned structures at Rocky Mountain National Park to assess the type and quantity of building debris in preparation for a Time Critical Removal Action (TCRA). The inspection was conducted on 9/29/2022 and 10/5/2022 in tandem with the soil/ash field sampling event. BB&E identified the following:

- Count, locations, and types of white goods (stoves, refrigerators, water heaters, etc.).
- Count, locations, and types of identifiable hazardous materials (light ballast, chemical containers, drums, compressed gas cylinders, batteries, electronic waste, non-dispersed aerosol cans, etc.).
- Count, locations, and description of suspected or potential hazardous materials or containers that cannot be identified and may require additional evaluation and testing (dispersed aerosol cans).
- Volume of metal debris that may be segregated for recycling (including white goods and other large debris).
- Large debris (metal, etc.) that may be segregated from ash and soil for recycling or disposal.
- Other Notes: Presence of concrete slab, chimney, foundations, stonework, etc.

The inspection forms provided as Attachment A detail the bulleted information above for each former structure. The inspection forms also include an "other notes" section to provide additional information pertinent to the removal action. Attachment B provides ash/debris removal volumes in tons based on the depth of ash/debris and soil removal volumes in tons which includes six inches of soil removal beneath ash/debris and slab if present. The removal footprint includes the former structure footprint plus a 5-foot perimeter on all sides. Volume of metal debris in pounds was calculated based on total presence of metal that could possibly be recycled including white goods, however some of this metal may be damaged beyond acceptable levels permitted by recyclers. Attachment C provides the location of each structure and Attachment D includes site photographs.

Based on initial site investigation sampling data the following results are available. Please reference to the *East Troublesome Wildfire Structural Fire Debris Sites Site Investigation Report* for more information.

1. Polychlorinated Byphenols (PCBs) were not detected above the method detection limit for the sites sampled including the Timber Creek Road Camp Barn or the Betty Dick Garage.
2. Hexavalent Chromium was not detected above the method detection limit for the sites sampled including the Timber Creek Road Camp Barn, Fern Lake Ranger Station, or the Betty Dick Garage.
3. Metals and Dioxins/Furans were detected at varying concentrations at all the sites.
4. Elevated metal concentrations above the 20X rule were further tested by TCLP to assess if any of the sites exceeded the TCLP regulatory limits and could be classified as a hazardous waste. Lead was detected at the Timber Creek Road Camp Tack Shed at a TCLP value of 10.3 mg/L, which exceeds the regulatory limit of 5 mg/L.



The information enclosed within this memo has been provided to support removal actions at the 26 burned structures. Removal actions are anticipated to be completed in accordance with a CERCLA Time Critical Removal Action (TCRA) and within the guidelines of the Colorado Department of Public Health and Environment (CDPHE) East Troublesome Wildfire, October 2020 Handouts.

Sincerely,

A handwritten signature in blue ink, appearing to read "Elyse Kutsche", with a long horizontal flourish extending to the right.

Elyse Kutsche, PE  
Project Manager

*Enclosed:*

*Attachment A: Inspection Forms*

*Attachment B: Soil and Metal Removal Volumes*

*Attachment C: Site Location Figures*

*Attachment D: Site Photographs*

## **Attachment A**

### *Inspection Forms*

**NIC**

Site ID/ Site Name:	0732 / Green Mountain Ranch (GMR) Parika Cottage	Date:	9/29/2022 9:15 AM
Building Footprint (Length x Width) (ft):	43 x 15	Sample Footprint (Length x Width) (ft):	53 x 25
Building Footprint (sq. ft):	645	Sample Footprint (sq. ft):	1325
Ash/ small inseparable debris depth in Building footprint (in):	0 in over 80%, 5 in over 20% (primarily in former porch area)		
White Goods (type, count [1 each unless specified otherwise], and location):	Stove, Electrical Box, Metal Kitchen sink, Refrigerator –south wall. Water heater tank – west wall. Small space heater/fan (2) – various locations.		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	210 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal piping, outlet boxes, bedframes (2), metal lamp shade, Metal gutters, metal porch bench.		
Other notes:	Metal grill and fire ring exterior west of former structure. Stone chimney center of former structure. Concrete support footers center of structure, concrete/mixed stone footings (4). Fibrous material present north of structure footprint.		

Site ID/ Site Name:	0731 / GMR Mineral Cottage	Date:	9/29/2022 10:30 AM
Building Footprint (Length x Width) (ft):	38 x 29	Sample Footprint (Length x Width) (ft):	48 x 39
Building Footprint (sq. ft):	1102	Sample Footprint (sq. ft):	1872
Ash/ small inseparable debris depth in Building footprint (in):	0 in over 60%, 6 in over 40%.		
White Goods (type, count [1 each unless specified otherwise], and location):	Stove, refrigerator, metal sink, electrical box – south wall. Water tank – north wall Small heater/fan (2) – various locations.		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	Fire extinguisher (discharged)		
Metal debris estimated volume:	250 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal sheeting, bed frames (2), metal piping, outlet boxes, fireplace grate.		
Other notes:	Stone chimney center. Stone footers and stone foundation perimeter wall. Significant shattered glass along east and west wall. Fibrous material – north structure edge.		

**NIC**

Site ID/ Site Name:	0733 / GMR Arapaho Cottage	Date:	9/29/2022 10:55AM
Building Footprint (Length x Width) (ft):	25 x 23.5	Sample Footprint (Length x Width) (ft):	35 x 33.5
Building Footprint (sq. ft):	587.5	Sample Footprint (sq. ft):	1172.5
Ash/ small inseparable debris depth in Building footprint (in):	8-12 in		
White Goods (count, location, and type):	Water tank (west wall), electrical boxes (2), stove, metal sink, refrigerator (kitchen SE corner), space heater/fan (2)		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	Fire extinguisher, unknown spray cans (discharged)		
Metal debris estimated volume:	250 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal bed frame (2), metal piping, gutters, lamps, buckets, outlet boxes, metal shelving unit		
Other notes:	No chimney, concrete footers & stone foundation wall, wall collapsed outward on north side. Some porcelain debris.		

Site ID/ Site Name:	0734 / GMR Onahu Cottage	Date:	9/29/2022 11:20AM
Building Footprint (Length x Width) (ft):	26 x 25	Sample Footprint (Length x Width) (ft):	36 x 35
Building Footprint (sq. ft):	650	Sample Footprint (sq. ft):	1260
Ash/ small inseparable debris depth in Building footprint (in):	0 in over 70%. 4-12 in over 30%		
White Goods (count, location, and type):	Stove, refrigerator, metal sink and counter (south wall). Water tank (east wall). Electrical box (northeast corner). Space heater/fan.		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	Fire extinguisher (discharged)		
Metal debris estimated volume:	350 lb including metal chimney		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal bed and couch frame, metal chimney pipe, gutters, metal sheeting, metal shelves (2), misc piping, outlet boxes.		
Other notes:	Chimney in center of structure, brick and concrete footers, stone foundation walls, wall collapse to the east.		



# NIC

Site ID/ Site Name:	0735 / GMR Cumulus Cottage	Date:	9/29/2022 11:36AM
Building Footprint (Length x Width) (ft):	23 x 23	Sample Footprint (Length x Width) (ft):	33 x 33
Building Footprint (sq. ft):	529	Sample Footprint (sq. ft):	1089
Ash/ small inseparable debris depth in Building footprint (in):	6-12 in		
White Goods (count, location, and type):	Water tank (south wall), stove, microwave, metal sink, refrigerator (center), electrical boxes (3+), space heater/fan		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	Fire extinguisher (discharged)		
Metal debris estimated volume:	200 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal gutters, metal chairs, bedframe, can light housings, metal piping		
Other notes:	No chimney, concrete pillar foundation footers, no stone. Fibrous material north edge of structure.		

Site ID/ Site Name:	0737 / GMR Cirrus Cottage	Date:	9/29/2022 1:15PM
Building Footprint (Length x Width) (ft):	23 x 20	Sample Footprint (Length x Width) (ft):	33 x 30
Building Footprint (sq. ft):	460	Sample Footprint (sq. ft):	990
Ash/ small inseparable debris depth in Building footprint (in):	12-24 in		
White Goods (count, location, and type):	Stove, refrigerator, water tank, microwave, electrical boxes, space heater/fan.		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	210 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Gutters, can light fixtures, bed frame, metal stove exhaust pipe, metal piping, metal sheeting, exhaust fan housing, picnic table metal shell.		
Other notes:	Concrete footers, significant fibrous material south and east side of structure.		

**NIC**

Site ID/ Site Name:	0853 / GMR Old Pumphouse	Date:	9/29/2022 12:13PM
Building Footprint (Length x Width) (ft):	14 x 17	Sample Footprint (Length x Width) (ft):	24 x 27
Building Footprint (sq. ft):	238	Sample Footprint (sq. ft):	648
Ash/ small inseparable debris depth in Building footprint (in):	0-1 in		
White Goods (count, location, and type):	Large water tanks (2), water tank piping, control boxes (2)		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	150 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Misc metal piping, electrical outlet boxes		
Other notes:	Concrete slab foundation, piping in foundation, medium sinkhole to south of structure (4 ft x 4 ft wide, 6 ft deep) likely UST collapse.		

Site ID/ Site Name:	0728 / GMR Wood Storage Shed	Date:	9/29/2022 12:06 PM
Building Footprint (Length x Width) (ft):	16 x 14	Sample Footprint (Length x Width) (ft):	26 x 24
Building Footprint (sq. ft):	224	Sample Footprint (sq. ft):	624
Ash/ small inseparable debris depth in Building footprint (in):	0-1 in		
White Goods (count, location, and type):	None		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	Small container – possible mineral spirits (discharged)		
Metal debris estimated volume:	None		
Other large debris that may be segregated for recycling or disposal estimated volume:	Ironing board, vehicle jack, electrical outlet boxes, wiring and piping, bucket		
Other notes:	Minimal stone edging, concrete footers.		

**NIC**

Site ID/ Site Name:	0727 / GMR Pioneer Cottage	Date:	9/29/2022 11:58AM
Building Footprint (Length x Width) (ft):	24 x 16	Sample Footprint (Length x Width) (ft):	34 x 26
Building Footprint (sq. ft):	384	Sample Footprint (sq. ft):	884
Ash/ small inseparable debris depth in Building footprint (in):	4 in over 50%. 12-24 in over 50%		
White Goods (count, location, and type):	Stove, refrigerator, water tank, electrical box, metal stove chimney piping, metal sink, space heater/fan.		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	Fire extinguisher and unidentified spray cans (discharged)		
Metal debris estimated volume:	250 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal sheeting, bed and couch frame, metal chair, gutters, outlet boxes, metal piping, exhaust stove chimney housing.		
Other notes:	No stone chimney, concrete foundation footers, stone foundation wall.		

Site ID/ Site Name:	0724 / GMR Barn	Date:	9/29/2022 3:00PM
Building Footprint (Length x Width) (ft):	26 x 21.5	Sample Footprint (Length x Width) (ft):	36 x 31.5
Building Footprint (sq. ft):	559	Sample Footprint (sq. ft):	1134
Ash/ small inseparable debris depth in Building footprint (in):	1-4 in		
White Goods (count, location, and type):	None		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	60lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal storage rack, electrical box, outlets, buckets, misc piping		
Other notes:	Concrete slab, north wall collapsed outward, sinkhole to north of structure.		

**NIC**

Site ID/ Site Name:	0740 / GMR Meadow Cottage	Date:	9/29/2022 1:50PM
Building Footprint (Length x Width) (ft):	25 x 21	Sample Footprint (Length x Width) (ft):	35 x 31
Building Footprint (sq. ft):	525	Sample Footprint (sq. ft):	1085
Ash/ small inseparable debris depth in Building footprint (in):	3 in		
White Goods (count, location, and type):	Water tank, stove, refrigerator, large metal utility sink, electrical boxes, wall furnace housing, potbelly stove/furnace.		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	Fire extinguisher (discharged)		
Metal debris estimated volume:	250 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal shelving units, gutters, misc piping, exhaust piping for potbelly stove, bedframes (2), can light housings, lamp post.		
Other notes:	Cinder block foundation, collapsed bricks in center of structure, in ground exposed piping (shower/bath), cinder block chimney, some fibrous material on east side.		

Site ID/ Site Name:	0579 / Onahu Ranch Bakuni Cottage	Date:	9/29/2022 2:47PM
Building Footprint (Length x Width) (ft):	11.5 x 31	Sample Footprint (Length x Width) (ft):	21.5 x 41
Building Footprint (sq. ft):	356.5	Sample Footprint (sq. ft):	881.5
Ash/ small inseparable debris depth in Building footprint (in):	1-2 in		
White Goods (count, location, and type):	Stove, water tank, refrigerator, sink, electrical box (2), microwave		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	Fire extinguisher (discharged)		
Metal debris estimated volume:	200 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Gutters, lamps, metal sheeting, bed frame, outlet boxes		
Other notes:	Cinder block footings, in ground plumbing, roofing material, collapsed bricks.		

**NIC**

Site ID/ Site Name:	0578 / Onahu Ranch Na Ha Non Cottage	Date:	9/29/2022 2:40 PM
Building Footprint (Length x Width) (ft):	15 x 30	Sample Footprint (Length x Width) (ft):	25 x 40
Building Footprint (sq. ft):	450	Sample Footprint (sq. ft):	1000
Ash/ small inseparable debris depth in Building footprint (in):	2-4 in		
White Goods (count, location, and type):	Stove, refrigerator, water tank, kitchen cabinet, sink, electrical box, space heater/fan, stove exhaust fan housing		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	200 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Gutters, bed frame (large), metal piping, misc metal frames		
Other notes:	Concrete footings, no bricks, no chimney.		

Site ID/ Site Name:	0577 / Onahu Ranch Ho Ta Ta Ha Cottage	Date:	9/29/2022 2:33PM
Building Footprint (Length x Width) (ft):	12 x 28	Sample Footprint (Length x Width) (ft):	22 x 38
Building Footprint (sq. ft):	336	Sample Footprint (sq. ft):	836
Ash/ small inseparable debris depth in Building footprint (in):	2-4 in		
White Goods (count, location, and type):	Stove, refrigerator, water tank, sinks (2), utility boxes.		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	150 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Gutters, bedframe, metal ladder/stand, metal countertop, metal chairs, lamp post, piping, electrical outlet boxes.		
Other notes:	Concrete footers, in ground metal plumbing (bath), roofing materials, bricks.		

**NIC**

Site ID/ Site Name:	0575 / Onahu Ranch Lodge	Date:	9/29/2022
Building Footprint (Length x Width) (ft):	55 x 41	Sample Footprint (Length x Width) (ft):	65 x 51
Building Footprint (sq. ft):	2255	Sample Footprint (sq. ft):	3315
Ash/ small inseparable debris depth in Building footprint (in):	Varies widely. 2-4 in on west half of building (50% of structure). 2-5 ft on east half of building where basement/crawlspace collapsed and debris piled (50% of structure).		
White Goods (count, location, and type):	Water tank, possibly other white good buried.		
Identifiable hazardous materials (count, location, and type):	None observed, possibly buried.		
Suspected or potential hazardous materials or containers (count, location, and type):	None observed, possibly buried.		
Metal debris estimated volume:	Tentatively 200 lbs, unknown quantity buried.		
Other large debris that may be segregated for recycling or disposal estimated volume:	Misc metal sheeting, fire place grates, metal piping, lighting housings, likely other large debris/recyclables buried.		
Other notes:	Substantial ruins include two stone chimneys (2 stories), partial foundation, concrete flooring, concrete retaining wall (east edge) and collapsed basement/crawl space.		

Site ID/ Site Name:	0587 / Onahu Ranch Pumphouse	Date:	9/29/2022 3:24PM
Building Footprint (Length x Width) (ft):	7.5 x 10.5	Sample Footprint (Length x Width) (ft):	17.5 x 20.5
Building Footprint (sq. ft):	78.75	Sample Footprint (sq. ft):	358.75
Ash/ small inseparable debris depth in Building footprint (in):	Unknown in pit, assumed 12 inches.		
White Goods (count, location, and type):	Large water tank in pit (approximately 3 feet diameter by 8 ft height) and associated piping		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	750 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	NA		
Other notes:	Structure walls standing, pit approximately 8 feet deep, minimal debris surrounding building, roof collapsed into pit, plastic bins NW of structure (possibly garbage bins, melted)		

**NIC**

Site ID/ Site Name:	0624 / Onahu Ranch Tool Shed	Date:	9/29/2022 3:55PM
Building Footprint (Length x Width) (ft):	17 x 10	Sample Footprint (Length x Width) (ft):	27 x 20
Building Footprint (sq. ft):	170	Sample Footprint (sq. ft):	540
Ash/ small inseparable debris depth in Building footprint (in):	0		
White Goods (count, location, and type):	None		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	None		
Other large debris that may be segregated for recycling or disposal estimated volume:	None		
Other notes:	Cinder blocks		

Site ID/ Site Name:	0583 / Onahu Ranch Abasaw Aw Xa Cottage	Date:	9/29/2022 3:40PM
Building Footprint (Length x Width) (ft):	21.5 x 26.3	Sample Footprint (Length x Width) (ft):	31.5 x 36.3
Building Footprint (sq. ft):	565.45	Sample Footprint (sq. ft):	1143.45
Ash/ small inseparable debris depth in Building footprint (in):	0-1 in		
White Goods (count, location, and type):	Water tank, stove, sink, large space heater unit, electrical boxes (2)		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	200 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal sheeting, piping, gutters, metal storage unit, metal sheeting		
Other notes:	Chimney, large concrete footers, picnic table legs, in ground piping.		

Site ID/ Site Name:	783 / Timber Creek Road Camp Barn	Date:	9/29/2022 5:00 PM
Building Footprint (Length x Width) (ft):	56 x 21	Sample Footprint (Length x Width) (ft):	66 x 31
Building Footprint (sq. ft):	1176	Sample Footprint (sq. ft):	2046
Ash/ small inseparable debris depth in Building footprint (in):	0-1 in		
White Goods (count, location, and type):	None		
Identifiable hazardous materials (count, location, and type):	2 drums (unknown contents) – center and north, compressed gas cylinder (unknown contents or discharge status) – north, fire extinguisher (discharge status unknown)– north wall.		
Suspected or potential hazardous materials or containers (count, location, and type):	Numerous fuel containers throughout unknown contents (discharged). Large portable generator – east center wall. Spray cans (discharged)		
Metal debris estimated volume:	Significant metal debris, quantity difficult to estimate due to piling of debris. Approximately 1800 lbs.		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal storage/shelves/tool boxes (throughout structure), metals wheelbarrows (6+), metal sheeting, metal wiring, piles of metal nails/stakes, garbage bins, metal piping (outside structure on east side), metal fencing (outside structure south edge)		
Other notes:	Concrete slab		

Site ID/ Site Name:	572 / Timber Creek Road Camp Barn Tack Shed	Date:	9/29/2022 4:45 PM
Building Footprint (Length x Width) (ft):	12 x 26	Sample Footprint (Length x Width) (ft):	22 x 36
Building Footprint (sq. ft):	312	Sample Footprint (sq. ft):	792
Ash/ small inseparable debris depth in Building footprint (in):	1-3 in		
White Goods (count, location, and type):	Washer and Dryer, water tank, electrical box.		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	Spray cans (discharged)		
Metal debris estimated volume:	300 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal storage unit, metal sheeting, metal piping, metal chair, metal cabling spools (several of various gauges), gutters, misc hand tools/ small size equipment.		
Other notes:	Concrete foundation slab, storage pad extends to south of structure.		



**NIC**

Site ID/ Site Name:	1141 / Grand Lake Entrance Station	Date:	9/29/2022
Building Footprint (Length x Width) (ft):	39.7 x 24.1	Sample Footprint (Length x Width) (ft):	49.7 x 34.1
Building Footprint (sq. ft):	956.77	Sample Footprint (sq. ft):	1694.77
Ash/ small inseparable debris depth in Building footprint (in):	None		
White Goods (count, location, and type):	None		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	None		
Other large debris that may be segregated for recycling or disposal estimated volume:	None		
Other notes:	Site debris/ash was formerly removed.		

Site ID/ Site Name:	1183 / Harbison Meadow Picnic Area Vault Toilet	Date:	9/29/2022
Building Footprint (Length x Width) (ft):	16 x 19.3	Sample Footprint (Length x Width) (ft):	26 x 29.3
Building Footprint (sq. ft):	308.8	Sample Footprint (sq. ft):	761.8
Ash/ small inseparable debris depth in Building footprint (in):	None		
White Goods (count, location, and type):	None		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	None		
Other large debris that may be segregated for recycling or disposal estimated volume:	None		
Other notes:	Site debris/ash was formerly removed.		

**NIC**

Site ID/ Site Name:	831 / Betty Dick Garage	Date:	9/29/2022
Building Footprint (Length x Width) (ft):	97.5 x 23.5	Sample Footprint (Length x Width) (ft):	107.5 x 33.5
Building Footprint (sq. ft):	2291.25	Sample Footprint (sq. ft):	3601.25
Ash/ small inseparable debris depth in Building footprint (in):	1-2 in		
White Goods (count, location, and type):	Water tank, electrical box (west wall), washer and dryer (NE corner), electrical heater unit (west wall).		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	Fire extinguisher (discharged), at least 10 light fixtures (possible PCB ballasts – no PCB detected above method detection in soil)		
Metal debris estimated volume:	750lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Antique farm equipment (4), gutters, metal tool boxes, multiple bed frames, metal chair, metal sheeting, outlet boxes, large metal trough, metal bath tub, wheel barrel, metal cage/coop,		
Other notes:	Partial concrete slab approximately 48 ft x 23.5 ft (north half of structure), concrete footings (center of structure)		

Site ID/ Site Name:	893 / Moraine Stables Bunk House/Mess House	Date:	10/5/2022
Building Footprint (Length x Width) (ft):	43 x 43.5	Sample Footprint (Length x Width) (ft):	53 x 53.5
Building Footprint (sq. ft):	1870.5	Sample Footprint (sq. ft):	2835.5
Ash/ small inseparable debris depth in Building footprint (in):	None		
White Goods (count, location, and type):	None		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	None		
Other large debris that may be segregated for recycling or disposal estimated volume:	None		
Other notes:	Site debris/ash was formerly removed.		

**NIC**

Site ID/ Site Name:	1086 / Moraine Park Stables	Date:	10/5/2022
Building Footprint (Length x Width) (ft):	26 x 54	Sample Footprint (Length x Width) (ft):	36 x 64
Building Footprint (sq. ft):	1404	Sample Footprint (sq. ft):	2304
Ash/ small inseparable debris depth in Building footprint (in):	None		
White Goods (count, location, and type):	None		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	None		
Other large debris that may be segregated for recycling or disposal estimated volume:	None		
Other notes:	Site debris/ash was formerly removed.		

Site ID/ Site Name:	014 / Fern Lake Ranger Station	Date:	10/5/2022
Building Footprint (Length x Width) (ft):	24 x 26	Sample Footprint (Length x Width) (ft):	34 x 36
Building Footprint (sq. ft):	624	Sample Footprint (sq. ft):	1224
Ash/ small inseparable debris depth in Building footprint (in):	1-3 in		
White Goods (count, location, and type):	None		
Identifiable hazardous materials (count, location, and type):	None		
Suspected or potential hazardous materials or containers (count, location, and type):	None		
Metal debris estimated volume:	50 lbs		
Other large debris that may be segregated for recycling or disposal estimated volume:	Metal exhaust pipe and exhaust housing, metal box, metal sheeting		
Other notes:	Remote location not accessible by vehicle, stone and mixed concrete foundation wall, site is covered by tarp.		

## Notes:

- White Goods includes stoves, refrigerators, water heaters, etc. **Presence of Freon in refrigerators unknown.**
- Hazardous materials include light ballasts, chemical containers, drums, compressed gas cylinders, batteries, electronic waste, aerosol cans (non-dispersed), etc.
- Other large debris includes misc metal items, concrete chunks, stones, foundation, etc.

## **Attachment B**

### *Soil and Metal Removal Volumes*

Ash/Debris, Soil, and Metal Removal Volumes									
Site ID	Site Name	Building Footprint (sq. ft.)	Cleanup Footprint (sq. ft.)	Total Estimated Ash/Debris Removal (ton) <sup>1,3</sup>	Total Estimated Soil Removal (ton) <sup>2</sup>	Appr. metal debris (lbs) <sup>4</sup>	Concrete Slab?	Chimney?	Notes
732	GMR Parika Cottage	645	1325	3	34	210		Yes	
731	GMR Mineral Cottage	1102	1872	11	49	250		Yes	Asbestos historically present in drywall sample
733	GMR Arapaho Cottage	588	1173	30	30	250			Asbestos historically present in drywall sample
734	GMR Onahu Cottage	650	1260	10	33	350		Yes	
735	GMR Cumulus Cottage	529	1089	27	28	200			
737	GMR Cirrus Cottage	460	990	48	26	210			
853	GMR Old Pumphouse	238	648	1	17	150	Yes - full building footprint		
728	GMR Wood Storage Shed	224	624	1	16	0			
727	GMR Pioneer Cottage	384	884	23	23	250			
724	GMR Barn	559	1134	10	29	60	Yes - full building footprint		
740	GMR Meadow Cottage	525	1085	7	28	250		Yes	
579	Onahu Ranch Bakuni Cottage	357	882	3	23	200			
578	Onahu Ranch Na Ha Non Cottage	450	1000	8	26	200			
577	Onahu Ranch Ho Ta Ta Ha Cottage	336	836	6	22	150			
575	Onahu Ranch Lodge	2255	3315	624	86	200	Yes - partial building footprint	Yes - 2 chimneys, multiple stories	
587	Onahu Ranch Pumphouse	79	359	4	9	750			Building intact, roof collapsed into pumphouse pit, pit approximately 8 feet deep.
624	Onahu Ranch Tool Shed	170	540	0	14	0			
583	Onahu Ranch Abasaw Aw Xa Cottage	566	1144	2	30	200		Yes	

Site ID	Site Name	Building Footprint (sq. ft.)	Cleanup Footprint (sq. ft.)	Total Estimated Ash/Debris Removal (ton) <sup>1,3</sup>	Total Estimated Soil Removal (ton) <sup>2</sup>	Appr. metal debris (lbs) <sup>4</sup>	Concrete Slab?	Chimney?	Notes
783	Timber Creek Road Camp Barn	1176	2046	5	53	1400	Yes - full building footprint		Significant metal debris.
572	Timber Creek Road Camp Barn Tack Shed	312	792	4	21	300	Yes - full building footprint		Hazardous - TCLP fail (lead)
1141	Grand Lake Entrance Station	957	1695	0	44	0			No ash/debris
1183	Harbison Meadow Picnic Area Vault Toilet	309	762	0	20	0			No ash/debris
831	Betty Dick Garage	2292	3602	20	93	750	Yes - partial building footprint. 48 x 23.5 ft		PCB ballasts likely present
893	Moraine Stables Bunk House/Mess House	1871	2836	0	74	0			No ash/debris
1086	Moraine Park Stables	1404	2304	0	60	0			No ash/debris
14	Fern Lake Ranger Station	624	1224	8	32	50			No road/vehicle access to site.

**Notes:**

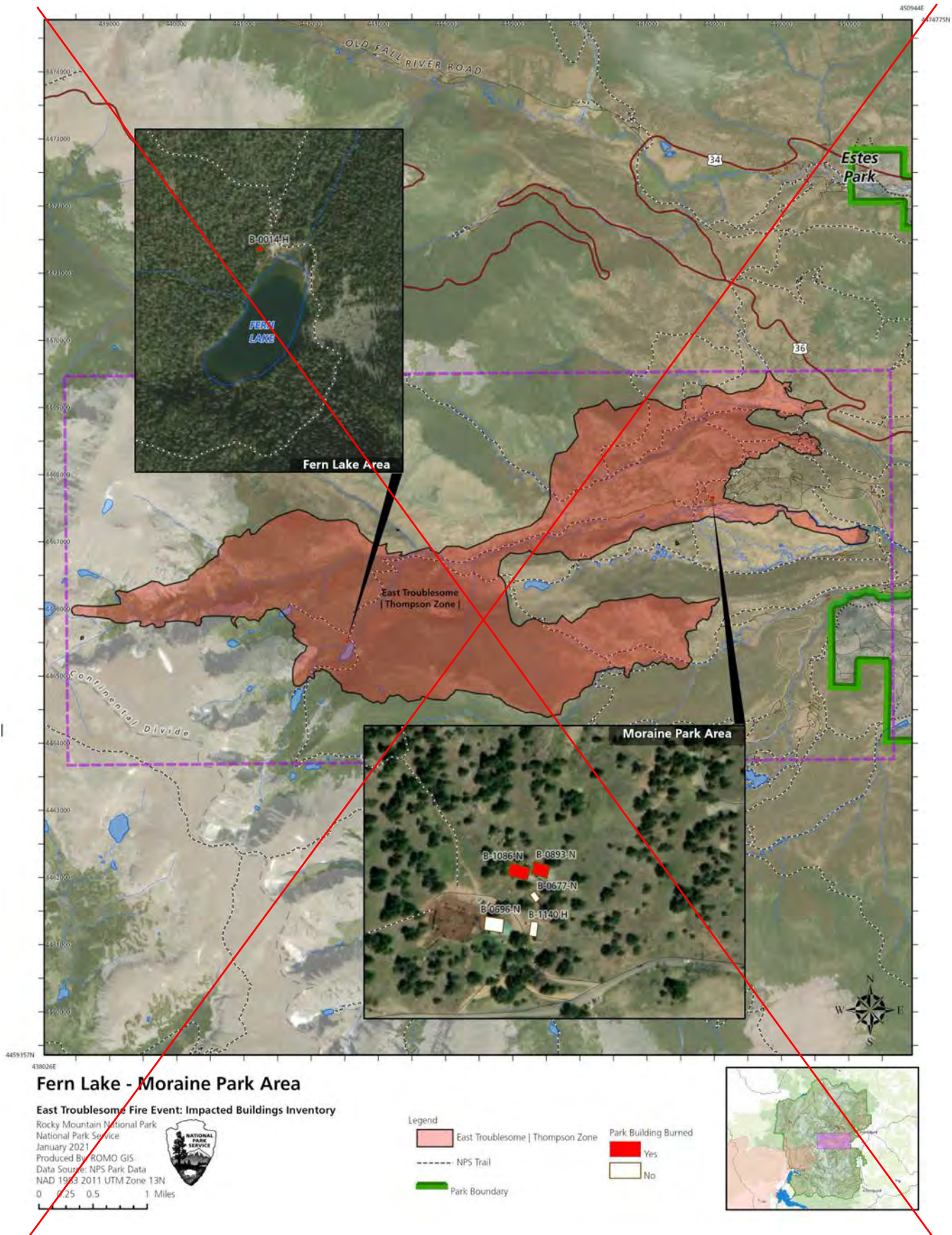
1. Includes full volume of ash/debris, if present. Conversion factors used: cubic feet of ash/debris \* 1.4 /27 = US tons
2. Includes 6 inches of soil to be removed beneath ash/debris and slab, if present. Conversion factors used: cubic feet of soil \* 1.4 /27 = US tons
3. Concrete, stone, metal, chimneys not included in ash/debris tonage.
4. Metal volume includes white good.

## Attachment C

### *Site Location Figures*



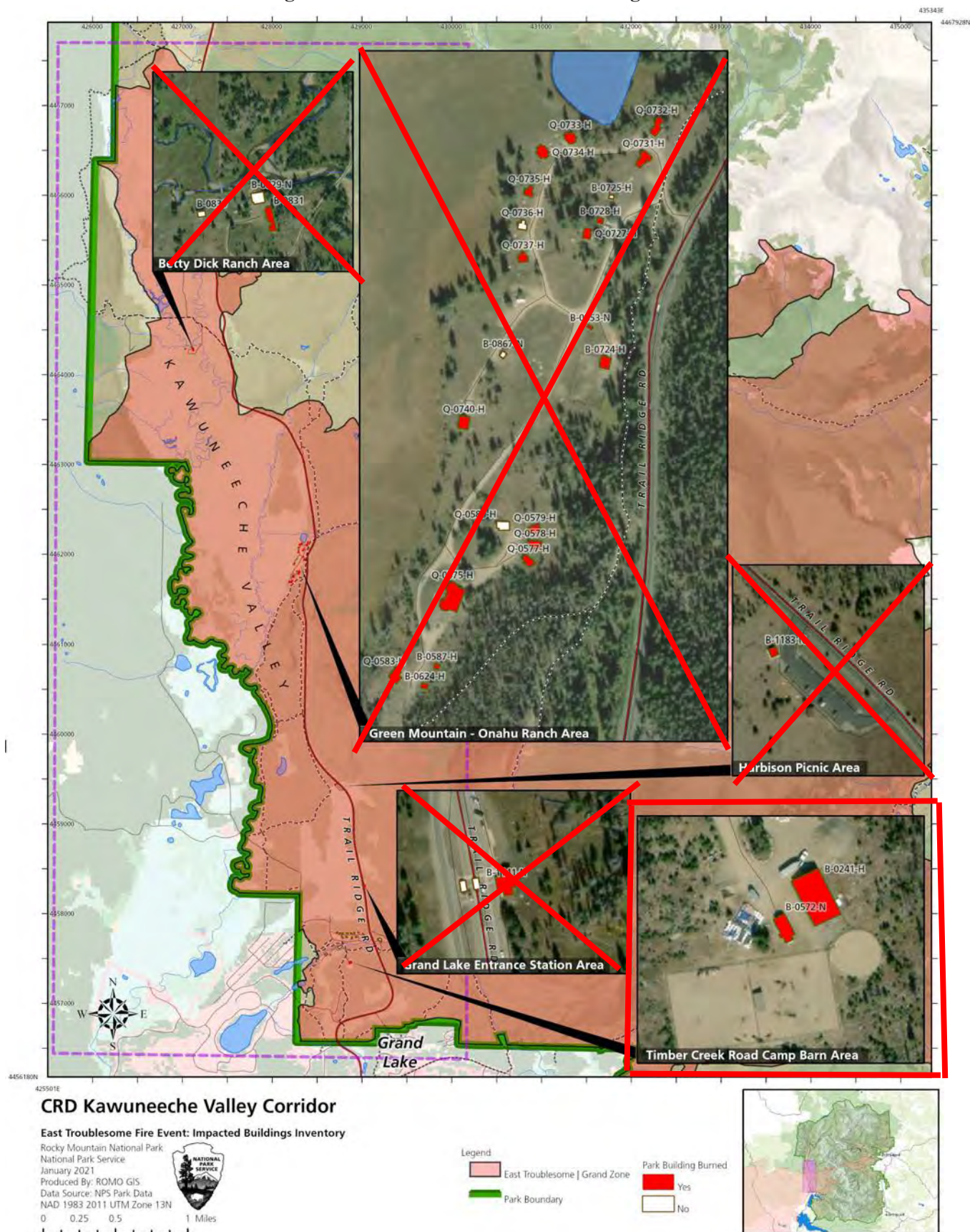
Figure 1 East Side District Building Locations



Source: ROMO East Troublesome Fire Event: Impacted Buildings Inventory (NPS, 2021)



Figure 2 Colorado River District Building Locations



Source: ROMO East Troublesome Fire Event: Impacted Buildings Inventory (NPS, 2021)

## Attachment D

*Site Photographs*



Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

The photos presented below were captured during the two-week sampling event conducted 9/27/2022 through 10/06/2022.

**Building: 0732, GMR Parika Cottage**

Park Region: Green Mountain Ranch (GMR) Area





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

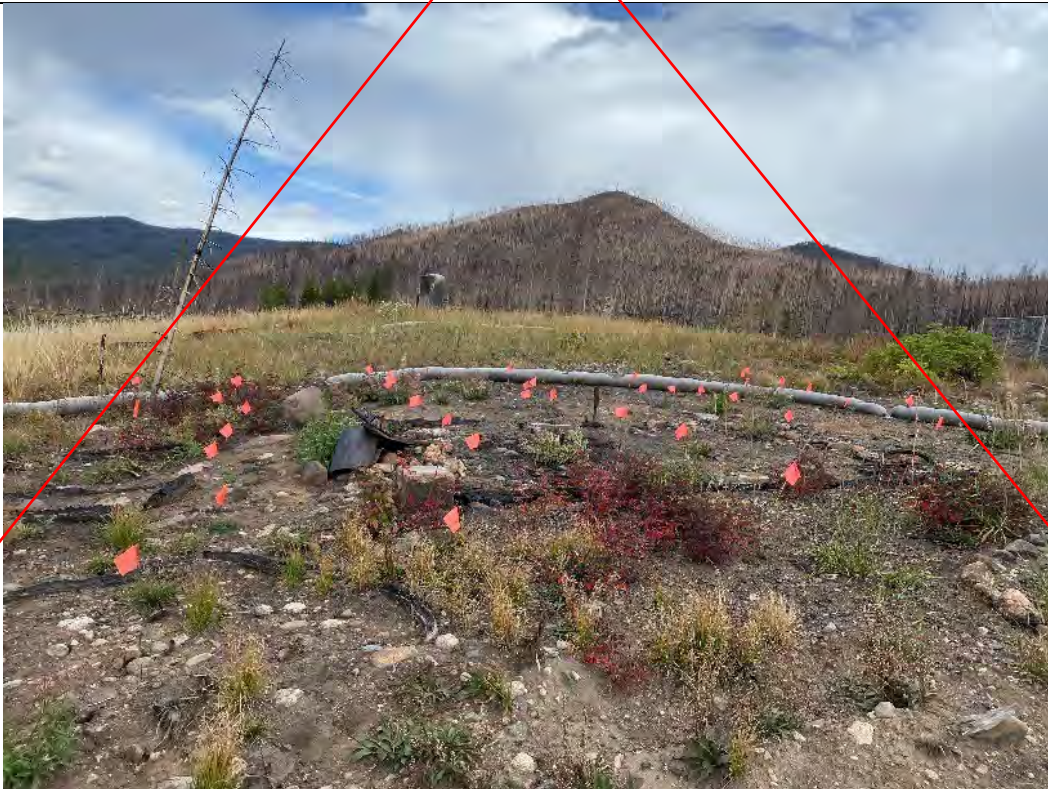
**Building: 0731, GMR Mineral Cottage**

Park Region: Green Mountain Ranch (GMR) Area



**Building: 0728, GMR Wood Storage Cottage**

Park Region: Green Mountain Ranch (GMR) Area





**Building: 0727, GMR Pioneer Cottage**

Park Region: Green Mountain Ranch (GMR) Area





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0733, GMR Arapaho Cottage**

Park Region: Green Mountain Ranch (GMR) Area





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0734, GMR Onahu Cottage**

Park Region: Green Mountain Ranch (GMR) Area





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0735, GMR Cumulus Cottage**

Park Region: Green Mountain Ranch (GMR) Area





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0737, GMR Cirrus Cottage**

Park Region: Green Mountain Ranch (GMR) Area





**Building: 0740, GMR Meadow Cottage**

Park Region: Green Mountain Ranch (GMR) Area









Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0853, GMR Pumphouse**

Park Region: Green Mountain Ranch (GMR) Area





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0579, Onahu Ranch Bakuni Cottage**  
Park Region: Green Mountain Ranch (GMR) Area





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0578, Onahu Ranch Na Ha Non Cottage**  
Park Region: Green Mountain Ranch (GMR) Area





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0577, Onahu Ranch Ho Ta Ta Ha Cottage**  
Park Region: Green Mountain Ranch (GMR) Area





**Building: 0583, Onahu Ranch Abasaw Aw Xa Cottage**  
Park Region: Green Mountain Ranch (GMR) Area





**Building: 0624, Onahu Ranch Tool Shed**

Park Region: Green Mountain Ranch (GMR) Area





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0575, Onahu Ranch Lodge**

Park Region: Green Mountain Ranch (GMR) Area





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0587, Onahu Ranch Pumphouse**

Park Region: Green Mountain Ranch (GMR) Area





**Building: 0783, Timber Creek Road Camp Barn**  
Park Region: Timber Creek Road Camp





**Building: 0572, Timber Creek Road Camp Barn Tack Shed**  
Park Region: Timber Creek Road Camp

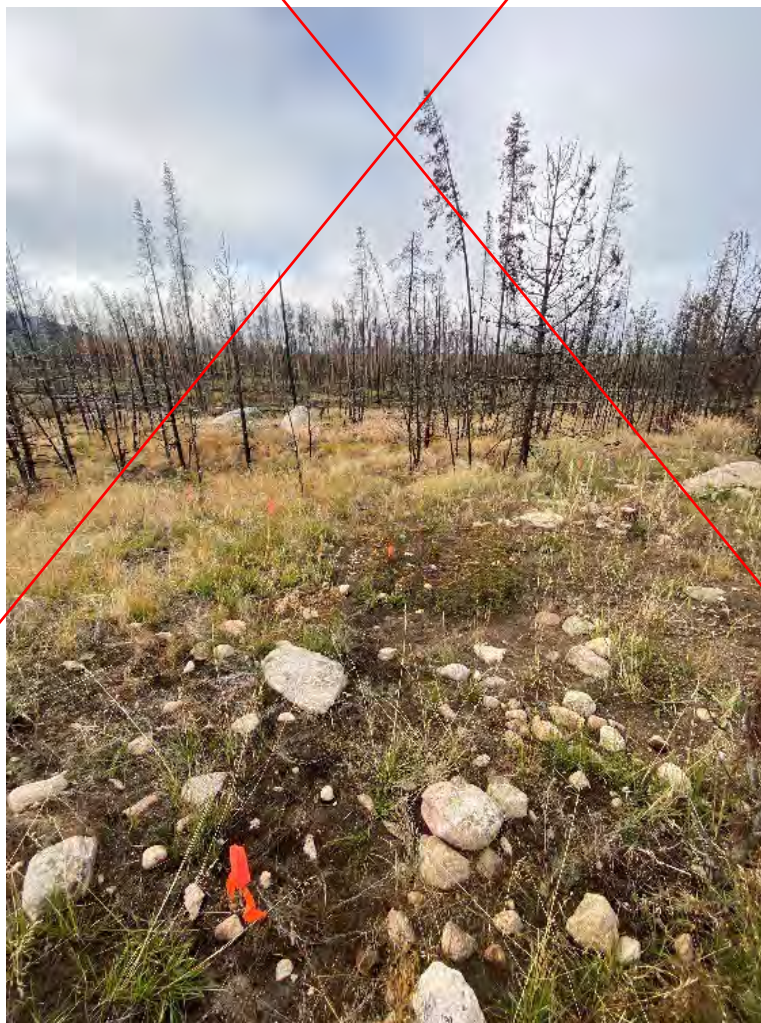




Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: R-TC, Remit Office/ Grand Lake Entrance Station**

Park Region: Timber Creek Road Camp





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 1141, Remit Office**

Park Region: Remit Office/ Grand Lake Entrance Station





**Building: R-GLE, Grand Lake Entrance Background**

Park Region: Remit Office/ Grand Lake Entrance Station





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 1183, Harbison Vault Toilet**  
Park Region: Harbison Vault Toilet





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0831, Betty Dick Barn**  
Park Region: Betty Dick Ranch





**Building: R-BD, Betty Dick Background**  
Park Region: Betty Dick Ranch





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0893, Moraine Stable Bunk House**  
Park Region: Moraine Park Stables



**Building: 1086, Moraine Stables Dorm**  
Park Region: Moraine Park Stables



**Building: R-MP, Moraine Park Background**  
Park Region: Moraine Park Stables

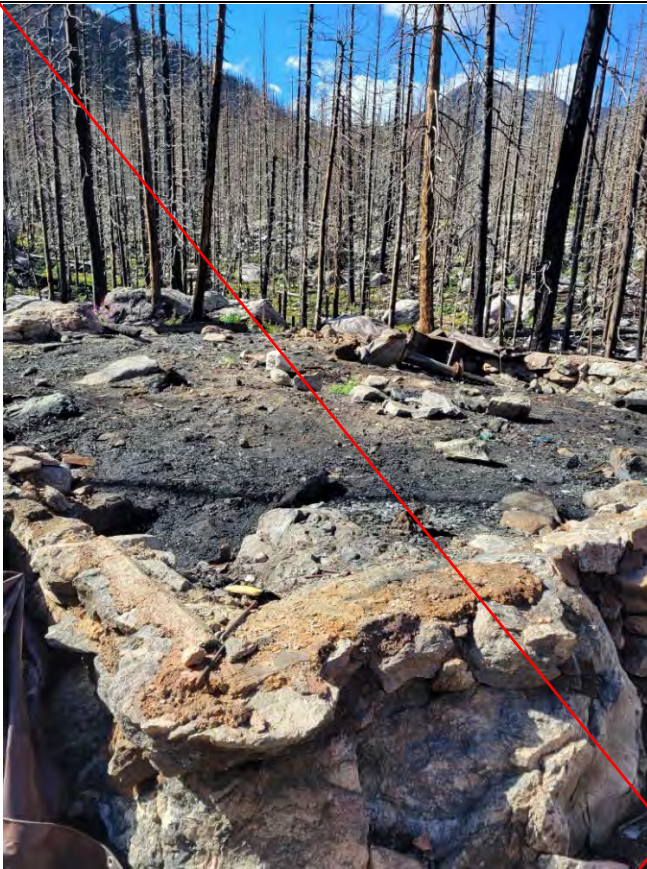




Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: 0014, Fern Lake**

Park Region: Fern Lake





Site Inspection Field Sampling Event East Troublesome Fire Damaged Structures  
Rocky Mountain Nation Park

**Building: R-FL, Fern Lake Background**  
Park Region: Fern Lake



Attachment 2  
DRAFT Site Characterization  
Data



Table 4  
Summary of Analytical Laboratory Results for Timber Creek Road Camp

District								Colorado River District	
Structure Name								Timber Creek Road Camp Barn	Timber Creek Road Camp Barn Tack Shed
Structure Number								0783	0572
Lab Report								231686	231686
Sample ID								R-783-SA-1-01	B-572-SA-1-01
Date Sampled								9/30/2022	9/30/2022
Analyte	CAS #	Analytical Method	Units	Site Specific Background Concentration <sup>1</sup>	US EPA RSL Resident Soil <sup>2</sup>	NPS Soil COPEC Selection ESV <sup>3</sup>	Project Risk Screening Value <sup>4</sup>		
Metals									
Antimony	7440-36-0	SW846 6020A	mg/kg	0.06	3.1	0.248	0.248	172	19.9
Arsenic	7440-38-2	SW846 6020A	mg/kg	2.64	11	0.25	0.25	123	79.3
Barium	7440-39-3	SW846 6020A	mg/kg	88.80	1500	17.2	17.2	680	6770
Beryllium	7440-41-7	SW846 6020A	mg/kg	0.35	16	2.42	2.42	0.292	0.297
Cadmium	7440-43-9	SW846 6020A	mg/kg	0.22	0.7	0.27	0.27	2.56	2.26
Chromium	7440-47-3	SW846 6020A	mg/kg	13.94	12000	0.34	0.34	126	73
Cobalt	7440-48-4	SW846 6020A	mg/kg	4.14	2.3	13	2.3	24.4	18.7
Copper	7440-50-8	SW846 6020A	mg/kg	13.94	310	14	14	3280	1810
Lead	7439-92-1	SW846 6020A	mg/kg	16.36	400	0.94	0.94	337	4380
Mercury	7439-97-6	SW846 7471B	mg/kg	0.06	1.1	0.013	0.013	0.13 U	0.12 U
Molybdenum	7439-98-7	SW846 6020A	mg/kg	0.51	39	0.52	0.52	23.5	1.28
Nickel	7440-02-0	SW846 6020A	mg/kg	8.68	150	10	10	39.3	19.5
Selenium	7782-49-2	SW846 6020A	mg/kg	0.19	39	0.331	0.331	0.17 J	0.11 J
Silver	7440-22-4	SW846 6020A	mg/kg	0.02	39	2	2	0.586	0.512
Thallium	7440-28-0	SW846 6020A	mg/kg	0.16	0.1	0.027	0.027	0.092	0.104
Vanadium	7440-62-2	SW846 6020A	mg/kg	20.81	39	0.714	0.714	22.8	21.2
Zinc	7440-66-6	SW846 6020A	mg/kg	40.61	2300	6.62	6.62	12200	4770
Polychlorinated Biphenyls (PCBs)									
Aroclor-1016	11096-82-5	SW846 8082A	mg/kg	NC	0.41	1.1	1.1	0.024 U	NA
Aroclor-1221	11096-82-5	SW846 8082A	mg/kg	NC	0.2	No ESV	0.2	0.024 U	NA
Aroclor-1232	11096-82-5	SW846 8082A	mg/kg	NC	0.17	No ESV	0.17	0.024 U	NA
Aroclor-1242	11096-82-5	SW846 8082A	mg/kg	NC	0.23	0.041	0.041	0.024 U	NA
Aroclor-1248	11096-82-5	SW846 8082A	mg/kg	NC	0.23	0.0073	0.0073	0.024 U	NA
Aroclor-1254	11096-82-5	SW846 8082A	mg/kg	NC	0.12	0.041	0.041	0.024 U	NA
Aroclor-1260	11096-82-5	SW846 8082A	mg/kg	NC	0.24	0.88	0.24	0.024 U	NA
Aroclor-1262	11096-82-5	SW846 8082A	mg/kg	NC	NE	NE	NE	0.024 U	NA
Aroclor-1268	11096-82-5	SW846 8082A	mg/kg	NC	NE	NE	NE	0.024 U	NA
Total PCBs	11096-82-5	SW846 8082A	mg/kg	NC	NE	NE	NE	0.024 U	NA
Chromium Hexavalent ( Cr+6)									
Hexavalent Chromium		SW846 7196A	mg/kg	NC	0.3	12.01	0.3	1.5 U	NA
Dioxins/Furans <sup>5</sup>									
2,3,7,8-TCDD		1613B	ng/Kg	0.10	Use TEQ	Use TEQ	Use TEQ	36	8.07
1,2,3,7,8-PeCDD		1613B	ng/Kg	0.25	Use TEQ	Use TEQ	Use TEQ	133	30.4
1,2,3,6,7,8-HxCDD		1613B	ng/Kg	0.33	Use TEQ	Use TEQ	Use TEQ	79.4	30.4
1,2,3,4,7,8-HxCDD		1613B	ng/Kg	0.19	Use TEQ	Use TEQ	Use TEQ	160	40.6
1,2,3,7,8,9-HxCDD		1613B	ng/Kg	0.27	Use TEQ	Use TEQ	Use TEQ	186	41.3
1,2,3,4,6,7,8-HpCDD		1613B	ng/Kg	2.91	Use TEQ	Use TEQ	Use TEQ	896	377
OCDD		1613B	ng/Kg	13.08	Use TEQ	Use TEQ	Use TEQ	1520	951
2,3,7,8-TCDF		1613B	ng/Kg	0.33	Use TEQ	Use TEQ	Use TEQ	116	86.3
1,2,3,7,8-PeCDF		1613B	ng/Kg	0.47	Use TEQ	Use TEQ	Use TEQ	160	102
2,3,4,7,8-PeCDF		1613B	ng/Kg	1.10	Use TEQ	Use TEQ	Use TEQ	273	183
1,2,3,6,7,8-HxCDF		1613B	ng/Kg	0.92	Use TEQ	Use TEQ	Use TEQ	208	167
1,2,3,7,8,9-HxCDF		1613B	ng/Kg	0.39	Use TEQ	Use TEQ	Use TEQ	254	189
1,2,3,4,7,8-HxCDF		1613B	ng/Kg	0.99	Use TEQ	Use TEQ	Use TEQ	72.6	66
2,3,4,6,7,8-HxCDF		1613B	ng/Kg	1.18	Use TEQ	Use TEQ	Use TEQ	268	231
1,2,3,4,6,7,8-HpCDF		1613B	ng/Kg	5.40	Use TEQ	Use TEQ	Use TEQ	958	1060
1,2,3,4,7,8,9-HpCDF		1613B	ng/Kg	0.69	Use TEQ	Use TEQ	Use TEQ	92.5	86.2
OCDF		1613B	ng/Kg	8.37	Use TEQ	Use TEQ	Use TEQ	442	628
Total TEQ		Calculated	ng/Kg	1.23	4.8	0.29	0.29	410	197
Toxicity Characteristic Leaching Procedure (TCLP)						Regulatory Limit			
Chromium	7440-47-3	EPA 1311	mg/L			5		0.090 U	NA
Lead	7439-92-1	EPA 1311	mg/L			5		0.057 J	10.3
Arsenic	7440-38-2	EPA 1311	mg/L			5		0.42U	NA
Barium	7440-39-3	EPA 1311	mg/L			100		NA	4.0

Notes:

1. Site Specific Background Concentration. 95% upper confidence limits (UCL) calculated from three ISM replicates using the Interstate Technology Regulatory Council's (ITRC's) updated Microsoft Excel workbook ISM 95% calculator (ITRC 2020a). U flagged data = one half of the MDL.
2. USEPA Regional Screening Levels (RSLs) Resident Soil Generic Tables - Target risk 1E-06, Target HQ 0.1 (November 2022). For arsenic, use Colorado Arsenic Risk Management Guidance for Evaluating Arsenic Concentrations in Soil = 11 mg/kg as a cleanup level.
3. Lowest Refined SLERA Ecological Screening Value (ESV) for mammals, birds, plants, and invertebrates across all NPS-approved sources for soils (Table 5 and 6 of NPS Protocol for the Selection and use of Ecological Screening Values for Non-Radiological Analytes).
4. Project Risk Based Screening Level (RBSL) = lower of USEPA RSL and NPS SLERA ESVs.
5. Only Total TEQ used for comparison to EPA RSL, NPS ESV, and background. Compare the TEQ to the 2,3,7,8-TCDD screening level.

NE - no standard established  
NA - not analyzed for constituent  
NC - not calculated  
mg/kg - milligrams per kilogram or parts per million  
mg/L - milligrams per liter or parts per million  
ng/Kg - nanograms per kilogram or parts per trillion  
U = Analyte not detected. Method Detection Limit indicated.  
J = Indicates an estimated value below the quantitation limit.  
TEQ = Toxic equivalency quotient, calculated by multiplying the result for each dioxin and dioxin-like compound by its toxic equivalency factor, and summing the results. ND value used = 0.5 MDL value.  
Compare the TEQ to the 2,3,7,8-TCDD screening level.

Result Bolded and Shaded Red - exceeds the EPA RSL, NPS Ecological RSV, and background concentration

Result Bolded and Shaded Yellow - exceeds both Project Rick Screening Value (lower of the EPA RSL or NPS Screening value) and background concentration

Result Shaded Grey - exceeds the Project RBSL but not the background concentration

Result Bolded and Shaded Blue - exceeds the USEPA TCLP Regulatory Limit

No Bolding or Shading - does not exceed the USEPA RSL, NPS Ecological screening value, or background concentration



Attachment 3  
East Troublesome Wildfire  
Guidance with Disposal Form



# Asbestos

## East Troublesome Wildfire, October 2020

### Public and Commercial Buildings

Ash and debris from burned structures may contain toxic substances due to the many synthetic and other materials that may be present in buildings. For example, car batteries or mercury light bulbs, lead-based paint, plastic items and other potentially toxic materials may have been present in the buildings prior to the fire. Public and commercial structures may contain larger amounts of these materials. People should take precautions when entering buildings that are partially damaged by the fire or when handling any materials from buildings completely destroyed by the fire. They should wear protective clothing and equipment to avoid skin contact with debris and inhalation of ash.

One particular concern in handling debris from structures damaged or destroyed by wildfires is the possible exposure to asbestos fibers. Asbestos is a known carcinogen and exposure to asbestos fibers can cause or contribute to the development of various diseases including asbestosis, mesothelioma and lung cancer. Asbestos fibers have been commonly used in a variety of building materials including wall and ceiling textures, drywall, insulation, sheet vinyl flooring and floor tiles. Asbestos-containing materials that are in good condition should not pose a hazard. However, materials that are damaged or disturbed can release asbestos fibers creating a potential exposure risk for people working on site or on neighboring sites.

Colorado enforces asbestos requirements under Colorado Regulation No. 8, Part B. It also has been delegated the authority and obligation to enforce the federal National Emission Standards for Hazardous Air Pollutants (NESHAP) regarding asbestos in public and commercial buildings. For residential properties, including commercial residential buildings with four or fewer dwelling units, the Colorado Department of Public Health and Environment is able to waive some of the asbestos requirements of Colorado Regulation 8, Part B. Please see the specific documents developed for residential properties affected by the East Troublesome Wildfire. Colorado cannot waive federal requirements for Public and Commercial buildings.

#### I. Addressing asbestos in Public and Commercial structures completely destroyed by the fire where only ash and debris remain.

##### Safe Handling of Ash and Debris

The ash/debris should be handled in a manner that will minimize potential exposure to asbestos fibers and other hazardous materials in the debris.

- Ash/debris must be wetted to minimize dust; packaged inside a container (such as an end-dump roll-off or truck) lined with double 6-mil plastic sheeting with the sheeting completely closed over the material and sealed once the container is loaded.
- Soil under/surrounding the building should be scraped to ensure that all ash and building debris has been removed from the site.
- Contractors should consult with the Occupational Safety and Health Administration (OSHA) at (303) 844-4500 (Englewood) or 303-844-5285 (Denver) to determine training and personal protective equipment that will be required for those handling this material.

## Proper Disposal of Ash and Debris

Ash and debris from buildings that were destroyed by must be disposed of at an approved landfill. The following landfills can accept ash and debris from public and commercial buildings destroyed by this fire that cannot be safely characterized for the presence of asbestos.

Tower Landfill, Inc.  
8480 Tower Road  
Commerce City  
Steve Derus, 720-590-4046

Denver Arapaho Disposal Site  
3500 S. Gun Club Road  
Aurora  
Chris Anderson: 720.876.2633

Buffalo Ridge Landfill  
11655 WCR 59  
Keenesburg  
Michelle Wittenbrink: 303-229-8085

Foothills Landfill  
8900 Hwy 93, Golden  
Steve Derus, 720-590-4046

Front Range Landfill  
1830 Weld CR 5, Erie  
Randy Tourville: 303-673-9431

No other landfills are currently approved to accept ash and debris from buildings completely destroyed by this fire. In order to get approval to accept these materials, landfills must request and receive permission from the Hazardous Materials and Waste Management Division (HMMWD) which will include agreement to implement certain best management practices designed to protect landfill workers and nearby public from potential asbestos hazards.

- Please contact the landfill before loads are taken there to confirm waste acceptance, to alert them that the material is coming and to initiate a waste profile. The landfill should be informed that the material has come from the fire area and may contain suspect asbestos-containing materials or other hazardous materials. Please take debris directly to the landfill.
- Recycling of metal and concrete foundations is permissible under the following circumstances: Metal debris must be washed clean of ash/debris prior to recycling. If you wish to recycle a concrete foundation, the concrete must be inspected by a Colorado certified asbestos building inspector to determine that it is free of asbestos-containing materials prior to recycling.

## Notification and Permitting Requirements

State demolition permitting requirements are waived. However, the building owner or contractor must submit written notification to the CDPHE Indoor Environment Program. This notification should be done using the Public and Commercial Disposal Notification Form, East Troublesome Wildfire, October 2020.

### **II. Addressing asbestos in damaged Public and Commercial structures where the building must be demolished and where sampling building materials for the presence of asbestos cannot be done safely.**

Building owners must work with appropriate local officials overseeing the fire response to determine whether a partially damaged structure can be safely inspected. Local government ordered demolitions based on a determination that the building is structurally unsound and in danger of imminent collapse waive the requirements to inspect and remove regulated asbestos containing material provided. However, all debris must be treated as friable asbestos waste.

- Provide written notification (10 working days in advance) to the Indoor Environment Program for all demolitions. Emergency provisions may allow notice to be made 24 hours instead of 10 working days.
- Ash/debris must be wetted to minimize dust; packaged inside a container (such as an end-dump roll-off or truck) lined with double 6-mil plastic sheeting with the sheeting completely closed over the material and sealed once the container is loaded.
- Soil under/surrounding the building should be scraped to ensure that all ash and building debris has been removed from the site.
- Ensure there is an asbestos trained supervisor on the jobsite with documentation posted.

- In addition, Contractors should consult with the Occupational Safety and Health Administration (OSHA) at (303) 844-4500 (Englewood) or 303-844-5285 (Denver) to determine training and personal protective equipment that will be required for those handling this material.
- All debris must be treated as friable asbestos waste and can only be disposed of in a landfill that meets the Asbestos NESHAP requirements. The following are the landfills permitted to accept this waste:

Tower Landfill, Inc.  
8480 Tower Road  
Commerce City  
Steve Derus, 720-590-4046

Denver Arapaho Disposal Site  
3500 S. Gun Club Road  
Aurora  
Chris Anderson: 720.876.2633

Buffalo Ridge Landfill  
11655 WCR 59  
Keenesburg  
Michelle Wittenbrink: 303-229-8085

### Notification and Permitting Requirements

State demolition permitting requirements are waived. However, the building owner or contractor must submit written notification to the CDPHE Indoor Environment Program. This notification should be done using the state Demolition Notification Application Form except the section for sign-off by the certified Asbestos Building Inspector and Asbestos Removal Contractor should be left blank. There is no fee required for submission. The form may be found here:

<https://environmentalrecords.colorado.gov/HPRMWebDrawer/RecordHtml/1298245>

### **III. Addressing asbestos in buildings only partially damaged by the fire and where sampling building materials for the presence of asbestos can be done safely:**

Building materials must be inspected by a Colorado certified asbestos building inspector prior to renovation/demolition or debris handling activities impacting the building materials. If asbestos-containing material is present in amounts greater than the trigger levels, they must be removed in accordance with Colorado Regulation No. 8, Part B - Asbestos. Known friable asbestos-containing materials must be disposed of at a landfill that can accept friable asbestos waste.

### **IV. If there is known asbestos-containing material above regulatory trigger levels in a building, the owner must follow the requirements of Colorado Regulation No. 8, Part B.**

For buildings that had been previously inspected and found to contain asbestos-containing materials or were previously known to contain asbestos in amounts greater than the state trigger levels, asbestos abatement permits and demolition permits are required. Known friable asbestos-containing materials must be disposed of at a landfill that can accept friable asbestos waste.

Asbestos Consulting Firms (asbestos inspectors):

<https://environmentalrecords.colorado.gov/HPRMWebDrawer/RecordView/1140204>

Asbestos Abatement Contractors:

<https://environmentalrecords.colorado.gov/HPRMWebDrawer/RecordView/1248240>

Asbestos Landfills:

<https://environmentalrecords.colorado.gov/HPRMWebDrawer/RecordView/1140205>

For additional asbestos information, please contact the CDPHE Indoor Environment Program at: 303-692-3100 or [cdphe.asbestos@state.co.us](mailto:cdphe.asbestos@state.co.us)



# DISPOSAL NOTIFICATION FORM

## East Troublesome Fire, October 2020

<b>Building Owner</b>	Owner's Name:		
	Street:		
	City:	State:	Zip Code:
	Telephone # (      )		
<b>Site Address</b>	Owner's Name:		
	Street:		
	City:	County:	Zip Code:
<b>Disposal Contractor</b>	Company/Contractor's Name:		
	Street:		
	City:	State:	Zip Code:
	Telephone # (      )		
<b>Landfill</b>	Landfill Name:		
	Street:		
	City:	State:	Zip Code:
	Telephone # (      )		

Submit form by mail/email (no fee is required) to:

Indoor Environment Program Permit Coordinator  
 Colorado Dept. of Public Health and Environment  
 APCD-IE-B1  
 4300 Cherry Creek Drive South  
 Denver, CO 80246-1530  
 cdphe.asbestos@state.co.us

Please call 303-692-3100 with any questions

## SECTION 01 31 00 - PROJECT MANAGEMENT AND COORDINATION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 31 00 "Project Management and Coordination" includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. Construction Coordination.
  - 2. Division 01 Submittals.
  - 3. Requests for Information (RFIs).
  - 4. Project meetings.
  - 5. Environmental Coordination.
  - 6. Permits

#### 1.2 CONSTRUCTION COORDINATION

- A. Coordination: Coordinate construction operations, included in different Sections, which depend on each other for proper installation, connection, and operation to ensure efficient and orderly installation of each part of the Work.
  - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  - 2. Coordinate installation of different components with other Contractors to ensure maximum accessibility for required maintenance, service, and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
  - 4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair of all components, including mechanical and electrical.
- B. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
  - 1. Preparation of Contractor's Construction Schedule.
  - 2. Preparation of the Schedule of Values.
  - 3. Installation and removal of temporary facilities and controls.
  - 4. Delivery and processing of submittals.
  - 5. Progress meetings.
  - 6. Permit requirements.
  - 7. Pre-installation conferences.
  - 8. Project closeout activities.
  - 9. Commissioning activities.



### 1.3 SUBMITTALS

- A. Division 01 documents: The following items shall be submitted a minimum of one week prior to the Preconstruction Conference. Contracting Officer will notify Contractor of tentative date for the Pre-Construction Conference.
1. Letter designating Project Superintendent.
  2. Construction Schedule.
  3. A comprehensive breakdown of the Schedule of Values.
  4. Accident Prevention Plan/Safety Plan.
  5. A list of Subcontractors for this project.
  6. Written statements from subcontractors certifying compliance with applicable labor standard clauses.
  7. Satisfactory evidence of liability insurance coverage and workman's compensation for the Contractor and all subcontractors.
  8. Construction Staging and Phasing Plan.
  9. Traffic Control Plan.
  10. Storm Water Pollution Prevention Plan.
  11. Archeology Monitoring Plan.
  12. Waste Management Plan.
  13. Quality Control Plan.
  14. Indoor Air Quality (IAQ) Management Plan.
  15. Contractors Commissioning Plan.
  16. List of Required Construction Permits. Include the following information for each permit:
    - a. Name of Permit
    - b. Agency(ies) with Jurisdiction issuing the permit
    - c. Information required from Government to complete permit application
- B. All items listed must be provided to the Contracting Officer before the Pre-Construction Conference is held. If all of these documents have not been received one week prior to the scheduled Pre-Construction Conference date, the conference will be cancelled, Notice to Proceed will not be issued, and the Contracting Officer may consider other contractual remedies. A time extension will not be issued due to late submittals. Work shall not commence until written Notice to Proceed has been issued.
- C. See also Spec Section 01 33 23 "Submittal Procedures."

### 1.4 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
1. Contracting Officer will return RFIs submitted by other entities controlled by Contractor with no response.
  2. Coordinate and submit RFIs in a prompt manner to avoid delays in the work.
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
1. RFI number, numbered sequentially.

2. Project name.
3. Contract number.
4. Date.
5. Name of Contractor.
6. RFI subject.
7. Specification Section number and title and related paragraphs, as appropriate.
8. Drawing number and detail references, as appropriate.
9. Field dimensions and conditions, as appropriate.
10. Contractor's suggested resolution. If Contractor's suggested resolution impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
11. Indication whether RFI impacts schedule and/or cost.
12. Contractor's signature.
13. Requested date for response.
14. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.

C. RFI Forms: Use RFI form included at the end of this Section or similar.

D. Contracting Officer's Action: Contracting Officer will review each RFI, determine action required, and respond. Contracting Officer will determine the critical nature of each RFI and issue a response accordingly.

1. The following Contractor-generated RFIs will be returned without action:
  - a. Requests for approval of submittals.
  - b. Requests for approval of substitutions.
  - c. Requests for approval of Contractor's means and methods.
  - d. Requests for coordination information already indicated in the Contract Documents.
  - e. Requests for adjustments in the Contract Time or the Contract Sum.
  - f. Requests for interpretation of Contracting Officer's actions on submittals.
  - g. Incomplete RFIs or inaccurately prepared RFIs.
2. Contracting Officer's action may include a request for additional information, in which case time for response will date from time of receipt of additional information.

## 1.5 PROJECT MEETINGS

A. Preconstruction Conference: Before start of construction, Contracting Officer will arrange an on-site meeting with Contractor. The meeting agenda will include the following as a minimum:

1. Roles & Responsibilities/ Lines of Authority.
2. Park rules and regulations.
3. Resolution of comments on required Division 01 documents.
4. Coordination of Subcontractors.
5. Labor law application.
6. Modifications.
7. Payments to Contractor.
8. Payroll reports.
9. Contract time.

10. Liquidated damages.
11. Notice to proceed.
12. Construction Schedule.
13. Correspondence procedures.
14. Acceptance/rejection of work.
15. Progress meetings.
16. Submittal procedures.
17. NPS Final Accessibility Inspection.
18. Waste Management.
19. Environmental requirements.
20. Project safety.
21. Display of Hotline posters.
22. Permit requirements.
23. As-constructed drawings/operation and maintenance (O&M) manuals.
24. Archeological monitoring
25. Notification to the park regarding the Bird Protection Acts
26. Visitor use of the entrance – daily park operations and procedures to close road
27. Contractor use of Maintenance Area parking lot as staging
28. Saturday, Sunday, holiday and night work – none permitted without CO approval
29. Reference materials.
30. Value engineering.
31. Schedule of Values.
32. Submittals required prior to or at Preconstruction Conference:
  - 1) Letter designating the Project Superintendent.
  - 2) Proposed construction schedule.
  - 3) Schedule of values.
  - 4) Accident Prevention Plan/Safety Plan.
  - 5) A list of Subcontractors for this project.
  - 6) Written statements from subcontractors certifying compliance with applicable labor standard clauses.
  - 7) Satisfactory evidence of liability insurance coverage and workman's compensation for the Contactor and all subcontractors.
  - 8) Waste management plan.
  - 9) Quality control plan.
  - 10) Storm Water Pollution Prevention Plan.
33. Project closeout requirements

B. Progress Meetings: The Contracting Officer will schedule weekly meetings with the Contractor.

1. Attendees: In addition to Government Representatives, the Prime Contractor shall be present. At the request of the Contracting Officer or Prime Contractor, each Subcontractor, supplier, and other entity concerned with current progress or involved in planning, coordination, or performance of future activities may be represented at these meetings. All participants at the meeting shall be familiar with the Project and authorized to conclude matters relating to the Work.
2. Agenda: Review and correct or approve minutes of previous progress meeting. Review other items of significance that could affect progress. The meeting agenda will include the following:
  - a. Approval of minutes of previous meetings.



- b. Submittal status.
  - c. Review of off-site fabrication and delivery schedules.
  - d. Requests for information (RFI) and other issues.
  - e. Modifications.
  - f. Work in progress and projected.
  - g. Inspections of work in progress and projected.
  - h. Construction Schedule update (provide updated CPM).
  - i. Work anticipated to affect road access.
  - j. Status of Project Record Drawings and O&M manuals.
  - k. Safety Issues and/or Concerns
  - l. Archeological, Historic and Natural Resource Protection/Monitoring
  - m. Stormwater Control Issues and/or Concerns
  - n. Other business relating to work.
  - o. Permit requirements.
3. Contractor shall prepare agendas and meeting minutes documenting discussions.
- C. Preinstallation Conferences: Conduct a preinstallation conference at Project site before each construction activity that requires coordination.
- 1. Attendees: Installer and representatives of manufacturers and fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Contracting Officer of scheduled meeting dates.
  - 2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration, including requirements for the following:
    - a. Contract Documents.
    - b. Options.
    - c. Related RFIs.
    - d. Related Change Orders.
    - e. Purchases.
    - f. Deliveries.
    - g. Submittals.
    - h. Sustainable design requirements.
    - i. Review of mockups.
    - j. Possible conflicts.
    - k. Time schedules.
    - l. Weather limitations.
    - m. Compatibility of materials.
    - n. Manufacture's written instructions.
    - o. Warranty requirements.
    - p. Acceptable substitutions.
    - q. Temporary facilities and controls.
    - r. Space and access limitations.
    - s. Regulations of authorities having jurisdiction.
    - t. Testing and inspecting requirements.
    - u. Installation procedures.
    - v. Coordination with other work.
    - w. Protection of adjacent work.
    - x. Protection of construction and personnel.

3. Record significant conference discussions, agreements, and disagreements, including required corrective measures and actions.
4. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

## 1.6 ENVIRONMENTAL COORDINATION

- A. Contractor's Environmental Manager: Designate an on-site party responsible for overseeing the Contractor's conformance to environmental goals for the project and implementing procedures for environmental protection. The Contractor's Environmental Manager may also perform other duties.
1. Qualifications: Construction experience on projects of similar size and scope; with environmental procedures similar to those of this project; familiar with environmental regulations applicable to construction operations.
  2. Responsibilities: Responsibilities shall include:
    - a. Compliance with applicable Federal, State, and local environmental regulations, including maintaining required documentation.
    - b. Implementation of the Waste Management Plan (WMP).
    - c. Implementation of the Indoor Air Quality (IAQ) Management Plan.
    - d. Implementation of the Storm Water Pollution Prevention Plan (SWPPP), including procedures for containment of leaks and spills.
    - e. Present an overview of environmental issues and summarize site specific procedures relating to management plans at the Preconstruction conference.

## 1.7 PERMITS

- A. General:
1. Permits and Responsibilities: Contractor shall, without additional expense to the Government, be responsible for obtaining necessary licenses and permits, and for complying with Federal, State and municipal laws, codes, and regulations applicable to the performance of the work. Contractor shall also be responsible for damages to persons or property that occur as a result of Contractor's fault or negligence; and for materials delivered and work performed until completion and acceptance of the work.
  2. For the purpose of this contract, Contractor will not be considered an agent of the Government. Contractor shall comply with appropriate Federal, State and local laws.
- B. Government Furnished Permits: During development of the project's design, permits listed below were negotiated and agreed to by the Government. Terms and provisions of these permits shall be adhered to for the duration specified in each permit.
1. A permit will be acquired for Grand County Onsite Wastewater Treatment System. The application is to be submitted at the time of the building permit. The Agency Having Jurisdiction for this permit is Grand County.

- C. Contractor Provided Permits: Permits listed below were identified during the design process as likely to be required based on typical means and methods of construction. The list is provided to assist Contractor in determining which permits will be required for contract's chosen means and methods. The list shall not be considered complete; it is the Contractors' responsibility to determine means and methods and obtain required permits. Contractor shall obtain all permits required to legally conduct work.
1. Stormwater Pollution Prevention Permit – Colorado Department of Public Health and Environment (CDPHE)
  2. Dewatering Permit - Colorado Department of Public Health and Environment (CDPHE)
  3. National Pollutant Discharge Elimination System (NPDES) – U.S. Environmental Protection Agency (U.S. EPA)
  4. Archeological Resources Protection Act (ARPA) Permit – National Park Service (NPS)
  5. Hot Work Permit – National Park Service (NPS)
- D. Coordination with Agency(ies) with Jurisdiction Issuing Permits
1. Coordination: Contact the Agency(ies) with Jurisdiction as needed and sufficiently in advance to avoid delaying work: Coordinate meetings, reporting requirements, inspections, and other requirements.
- E. Administrative Procedures:
1. Coordinate scheduling and timing of required administrative provisions of project permits with Agency(ies) with Jurisdiction, Construction Manager, and Park to avoid conflicts.
  2. Supply needed information to Agency(ies) with Jurisdiction issuing permits, pay fees required and provide material needed to comply with permit's conditions and provisions.
  3. Upload permits to NPS/DSC management software website when permits are obtained.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION



# Request for Information (RFI) Form

National Park Service (NPS) - Denver Service Center (DSC) | 2-18-20

<b>RFI Number:</b>	
<b>Project:</b>	
<b>Contract Number:</b>	
<b>Date:</b>	
<b>To:</b>	
<b>Carbon Copy (CC):</b>	
<b>From:</b>	
<b>Subject:</b>	
<b>Impact to Schedule: (Y or N) _____</b>	
<b>Impact to Cost: (Y or N) _____</b>	
<b>Please provide the following information or clarification:</b>	
<b>Response Required By:</b>	

<b>Date:</b>	
<b>To:</b>	
<b>From:</b>	
<b>Subject:</b>	Response to RFI Number:
<b>Response:</b>	

## SECTION 01 32 16 – CONSTRUCTION SCHEDULE

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 32 16 “Construction Schedule” consists of Construction Schedule requirements including but not limited to the following:
  - 1. Schedule of Values.
  - 2. Construction Schedule Requirements.
  - 3. Construction Schedule Updates.
- B. Purpose: The purpose of the Construction Schedule is to ensure adequate planning, coordination, scheduling, and reporting during execution of the work by the Contractor. The Construction Schedule will assist the Contractor and Contracting Officer in monitoring the progress of the work, evaluating proposed changes, and processing the Contractor's monthly progress payment.

#### 1.2 DEFINITIONS

- A. Activity: A discrete part of a project that can be identified for planning, scheduling, monitoring, and controlling the construction project. Activities included in a construction schedule consume time and resources.
  - 1. Critical activities are activities on the critical path. They must start and finish on the planned early start and finish times.
  - 2. Predecessor Activity: An activity that precedes another activity in the network.
  - 3. Successor Activity: An activity that follows another activity in the network.
- B. CPM: Critical path method, which is a method of planning and scheduling a construction project where activities are arranged based on activity relationships. Network calculations determine when activities can be performed and the critical path of Project.
- C. Critical Path: The longest connected chain of interdependent activities through the network schedule that establishes the minimum overall Project duration and contains no float.
- D. Float: The measure of leeway in starting and completing an activity.
  - 1. Float: Float is not for the exclusive use or benefit of either the Government or the Contractor but is jointly owned.
  - 2. Free float is the amount of time an activity can be delayed without adversely affecting the early start of the successor activity.
  - 3. Total float is the measure of leeway in starting or completing an activity without adversely affecting the planned Project completion date.

### 1.3 SUBMITTALS

- A. Schedule of Values: After contract award and before the Pre-Construction conference submit a schedule of dollar values based on the Contract Price Schedule.
- B. Construction Baseline Schedule: After contract award and before the Pre-Construction conference, submit baseline schedule, showing entire schedule for entire construction period.
- C. Construction Schedule Updates: On or before the 7th day preceding the progress payment request date, submit estimates of the percent completion of each schedule activity and necessary supporting data.
- D. Construction Schedule Revisions: For each Construction Schedule revision submit revised schedule demonstrating how the Contractor proposes to incorporate a modification, change, delay or Contractor request.

### 1.4 COORDINATION

- A. Coordinate preparation and processing of schedules and reports with performance of construction activities and with scheduling and reporting of separate Contractors.
- B. Coordinate Construction Baseline Schedule with the Schedule of Values, list of subcontracts, Submittals Schedule, progress reports, payment requests, and other required schedules and reports.
  - 1. In developing the Construction Baseline Schedule, ensure that the Subcontractor's work at all tiers, as well as the prime Contractor's work, is included and coordinated.
  - 2. Secure time commitments for performing critical elements of the Work from parties involved.
  - 3. Coordinate each construction activity in the network with other activities and schedule them in proper sequence.

## PART 2 - PRODUCTS

### 2.1 SCHEDULE OF VALUES

- A. Breakdown each lump-sum item into component parts of work for which progress payments may be requested. The total costs for the component parts of work shall equal the contract price for that lump-sum item. The Contracting Officer may request data to verify accuracy of dollar values. Include mobilization, general condition costs, overhead and profit in the total dollar value of unit price items and in the component parts of work for each lump-sum item. Do not include mobilization, general condition costs, overhead or profit as a separate item.
- B. Do not break down unit price items. Use only the contract price for unit price items.
- C. The total cost of all items shall equal the contract price. The Schedule of Values will form the basis for progress payments.



- D. An acceptable Schedule of Values shall be agreed upon by the Contractor and Contracting Officer before the first progress payment is processed.

## 2.2 CONSTRUCTION SCHEDULE REQUIREMENTS

- A. Construction Baseline Schedule: Prepare Construction Baseline Schedule using a computerized, cost and resource-loaded, time-scaled CPM network analysis diagram for the Work.
  - 1. Develop and finalize Construction Baseline Schedule so it can be accepted for use no later than 30 days after date established for the Notice of Award.
    - a. Failure to include any work item required for performance of this Contract shall not excuse Contractor from completing all work within applicable completion dates, regardless of Governments acceptance of the schedule.
  - 2. Establish procedures for monitoring and updating Construction Baseline Schedule and for reporting progress. Coordinate procedures with progress meeting and payment request dates.
- B. Construction Baseline Schedule Preparation: Prepare a list of all activities required to complete the Work. Prepare a skeleton network to identify probable critical paths.
  - 1. Activities: Indicate the estimated duration, sequence requirements, and relationship of each activity in relation to other activities.
  - 2. Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates.
  - 3. Processing: Process data to produce output data on a computer-drawn, time-scaled network. Revise data, reorganize activity sequences, and reproduce as often as necessary to produce the CPM schedule within the limitations of the Contract Time.
  - 4. The Construction Baseline Schedule as developed shall show the sequence and interdependence of activities required for complete performance of the work. Ensure all work sequences are logical and the Construction Baseline Schedule shows a coordinated plan of the work.
  - 5. Consider seasonal weather conditions in planning and scheduling all work influenced by high and low ambient temperatures, wind, or precipitation to ensure completion of all work within the contract time.
  - 6. Time Frame: Proposed duration assigned to each activity shall be the Contractor's best estimate of time required to complete the activity considering the scope and resources planned for the activity.
    - a. An early finish date may be shown but the late finish date must be the same date as the last day of the contract period.
    - b. Contract completion date shall not be changed by submission of a schedule that shows an early completion date.
    - c. The Contractor shall limit use of lead or lag durations between schedule activities.
    - d. Activity Duration: Define activities so no activity is longer than 15 days, except for non-construction activities including mobilization, shop drawings and submittals, fabrication and delivery of materials and equipment.

- e. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 calendar days, as separate activities in the schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery. DD Note: This is the start of this list
    - 1) Potential base bid long lead items: light fixtures, PVC conduit, outdoor VRF condensing units, indoor energy recovery ventilation unit, make-up air unit.
    - 2) Potential bid option long lead items: fiber optic cable.
  - f. Submittal Review Time: Include review and re-submittal times indicated. Coordinate submittal review times in Construction Baseline Schedule.
  - g. Startup and Testing Time: Include no less than one (1) day for startup and testing and one (1) day for commissioning activities.
  - h. Substantial Completion: Allow time for Government administrative procedures necessary for certification of Substantial Completion as specified Section 01 77 00 "Closeout Procedures".
7. Constraints: Include constraints and work restrictions indicated in the Contract Documents, as follows in schedule, and show how the sequence of the Work is affected.
- a. Work Restrictions: Show the effect of the following items on the schedule:
    - 1) Coordination with parallel areas of construction.
    - 2) Uninterruptible services.
    - 3) Use of premises restrictions.
    - 4) Seasonal variations.
    - 5) Maintaining vehicular access through site.
    - 6) Shift of vehicular access as construction progresses.
    - 7) Natural resources restrictions.
    - 8) Archeological monitoring restrictions.
    - 9) Snow removal.
8. Milestones: Include milestones indicated in the Contract Documents in schedule including, but not limited the following milestones:
- a. Notice to Proceed
  - b. Substantial Completion
  - c. Final Completion.
- C. Joint Review, Revision, and Acceptance:
- 1. Within seven calendar days of receipt of the Contractor's proposed Construction Baseline Schedule, the Contracting Officer and Contractor shall meet for joint review, correction, or adjustment of the initial Construction Baseline Schedule. Any areas which, in the opinion of the Contracting Officer, conflict with timely completion of the project shall be subject to revision by the Contractor.
  - 2. Within seven calendar days after the joint review between the Contractor and Contracting Officer, the Contractor shall revise and resubmit the Construction Baseline Schedule in accordance with agreements reached during the joint review.
  - 3. In the event the Contractor fails to define any element of work, activity, or logic, and the Contracting Officer review does not detect this omission or error, such omission or error,

- when discovered by the Contractor or Contracting Officer, shall be corrected by the Contractor within seven calendar days and shall not affect the contract period.
4. Upon acceptance of the Construction Baseline Schedule by the Contracting Officer, save the schedule as a baseline and update on a monthly basis. The construction schedule update will be used to evaluate the Contractor's monthly applications for payment based upon information developed at the monthly Construction Schedule update meeting.
- D. Computer Software: Prepare schedules using a program that has been developed specifically to manage construction schedules.

## PART 3 - EXECUTION

### 3.1 CONSTRUCTION SCHEDULE UPDATES

- A. Progress Meeting Updates: Provide updated schedule information before each weekly progress meeting.
1. Issue updated schedule concurrently with the report of each such meeting. Incorporate construction progress into the currently accepted schedule in a timely manner.
- B. Monthly Schedule Updates:
1. General: Update the Construction Schedule on a monthly basis to reflect actual construction progress and activities throughout the entire contract period and until project substantial completion. The status date of each schedule update shall be the 7th day preceding the progress payment request date.
  2. Procedure: The Contractor shall meet with the Contracting Officer each month to review actual progress made through the status date of the Construction Schedule update, including dates activities were started and/or completed and the percentage of work completed on each activity started and/or completed.
  3. As the Work progresses, indicate Actual Completion percentage for each activity
  4. Progress Payments: The monthly updating of the currently accepted Construction Schedule shall be an integral part of the process upon which progress payments will be made under this contract. If the Contractor fails to provide schedule updates or revisions, then a portion of the monthly payment may be retained until such corrections have been made.
- C. Distribution: Distribute copies of accepted schedule to Contracting Officer, Construction Management Representative, Subcontractors, testing and inspecting agencies, and other parties identified by Contractor with a need-to-know schedule responsibility.
1. When revisions are made, distribute updated schedules to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in performance of construction activities.
- D. Construction Schedule Revisions:
1. Required Revisions: If, as a result of the monthly schedule update, it appears the currently accepted Construction Schedule no longer represents the actual prosecution and



progress of the work, the Contracting Officer will request, and the Contractor shall submit, a revision to the Construction Schedule. The Contractor may also request reasonable revisions to the currently accepted Construction Schedule in the event the Contractor's planning for the work is revised. If the Contractor desires to make changes, the Contractor shall notify the Contracting Officer in writing, stating the reason for the proposed revision. Accepted revisions will be incorporated into the currently accepted Construction Schedule for the next monthly schedule update.

2. Procedure: If revision to the Construction Schedule is contemplated, the Contractor or Contracting Officer shall so advise the other in writing at least seven calendar days prior to the next monthly schedule update meeting, describing the revision and reasons for the revision. Government-requested revisions to the Construction Schedule will be presented in writing to the Contractor, who shall respond in writing within seven calendar days.

END OF SECTION 01 32 16 – CONSTRUCTION SCHEDULE

## SECTION 01 32 33 – PHOTO DOCUMENTATION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 32 33 "Photo Documentation" includes administrative and procedural requirements for the following:
  - 1. Existing Condition images.
  - 2. Periodic construction images.
  - 3. Post construction images.
- B. See Division 01 Section 01 77 00 "Closeout Procedures" for a complete listing of closeout documents.

#### 1.2 SUBMITTALS

- A. Existing Conditions and Construction Images: Submit images electronically within seven days of taking the image. Include the following for each:
  - 1. Include Date, time and number (sequentially number all images) in filename.
  - 2. Description of vantage point, indicating location, direction (by compass point), and elevation or story of construction.
  - 3. Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications using image-editing software.
  - 4. Submittal of Existing Conditions photos will be reviewed by the Contracting Officer.
  - 5. Approval by CO is required before proceeding with demolition.
- B. Closeout: Submit a complete set of digital image electronic files as a Project Record Document. Submit on either a Compact Disc (CD) or Digital Video Disc (DVD).
  - 1. Provide an index as a separate file on the Disc. List each image as a file name with number, date, and time. Include description and or vantage point image was taken.
  - 2. Submit images that have the same aspect ratio as the sensor, un-cropped.

### PART 2 - PRODUCTS

#### 2.1 FORMAT REQUIREMENTS

- A. Media: CD-R Archival Gold or DVD-R Archival Gold
- B. Media Labels: Archival CD/DVD labeling markers, archival labels, or direct print CD
- C. Images: Provide sRGB color images in JPEG format. Minimum sensor size of 6 mega pixels, and at an image resolution of not less than 3200 by 2400 pixels.

- D. Photos must meet National Register standards for quality:  
[https://www.nps.gov/subjects/nationalregister/upload/Photo\\_Policy\\_update\\_2013\\_05\\_15\\_508.pdf](https://www.nps.gov/subjects/nationalregister/upload/Photo_Policy_update_2013_05_15_508.pdf)

## PART 3 - EXECUTION

### 3.1 CONSTRUCTION IMAGES

- A. General: Take digital images using the maximum range of depth of field, and that are in focus, to clearly show the Work. Images with blurry or out-of-focus areas will not be accepted.
- B. Existing Condition Images: Before commencement of demolition, take color digital images of Project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Contracting Officer.
1. Flag relevant construction limits in view before recording construction images.
  2. Take eight separate images to show existing conditions adjacent to project area before starting Work.
  3. Take eight or more separate images of existing built and natural conditions either on or adjoining property to accurately record physical conditions at start of construction for the entire construction area, including the following areas;
    - a. Corrals
    - b. Wetlands
    - c. Western Yard (Cold Storage)
- C. During Construction Images: Take minimum eight (8) color, digital images at midpoint of rehabilitation and construction effort. Select vantage points to show status of construction and progress since last images were taken.
- D. Post Construction Images: Take minimum eight (8) color, digital images at close of construction effort with the cutoff date associated with Application for Payment. Select vantage points to show status of construction and progress since last images were taken.
- E. Additional Images: Contracting Officer may issue requests for additional images, in addition to periodic Construction images specified.
1. Three day's notice will be given.
  2. In emergency situations, take additional images within 24 hours of request.
  3. Circumstances that could require additional images include, but are not limited to, the following:
    - a. Immediate follow-up when on-site events result in construction damage or losses.
    - b. Images to be taken at fabrication locations away from Project site.
    - c. Substantial Completion of a major phase or component of the Work.
    - d. Extra record images at time of final acceptance.

END OF SECTION 01 32 33 – PHOTO DOCUMENTATION



## SECTION 01 33 23 - SUBMITTAL PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 33 23 "Submittal Procedures" includes administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples and other submittals.

#### 1.2 DEFINITIONS

- A. Action Submittals: Written, graphic information, and physical samples that require Government's responsive action.
- B. Informational Submittals: Written information that does not require Government's responsive action. Submittals may be rejected for not complying with requirements.

#### 1.3 GENERAL SUBMITTAL PROCEDURES

- A. General: Prepare and submit submittals required by individual specification sections. Types of submittals are indicated in individual specific sections.
  - 1. Contracting Officer reserves the right to require submittals in addition to those called for in individual sections.
- B. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Review them for legibility, accuracy, completeness, and compliance with Contract Documents.
  - 1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
  - 2. 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. Contracting Officer reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- C. Submittal List: A submittal list will be issued with Construction Documents. The intent is to provide an overall summary of submittal requirements and not a comprehensive list. The requirements of the individual specification sections, terms and conditions of the Contract still apply regardless of what is shown on the submittal list.
- D. Processing Time: Allow enough time for submittal review, including time for re-submittals, as follows. Time for review shall commence on Contracting Officer's receipt of submittal. No

extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including re-submittals.

1. Action Submittals

- a. Initial Review: Allow 15 calendar days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required.
- b. Re-submittal Review: Allow 15 calendar days for review of each re-submittal.

2. Informational submittals

- a. Review: Allow 10 days for review of each submittal.

E. Approved Equals:

1. For each item proposed as an "approved equal," submit supporting data, including:

- a. Drawings and samples as appropriate.
- b. Comparison of the characteristics of the proposed item with that specified.
- c. Changes required in other elements of the work because of the substitution.
- d. Name, address, and telephone number of vendor.
- e. Manufacturer's literature regarding installation, operation, and maintenance, including schematics for electrical and hydraulic systems, lubrication requirements, and parts lists. Describe availability of maintenance service, and state source of replacement materials.

2. A request for approval constitutes a representation that Contractor:

- a. Has investigated the proposed item and determined that it is equal or superior in all respects to that specified.
- b. Will provide the same warranties for the proposed item as for the item specified.
- c. Has determined that the proposed item is compatible with interfacing items.
- d. Will coordinate the installation of an approved item and make all changes required in other elements of the work because of the substitution.
- e. Waives all claims for additional expenses that may be incurred as a result of the substitution.

F. Electronic Submittals: Identify and incorporate information in each electronic submittal file as follows:

- 1. CM-16E Transmittal Form: All material submittals shall be transmitted using National Park Service form CM-16E. (This form can be downloaded from <https://www.nps.gov/dscw/publicforms.htm>) No action will be taken on a material submittal item unless accompanied by the transmittal form.
  - a. Complete the Contractor portion (indicated in white) on form CM-16E.
  - b. Provide a certified digital signature on form CM-16E where indicated.
  - c. Attach all related documents in PDF format.
- 2. Name file with submittal number or other unique identifier, including revision identifier.

G. Hardcopy Submittals:

1. Hardcopy submittals will be accepted in lieu of electronic submittals.
2. Use the same transmittal form as specified above.
3. Complete all sections as specified above.
4. Signature and attached related documents do not need to be electronic format.
5. Number of copies:
  - a. Submit four copies, unless otherwise indicated. Contracting Officer will return one copy. Retain copy as a Project Record Document.

H. Identification: Submittal number or other unique identifier, including revision identifier.

1. Submittal number shall use a sequential number (e.g., .001). Re-submittals shall include an alphabetic suffix after another decimal point (e.g., .001.A).

I. Re-submittals: Make re-submittals using the same process used with the initial submittal.

1. Note date and content of previous submittal.
2. Note date and content of revision in the title block on the CM-16E and clearly indicate the extent of revision.
3. Re-submit submittals until they are marked “Approved” or “Approved with Notations”.

J. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, and others as necessary for performance of construction activities.

K. Use for Construction: Use only final submittals with mark indicating “Approved” or “Approved with Notations”. Ensure all notations have been incorporated and, at a minimum, keep one copy of the final approved submittal on site for use during construction.

## 1.4 CONTRACTOR'S USE OF CAD FILES

A. General: At Contractor's written request, copies of CAD files will be provided to Contractor for Contractor's use in connection with Project, subject to the following conditions:

1. Files will be provided as is; no format or other changes to files or changes to the objects in the drawing will be done by the Government.
2. After a written request is received from the contractor for CAD files, the project engineer will provide coordinate information and electronic drawings in AutoCAD Civil3D 2018 format within 14 days.
  - a. If files are provided by the design team, contractor may be required to fill out an electronic file release form prior to provision of the files.



## PART 2 - PRODUCTS

### 2.1 ACTION SUBMITTALS

- A. 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 submittal to show which products and options are applicable.
  - 3. Include the following information, as applicable:
    - a. Manufacturer's catalog cuts: Submit only pertinent pages; mark each page of standard printed data to identify specific products proposed for use.
    - b. Manufacturer's product specifications.
    - c. Manufacturer's installation instructions: When Contract Documents require compliance with manufacturer's printed instructions, provide one complete set of instructions to Contracting Officer and keep another complete set of instructions at the project site until substantial completion.
    - d. Wiring diagrams showing factory-installed wiring.
    - e. Printed performance curves.
    - f. Operational range diagrams.
    - g. Compliance with specified referenced standards.
    - h. Testing by recognized testing agency.
  - 4. Submit product data in PDF file format or hardcopy.
- B. 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: Fully illustrate requirements in the Contract Documents. 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. Shopwork manufacturing instructions.
    - g. Templates and patterns.
    - h. Schedules.
    - i. Notation of coordination requirements.
    - j. Notation of dimensions established by field measurement.
    - k. Relationship to adjoining construction clearly indicated.
    - l. Seal and signature of professional engineer if specified.
    - m. Wiring Diagrams: Differentiate between manufacturer-installed and field-installed wiring.

2. Submit shop drawings in PDF file format or hardcopy.
- C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other elements and for a comparison of these characteristics between submittal and actual component as delivered and installed.
1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.
  2. Identification: Attach label on unexposed side of Samples that includes the following:
    - a. Generic description of Sample.
    - b. Product name and name of manufacturer.
    - c. Sample source.
    - d. Submittal Number and title of appropriate Specification Section.
  3. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.
  4. 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.
    - a. Number of Samples: Submit two full set(s) of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line. Contracting Officer will return submittal with options selected.
  5. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.
    - a. Number of Samples: Submit two sets of Samples. Contracting Officer will retain one Sample set; remainder will be returned. Retain Sample set as a Project Record Sample.
- D. Construction Materials: The Contractor is encouraged to submit for approval products made out of recycled or environmentally responsible material. Every effort will be made by the National Park Service to approve these materials.

## 2.2 INFORMATIONAL SUBMITTALS

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

1. Certificates and Certifications: Provide a notarized statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity.
  2. Informational submittals that do not comply with the requirements specified in the Contract Documents will be rejected and one copy will be returned.
- B. Coordination Drawings: Comply with requirements specified in Section 01 31 00 "Project Management and Coordination."
- C. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, names and addresses of architects and Contracting Officers, and other information specified.
- D. Welding Certificates: Prepare written certification that welding procedures and personnel comply with requirements in the Contract Documents. Submit record of Welding Procedure Specification (WPS) and Procedure Qualification Record (PQR) on AWS forms. Include names of firms and personnel certified.
- E. Installer Certificates: Prepare written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
- F. Manufacturer Certificates: Prepare written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
- G. Product Certificates: Prepare written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.
- H. Material Certificates: Prepare written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.
- I. 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 in the Contract Documents.
- J. Product Test Reports: Prepare written reports indicating current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
- K. Research/Evaluation Reports: Prepare written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project.
- L. Preconstruction Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.



- M. Compatibility Test Reports: Prepare reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
- N. 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 in the Contract Documents.
- O. Maintenance Data: Prepare written and graphic instructions and procedures for operation and normal maintenance of products and equipment. Comply with requirements specified in Section 01 78 23 "Operation and Maintenance Data."
- P. Design Data: Prepare written and graphic information, including, but not limited to, performance and design criteria, list of applicable codes and regulations, and calculations. Include list of assumptions and other performance and design criteria and a summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Include page numbers.
- Q. 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.
- R. Manufacturer's Field Reports: Prepare written information documenting factory-authorized service representative's tests and inspections. Include the following, as applicable:
  - 1. Statement on condition of substrates and their acceptability for installation of product.
  - 2. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
  - 3. Results of operational and other tests and a statement of whether observed performance complies with requirements.

## PART 3 - EXECUTION

### 3.1 CONTRACTOR'S REVIEW

- A. Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions.

### 3.2 CONTRACTING OFFICER'S ACTION

- A. General: Submittals will be disapproved without technical review if identification information is missing; an incorrect format of submittals is provided; the transmittal form is incorrectly filled out; submittals are not coordinated; or submittals do not show evidence of Contractor's approval.

1. Any work done or orders for materials or services placed before approval shall be at the Contractor's own risk.
- B. Action Submittals: Contracting Officer will review each submittal, generate comments on corrections or modifications required, and indicate the appropriate action on the CM-16E Transmittal Form. The submittal will be marked in one of three ways as defined below:
1. APPROVED: Acceptable with no corrections.
  2. APPROVED WITH NOTATIONS: Minor corrections or clarifications required. All comments are clear and no further review is required. The Contractor shall address all review comments when proceeding with the work.
  3. DISAPPROVED - RESUBMIT: Rejected as not in accordance with the contract or as requiring major corrections or clarifications. The Contracting Officer will identify the reasons for disapproval. The Contractor shall revise and resubmit with changes clearly identified.
- C. Informational Submittals: Contracting Officer will review each submittal and will either accept or reject it.
- D. Partial submittals are not acceptable, will be considered non-responsive, and will be returned without review.

END OF SECTION 01 33 23 - SUBMITTAL PROCEDURES

# Submittal List with Review Estimate Template

National Park Service (NPS) - Denver Service Center (DSC) | 1-27-21

SUBMITTAL LIST										
Park Acronym/Project Management Information System (PMIS) Number:						ROMO 316223				
Project Title:		Construct Colorado River District (CRD) Barn and Tack Shed								
SUBMITTAL			REQUIREMENTS (Indicate with X)							
SPECIFICATION SECTION	PARAGRAPH NUMBER	DESCRIPTION	INFORMATIONAL				ACTION			
			CERTIFICATIONS OR LABORATORY TESTS	REPORTS OR CALCULATIONS OR PLAN	MANUFACTURER DATA AND INSTRUCTIONS	OTHER	MOCK-UPS	SAMPLES	SHOP DRAWINGS	MANUFACTURER DATA AND INSTRUCTIONS
01 31 00	1.3	<b>Project Management</b>								
		Project Superintendent Designation				X				
		Construction Schedule				X				
		Comprehensive Schedule of Values				X				
		Accident Prevention Plan				X				
		Subcontractor List				X				
		Written Statements Certifying Compliance with Labor Clauses				X				
		Certificates of Insurance				X				
		Construction Staging and Phasing Plan				X				
		Traffic Control Plan				X				
		Temporary Storm Water Pollution Prevention Plan (SWPP)				X				
		Archeology Monitoring Plan				X				
		Waste Management Plan				X				
		Quality Control Plan				X				
		Indoor air Quality (IAQ) Management Plan				X				
		Contractors Commissioning Plan				X				
		List of Required Construction Permits				X				
01 3216	1.3	<b>Construction Schedule</b>								
		Schedule of Values				X				
		Construction Baseline Schedule				X				
		Construction Schedule Updates				X				
		Construction Schedule Revisions				X				
01 3233	1.2	<b>Photo Documentation</b>								
		Existing Conditions and Construction Images				X				
		Closeout Images				X				
01 3513	1.3	<b>Archeological and Historic Resource Protection</b>								
		Archeological Resources Protection Act (ARPA) Permit Application				X				
		Resume and Qualifications of Archeological Monitor				X				
		Preliminary Report		X		X				
		Final Report/Project Deliverables		X		X				
		Daily Work Schedule				X				
01 3523	1.3	<b>Safety Requirements</b>								
		Accident Prevention Plan/Safety Plan				X				
01 4000	1.4	<b>Quality Requirements</b>								
		Quality Control Plan				X				
		Qualification Data				X				



SUBMITTAL LIST											
Park Acronym/Project Management Information System (PMIS) Number:						ROMO 316223					
Project Title:		Construct Colorado River District (CRD) Barn and Tack Shed									
SUBMITTAL			REQUIREMENTS (Indicate with X)								
SPECIFICATION SECTION	PARAGRAPH NUMBER	DESCRIPTION	INFORMATIONAL				ACTION				
			CERTIFICATIONS OR LABORATORY TESTS	REPORTS OR CALCULATIONS OR PLAN	MANUFACTURER DATA AND INSTRUCTIONS	OTHER	MOCK-UPS	SAMPLES	SHOP DRAWINGS	MANUFACTURER DATA AND INSTRUCTIONS	OTHER
		Quality Control Daily Reports		X							
		Test Reports		X							
		Accessibility Inspection Report		X							
		Off-Site Inspection Report				X					
		Permits, Licenses and Certificates	X			X					
01 5000	1.3	<b>Temporary Facilities and Controls</b>									
		Construction Staging and Phasing Plan		X							
01 5719.11	1.4	<b>Indoor Air Quality Management</b>		X							
		IAQ Management Plan									
01 5723	1.3	<b>Temporary Storm Water Pollution Prevention</b>									
		SWPPP		X							
01 7329	1.3	<b>Cutting and Patching</b>									
		Cutting and Patching Plan		X							
01 7340	1.2	<b>Execution</b>									
		Certificates	X								
		Landfill Receipts				X					
		Certified As-Built Surveys				X					
		Quantity Surveys				X					
01 7419	1.4	<b>Construction Waste Management and Disposal</b>									
		Waste Management Plan				X					
		Landfill and Incinerator Disposal Records				X					
		Closeout Submittals				X					
01 7700	1.3	<b>Closeout Procedures</b>									
		Closeout Requirements	X	X		X					
01 7823	1.2	<b>Operation and Maintenance Data</b>									
		Draft O&M Manual			X	X					
		Final O&M Manual			X	X					
01 7900	1.3	<b>Demonstration and Training</b>									
		Demonstration and Training Video			X						
01 81 13	1.3	<b>Sustainable Design Requirements for Non-LEED Projects</b>									
		Preliminary Submittals as Listed in 1.3B	X	X	X	X					
01 9114	1.6	<b>Total Building Commissioning</b>									
		Look-Ahead Schedules				X					
		Certificates of readiness	X								
		Contractor's Commissioning Representative Qualifications				X					
		Commissioning Plan									
		Pre functional Checklists				X					
		Project Requirements				X					
		Functional performance test forms				X					
		List of test instrumentation, equipment, monitoring devices				X					

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		Deficiency Report and Resolution Records				X					
		Closeout Documentation				X					
03 10 00		Concrete Forming and Accessories									
	1.5A	Product Dada								X	
	1.5B	Shop Drawings							X		
	1.6A	Qualification Data	X								
	1.6B	Material Certificates	X								
	1.6C	Research Reports		X							
	1.6D	Conference Minutes				X					
03 20 00		Concrete Reinforcement									
	1.4A	Product Data								X	
	1.4B	Shop Drawings							X		
	1.4C	Joint Layout							X		
	1.5A	Qualification Data	X								
	1.5B	Material Certificates	X								
	1.5C	QC Reports		X							
	1.5D	Conference Minutes				X					
03 30 00		Cast in Place Concrete									
	1.5A	Product Data								X	
	1.5B	Design Mixtures							X		
	1.5C	Shop Drawings							X		
	1.5D	Concrete Schedule							X		
	1.6A	Qualification Data	X								
	1.6B	Material Certificates	X								
	1.6C	Test Reports		X							
	1.6D	Floor Levelness		X							
	1.6E	Research Reports		X							
	1.6F	Test Reports		X							
	1.6G	QC Reports		X							
	1.6H	Conference Minutes				X					
04 22 00		Concrete Unit Masonry									
	1.4A	Product Data								X	
	1.4B	Shop Drawings							X		
	1.4C	Samples						X			
	1.4D	Qualification Data				X					
	1.4E	Material Certificates	X								
	1.4F	Mix Designs		X							
	1.4G	Statement of Compressive Strength		X							
	1.4H	Hot & Cold Weather Procedures				X					
05 12 00		Structural Steel Framing									

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	1.6A	Product Data								X	
	1.6B	Shop Drawings							X		
	1.6C	Welding Procedures								X	
	1.7A	Qualification Data	X								
	1.7B	Welding Certificates	X								
	1.7C	Mill Test Reports	X								
	1.7D	Product Test Report	X								
	1.7E	QC Reports		X							
	1.7F	QC Reports		X							
05 50 00		Metal Fabrications									
	1.4A	Product Data									X
	1.4B	Shop Drawings							X		
	1.5A	Qualification Data				X					
	1.5B	Mill Certificates	X								
	1.5C	Welding Certificates	X								
	1.5D	Painting Certificates	X								
	1.5E	Research Reports		X							
06 10 00		Rough Carpentry									
	1.4A	Product Data								X	
	1.5A	Material Certificates	X								
	1.5B	Evaluation Reports		X							
06 13 00		Heavy Timber Construction									
	1.4A	Product Data								X	
	1.4B	Shop Drawings							X		
	1.4C	Samples						X			
	1.5A	Material Certificates	X								
	1.5B	Inspections	X								
06 16 00		Sheathing									
	1.4A	Product Data								X	
06 17 53		Shop Fabricated Wood Trusses									
	1.5A	Product Data								X	
	1.5B	Shop Drawings							X		
	1.5C	Delegated Design Submittal							X		
	1.6A	Material Certificates	X								
	1.6B	Product Certificates	X								
	1.6C	Evaluation Reports		X							
06 41 16		Plastic Laminated Faced Architectural Cabinets									
	1.4A	Product Data								X	
	1.4B	Shop Drawings							X		
	1.4C	Samples for Initial Selection						X			



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	1.4D	Samples for Verification						X			
	1.5A	Qualification Data								X	
	1.5B	Product Certificates	X								
07 11 00		Dampproofing									
	1.2.A	Product Data			X						
07 21 00		Thermal Insulation									
	1.2A	Product Data								X	
	1.2B	Product Test Reports	X								
	1.2C	Installers Certification	X								
	1.2D	Product Test Reports	X								
	1.2E	Research Reports		X							
07 22 16		Nailbase Insulated Panels									
	1.3A	Product Data								X	
	1.3B	Shop Drawings							X		
	1.3C	Samples							X		
	1.4A	Qualification Data			X						
	1.4B	Product Test Reports		X							
	1.4C	Field quality-control reports	X								
	1.4D	Sample Warranty				X					
07 25 00		Weather Barriers									
	1.2A	Product Data								X	
	1.2B	Shop Drawings							X		
	1.2C	Evaluation Reports		X							
07 26 00		Vapor Retarder									
	1.3.A	Product Data								X	
	1.4.A	Informational Submittals			X						
	2.1.A	Products									X
07 41 13.16		Standing-Seam Metal Roof Panels									
	1.4.A.	Product Data			X						
	1.4.B.	Shop Drawings						X			
	1.4.C.	Samples		X							
	1.4.E.	Product Test Reports		X							
	1.5.A	Qualification Data			X						
	1.5.B	Product Test Reports							X		
	1.5.C	Field quality-control reports		X							
	1.5.D	Sample Warranty				X					
07 46 46		Fiber Cement Siding									
	1.5.A.	Product Data			X						
	1.5.B.	Samples for Initial Selection						X			
	1.5.C.	Samples for Verification							X		

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	1.5.D.	Product Certificates			X						
	1.5.E.	Product Test Reports							X		
	1.5.F.	Research/Evaluation Reports			X						
	1.5.G.	Sample Warranty		X							
	1.5.H.	Maintenance Data			X						
07 62 00		Sheet Metal Flashing & Trim									
	1.5.A.	Product Data			X						
	1.5.B.	Shop Drawings						X			
	1.5.C.	Samples							X		
	1.5.D.	Qualification Data			X						
	1.5.E.	Sample Warranty							X		
	1.5.F.	Maintenance Data			X						
	1.5.G.	Special Warranty		X							
07 72 53		Snow Guards									
	1.2.A.	Product Data			X						
	1.2.B.	Shop Drawings							X		
	1.2.C.	Samples						X			
	1.2.D.	Delegated Design Submittal							X		
	1.2.E.	Qualification Data	X								
07 92 00		Joint Sealants									
	1.3.A.	Product Data			X						
	1.3.B.	Samples							X		
	1.3.C.	Joint Sealant Schedule		X							
	1.3.D.	Product Test Reports		X							
	1.3.E.	Preconstruction Field Adhesion Test Reports		X							
	1.3.F.	Field Adhesion Test Reports		X							
	1.3.G.	Sample Warranty							X		
08 11 13		Hollow Metal Doors and Frames									
	1.5.A.	Product Data			X						
	1.5.B.	Shop Drawings						X			
	1.5.C.	Samples for Initial Selection						X			
	1.5.D.	Samples for Verification							X		
	1.5.E.	Product Schedule									X
08 32 19		Sliding Wood-framed Doors									
	1.4.A.	Product Data			X						
	1.4.B.	Shop Drawings						X			
	1.4.C.	Samples for Verification						X			
	1.5.A.	Qualification Data	X								
08 32 22		Sliding Wood-framed Half-Light Doors									
	1.4.A.	Product Data			X						

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	1.4.B.	Shop Drawings						X			
	1.4.C.	Samples for Verification						X			
	1.5.A.	Qualification Data	X								
08 33 23		Overhead Coiling Doors									
	1.2.A	Product Data			X						
	1.2.B.	Shop Drawings						X			
	1.2.C.	Samples for Verification						X			
	1.3.A.	Sample Warranties			X						
	1.3.B.	Maintenance Data									
08 36 13		Sectional Doors									
	1.2.A.	Product Data			X						
	1.2.B.	Samples							X		
08 52 00		Wood Windows									
	1.4.A.	Product Data								X	
	1.4.B.	Shop Drawings							X		
	1.4.C.	Samples						X			
	1.4.F.	Project Schedule									X
	1.5.A.	Qualification Data	X								
	1.5.B.	Product Test Reports		X							
	1.5.C.	Field Quality Control Report		X							
	1.5.D.	Sample Warranties			X						
08 62 00		Unit Skylights									
	1.4.A.	Product Data								X	
	1.4.B.	Shop Drawings							X		
	1.4.C.	Samples						X			
	1.4.D.	Samples for Initial Selection						X			
	1.4.E.	Samples for Verification						X			
	1.4.F.	Project Schedule									X
	1.5.A.	Product Test Reports		X							
	1.5.B.	Evaluation Reports		X							
	1.5.C.	Field Quality Control Report		X							
	1.5.D.	Sample Warranties			X						
08 71 00		Door Hardware									
	1.5.A.	Product Data			X						
	1.5.B.	Hardware Schedule									X
	1.5.C.	Templates							X		
	1.5.D.	Maintenance Tools & Instructions								X	
	1.5.E.	Quality Assurance									X
09 29 00		Gypsum Board									
	1.2.A.	Product Data			X						



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	1.2.B.	Samples						X			
	1.2.C.	Samples for Initial Selection						X			
	1.2.D.	Samples for Verification						X			
09 30 13		Ceramic Tiling									
	1.4,A.	Product Data			X						
	1.4.B.	Shop Drawings							X		
	1.4.C.	Samples for Initial Selection						X			
	1.4.D.	Samples for Verification						X			
	1.4.E.	Qualification Data			X						
	1.4.F.	Product Certificates	X								
	1.4.G.	Product Test Reports		X							
09 65 16.13		Linoleum Sheet Flooring									
	1.3A	Product Data			X						
	1.3B	Shop Drawings							X		
	1.3C	Samples for Initial Selection						X			
	1.4A	Sample Warranties			X						
09 91 00		Painting									
	1.4.A.	Product Data			X						
	1.4.B.	Samples for Initial Selection						X			
	1.4.C.	Samples for Verification						X			
	1.4.D.	Product List			X						
09 93 00		Staining & Transparent Finishing									
	1.2.A.	Product Data			X						
	1.2.B.	Samples for Initial Selection						X			
	1.2.C.	Samples for Verification						X			
	1.2.D.	Product List			X						
	1.2.E.	Sustainable Design Submittals			X						
09 96 00		High Performance Coatings									
	1.6.A.	Product Data			X						
	1.6.B.	Product Data			X						
	1.6.C.	Samples for Verification						X			
	1.6.D.	Samples on Rigid Backing			X						
10 14 23.16		Room-Identification Panel Signage									
	1.5A	Product Data								X	
	1.5B	Shop Drawings							X		
	1.5C	Samples						X			
	1.5D	Product Schedule				X					
	1.6A	Qualification Data	X								
	1.6B	Sample Warranty				X					
	1.7A	Maintanance Data			X						

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10 28 00		Toilet, Bath and Laundry Accessories									
	1.3.A.	Product Data			X						
	1.3.B.	Product Schedule								X	
	1.3.C.	Delegated Design Submittal							X		
	1.4.A.	Sample Warranty			X						
10 44 16		Fire Extinguishers									
	1.2.A	Product Data			X						
	1.2.B.	Sample Warranty			X						
12 36 61.16		Solid Surface Countertops									
	1.3.A.	Product Data			X						
	1.3.B.	Shop Drawings							X		
	1.3.C.	Samples for Initial Selection						X			
	1.3.D.	Samples for Verification						X			
	1.4.A	Qualification Data			X						
13 34 19		Metal Building Systems									
	1.6A	Product Data								X	
	1.6B	Shop Drawings							X		
	1.6C	Samples						X			
	1.6D	Samples						X			
	1.6E	Door Schedule							X		
	1.6F	Delegated Design Submittal							X		
	1.7A	Qualification Data	X								
	1.7B	Welding Certificates	X								
	1.7C	Letter of Design		X							
	1.7D	Erector Certificates	X								
	1.7E	Material Test Reports	X								
	1.7F	QC Reports		X							
	1.7G	QC Reports		X							
	1.7H	Warranties				X					
22 05 00		Common Work Results for Plumbing									
	1.5	Welding Certificates	X								
	1.6	Operation and Maintenance Data								X	
22 05 17		Sleeves and Sleeve Seals for Plumbing Piping									
	1.2	Product Data								X	
	1.3	Field Quality-Control Reports		X							
22 05 18		Escutcheons for Plumbing Piping									
	1.2	Product Data								X	
22 05 19		Meters and Gages for Plumbing Piping									
	1.3	Product Data								X	
	1.4	Product Certificates	X								

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22 05 23		General-Duty Valves for Plumbing Piping									
	1.2	Product Data								X	
22 05 29		Hangers and Supports for Plumbing Piping and Equipment									
	1.2	Product Data								X	
22 05 53		Identification for Plumbing Piping and Equipment									
	1.2	Product Data								X	
22 07 19		Plumbing Piping Insulation									
	1.2	Product Data								X	
	1.2	Samples						X			
	1.3	Field Quality-Control Reports		X							
22 11 16		Domestic Water Piping									
	1.2	Product Data								X	
	1.3	System Purging and Disinfection Activities Report		X							
	1.3	Field Quality-Control Reports		X							
22 11 19		Domestic Water Piping Specialties									
	1.3	Product Data								X	
	1.4	Field Quality-Control Reports		X							
22 13 16		Sanitary Waste and Vent Piping									
	1.2	Product Data								X	
	1.3	Seismic Qualification Certificates	X								
	1.3	Field Quality-Control Reports		X							
22 13 19		Sanitary Waste Piping Specialties									
	1.2	Product Data								X	
	1.2	Shop Drawings							X		
	1.3	Field Quality-Control Reports		X							
22 33 00		Electric, Domestic Water Heaters									
	1.3	Product Data								X	
	1.3	Shop Drawings							X		
	1.4	Seismic Qualification Certificates			X						
	1.4	Domestic-Water Heater Labeling			X						
	1.4	Source Quality-Control Reports	X								
	1.4	Field Quality-Control Reports	X								
23 05 00		Common Work Results for HVAC									
	1.5	Product Data								X	
	1.5	Welding Certificates	X								
	1.6	Operation and Maintenance Data								X	
23 05 19		Meters and Gages for HVAC Piping									
	1.3	Product Data								X	
	1.4	Product Certificates	X								
23 05 23		General-Duty Valves for HVAC Piping									

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	1.4	Product Data								X	
23 05 48		Vibration and Seimic Controls for HVAC Piping and Equipment									
	1.3	Product Data								X	
	1.3	Delegated-Design Submittal							X		
	1.4	Qualification Data	X								
	1.4	Welding Certificates	X								
	1.4	Field Quality-Control Reports	X								
23 05 53		Identificiation for HVAC Piping and Equipment									
	1.2	Product Data								X	
23 05 93		Testing, Adjusting, and Balancing for HVAC									
	1.3	Stratedgies and Procedures Plan		X							
	1.3	Certified TAB Reports	X								
23 07 13		Duct Insulation									
	1.2	Product Data								X	
	1.2	Shop Drawings							X		
	1.3	Field Quality-Control Reports	X								
23 07 16		HVAC Equipment Insulation									
	1.2	Product Data								X	
	1.2	Samples						X			
	1.3	Field Quality-Control Reports									
23 08 00		Mechanical Commissioning									
	1.6	Commissioning Plan		X							
23 23 00		Refrigerant Piping									
	1.2	Product Data								X	
	1.3	Field Quality-Control Reports	X								
23 31 13		Metal Ducts									
	1.3	Product Data								X	
	1.4	Welding Certificates	X								
23 33 00		Air Duct Accessories									
	1.2	Product Data								X	
23 34 23		HVAC Power Ventilators									
	1.3	Product Data								X	
	1.3	Shop Drawings							X		
	1.4	Field quality -control reports	X								
23 37 13		Diffusers, Registers, and Grilles									
	1.2	Product Data								X	
	1.2	Samples						X			
23 81 26		Split-System Air-Conditioners									
	1.2	Product Data								X	
23 82 39.13		Cabinet Unit Heaters									



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	1.2	Product Data								X	
	1.2	Samples						X			
	1.3	Seismic Qualification Certificates	X								
	1.3	Field Quality-Control Reports	X								
23 82 39.16		Propeller Unit Heaters									
	1.2	Product Data								X	
	1.2	Samples						X			
	1.3	Seismic Qualification Certificates	X								
	1.3	Field Quality-Control Reports	X								
26 05 19		Low-Voltage Electrical Power Conductors and Cables									
	1.3	Product data for each type of product indicated								X	
	1.3	Field quality-control test reports.		X							
26 05 26		Grounding and Bonding for Electrical Systems									
	1.2	Product data for each type of product indicated								X	
	1.2	As-Built grounding plans		X							
	1.2	Field quality-control test reports.		X							
26 05 29		Hangers And Supports for Electrical Systems									
	1.5	Product data for each type of product indicated								X	
	1.5	Shop Drawings							X	X	
	1.5	Welding Certificates	X								
26 05 33		Raceway and Boxes for Electrical Systems									
	1.4	Product data for each type of product indicated								X	
26 05 44		Sleeves and Sleeve Seals for Electrical Raceways and Cabling									
	1.3	Product data for each type of product indicated								X	
26 05 53		Identification for Electrical Systems									
	1.3	Product data for each type of product indicated								X	
	1.3	Identification Schedule		X							
26 05 73		Electrical Systems Studies									
	1.3	Product data for each type of product indicated								X	
	1.3	Product Certificates	X								
	1.3	Qualification Data	X								
	1.3	Study Reports		X							
26 08 00		Commisioning of Electrical Systems									
	1.4	Construction Checklists		X							
	1.5	O&M Data			X						
26 09 23		Lighting Control Devices									
	1.4	Product data for each type of product indicated								X	
	1.4	Shop Drawings							X		
	1.4	Field quality-control test reports.		X							
	1.4	O&M Data			X						

SUBMITTAL LIST											
Park Acronym/Project Management Information System (PMIS) Number:						ROMO 316223					
Project Title:		Construct Colorado River District (CRD) Barn and Tack Shed									
SUBMITTAL			REQUIREMENTS (Indicate with X)								
SPECIFICATION SECTION	PARAGRAPH NUMBER	DESCRIPTION	INFORMATIONAL				ACTION				
			CERTIFICATIONS OR LABORATORY TESTS	REPORTS OR CALCULATIONS OR PLAN	MANUFACTURER DATA AND INSTRUCTIONS	OTHER	MOCK-UPS	SAMPLES	SHOP DRAWINGS	MANUFACTURER DATA AND INSTRUCTIONS	OTHER
26 24 16		Panelboards									
	1.4	Product data for each type of product indicated								X	
	1.4	Shop Drawings							X		
	1.4	Panelboard Schedules				X					
	1.4	Field quality-control test reports.		X							
	1.5	O&M Data			X						
26 27 13		Electricity Metering									
	1.3	Product data for each type of product indicated								X	
	1.3	Field quality-control test reports.		X							
	1.3	O&M Data		X							
26 27 26		Wiring Devices									
	1.4	Product data for each type of product indicated								X	
	1.4	O&M Data			X						
26 28 16		Enclosed Switches and Circuit Breakers									
	1.4	Product data for each type of product indicated								X	
	1.4	Shop Drawings							X		
	1.4	Field quality-control test reports.		X							
	1.4	O&M Data			X						
26 41 13		Lightning Protection for Structures									
	1.4	Product data for each type of product indicated								X	
	1.4	Shop Drawings							X		
	1.4	Qualification Data	X								
	1.4	Certification of roof adhesive	X								
	1.4	Field quality-control test reports.		X							
26 43 13		Transient-Voltage Suppression for Low-Voltage Electrical									
	1.4	Product data for each type of product indicated								X	
	1.5	Field quality-control test reports.		X							
	1.5	Sample Warranty			X						
	1.6	O&M Data			X						
26 51 00		Lighting Fixtures									
	1.4	Product data for each type of product indicated								X	
	1.4	Shop Drawings							X		
	1.4	Qualification Data	X								
	1.4	Field quality-control test reports.		X							
	1.4	O&M Data			X						
27 05 26		Grounding and Bonding for Communications Systems									
	1.3	Product data for each type of product indicated								X	
	1.4	Field quality-control test reports.		X							
	1.5	Qualification Data	X								
27 05 28		Pathways for Communications Systems									
	1.3	Product data for each type of product indicated								X	
	1.4	Coordination Drawings		X							
	1.4	Source quality control reports		X							
27 05 44		Sleeves and Sleeve Seals for Communications Pathways and Cabling									
	1.2	Product data for each type of product indicated								X	
27 11 00		Communications Equipment Room Fittings									

SUBMITTAL LIST											
Park Acronym/Project Management Information System (PMIS) Number:						ROMO 316223					
Project Title:		Construct Colorado River District (CRD) Barn and Tack Shed									
SUBMITTAL			REQUIREMENTS (Indicate with X)								
SPECIFICATION SECTION	PARAGRAPH NUMBER	DESCRIPTION	INFORMATIONAL				ACTION				
			CERTIFICATIONS OR LABORATORY TESTS	REPORTS OR CALCULATIONS OR PLAN	MANUFACTURER DATA AND INSTRUCTIONS	OTHER	MOCK-UPS	SAMPLES	SHOP DRAWINGS	MANUFACTURER DATA AND INSTRUCTIONS	OTHER
	1.3	Product data for each type of product indicated								X	
	1.3	Shop Drawings							X		
	1.4	Qualification Data	X								
27 13 00		Communications Backbone Cabling									
	1.6	Product data for each type of product indicated								X	
	1.6	Shop Drawings							X		
	1.6	Cable testing plan									X
	1.7	Qualification Data	X								
	1.7	Source quality control reports		X							
	1.7	Product Certificates	X								
	1.7	Field quality-control test reports.		X							
27 15 00		Communications Horizontal Cabling									
	1.5	Product data for each type of product indicated								X	
	1.5	Shop Drawings							X		
	1.5	Cable testing plan									X
	1.6	Qualification Data	X								
	1.6	Product Certificates	X								
	1.6	Source quality control reports		X							
	1.6	Field quality-control test reports.		X							
28 31 11		Digital Addressable Fire-Alarm System									
	1.4	Product data for each type of product indicated								X	
	1.4	Shop Drawings							X		
	1.4	Delegated-Design Submittal							X	X	X
	1.5	Qualification Data	X								
	1.6	Sample Warranty			X						
	1.7	O&M Data			X						
	1.7	Software and Firmware Operational Documentation			X						
		Earthwork									
31 0000	1.5.B	Product Data: Soil Materials								X	
31 22 19	1.5	Topsoil									
		Topsoil Storage Plan		X		X					
		Erosion and Sedimentation Controls									
31 2500	1.3.B	Applicable Stormwater and Erosion Control Permits	X	X							
31 2500	1.3.C	Product Data: Erosion Control Materials								X	
		Flexible Paving									
32 1200	1.4.B	Record of Work: Flexible Paving	X								
32 1200	1.4.C	Mix Design Formula: Flexible Paving								X	
32 1200	1.4.D	Mix Design Test Reports: Flexible Paving		X							
32 1200	3.10.G	Field Sample Test Reports: Flexible Paving		X							
		Rigid Paving									
32 1300	1.4.B	Mix Design Formula and Test Reports: Rigid Paving								X	
32 1300	1.4.B	Field Sample Test Reports: Rigid Paving		X							
32 1300	1.7.E	Delivery Tickets: Concrete Properties		X							
32 1300	2.3.L	Three 5'x'5 Mock-Ups: Variable Pigment-Cement Ratios					X				
32 91 13	1.3	Soil Preparation									
		Samples						X			

SUBMITTAL LIST										
Park Acronym/Project Management Information System (PMIS) Number:						ROMO 316223				
Project Title:		Construct Colorado River District (CRD) Barn and Tack Shed								
SUBMITTAL			REQUIREMENTS (Indicate with <b>X</b> )							
SPECIFICATION SECTION	PARAGRAPH NUMBER	DESCRIPTION	INFORMATIONAL				ACTION			
			CERTIFICATIONS OR LABORATORY TESTS	REPORTS OR CALCULATIONS OR PLAN	MANUFACTURER DATA AND INSTRUCTIONS	OTHER	MOCK-UPS	SAMPLES	SHOP DRAWINGS	MANUFACTURER DATA AND INSTRUCTIONS
		Certificates	X							
33 10 00		<b>Water Utilities</b>								
	1.4.B	Product data for each type of product indicated							X	
	1.4.C	Manufacturer's Certificate	X							
	1.4.D	Pressure Test Report		X						
	1.4.D	Tracer Wire Disinfection Report		X						
	1.4.D	Disinfection Test Report		X						
33 32 00	1.5	<b>Onsite Wastewater Treatment System Infrastructure and Equipment</b>								
	1.5.B	Shop Drawings: Pipe Layout							X	
	1.5.B	Shop Drawings: Pumps							X	
	1.5.C	Product Data							X	
	1.5.D	Manufacturer's Certificate	X							
	1.5.E	Test Reports	X							



## SECTION 01 35 13 – ARCHEOLOGICAL AND HISTORICAL RESOURCE PROTECTION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. The work of Section 01 35 13 “Archeological and Historical Resource Protection” consists of protecting archeological and historical resources, and within and/or around the limits of disturbance limits.
- B. The area of work has the potential to contain prehistoric and historically significant buried features and artifacts. The Contractor shall strictly limit and control the depth and extent of excavations and disturbance, minimizing them to the greatest extent possible in order to avoid impacts within the project work area.
- C. The limits of disturbance for the work shown on the drawings has been submitted to and accepted by authorities with responsibility for ensuring that the scope of work is in compliance with cultural resource requirements. Any significant changes to the location of work, must be approved by the Contracting Officer and may require temporarily relocating work until the revised location is approved by required officials, as specified below.
- D. The Contractor shall provide an archeological monitor to observe all excavation work. Archeological monitor requirements are specified in this Section.
- E. The Contractor shall provide maximum protection of government-provided data and information about prehistoric, historic resources, and other sensitive areas within the park. Upon the completion of the project, such data and information will either be (1) returned to the government or (2) destroyed in an appropriate manner approved by the Contracting Officer.

#### 1.2 DEFINITIONS

- A. Archeological Resources: Archeological resources are the physical evidences of past human activity, including evidences of the effects of that activity on the environment. Archeological resources represent both prehistoric and historic time periods. They are found above and below ground and under water.
- B. Archeologically Sensitive Areas: Areas that have the potential to contain significant (National Register eligible) archeological resources. If National Register eligible or listed archeological resources could not be avoided, an appropriate mitigation strategy would be developed in consultation with the State Historic Preservation Officer (SHPO) and, if necessary, associated Native American tribes.
- C. Archeological Monitor: Representative of Government designated to oversee construction activities that could disturb archeological resources.
- D. Cultural Resource Specialist: A person employed by the park that meets the Secretary of the Interior’s Professional Qualification Standards.

- E. Archaeological Resources Protection Act (ARPA) of 1979 (P.L. 96-95; 93 Stat. 712): defines archeological resources as any material remains of past human life or activities that are of archeological interest and at least 100 years old; Section 4 of the statute describes the requirements that must be met before Federal authorities can issue a permit to excavate or remove any archeological resource on Federal or Indian lands; the curatorial requirements of artifacts, and other materials excavated or removed.
- F. Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (P.L. 101-601; 25 U.S.C. 3001-3013): defines the rights of Native American lineal descendants, Indian tribes, and Native Hawaiian organizations with respect to the treatment, repatriation, and disposition of Native American human remains and associated cultural items.
- G. Secretary of the Interior's Standards for the Treatment of Historic Properties: common sense historic preservation principles in non-technical language. They promote historic preservation best practices and can be found at <https://www.nps.gov/tps/standards.htm>

### 1.3 SUBMITTALS

- A. Archeological Resources Protection Act (ARPA) permit application for work performed by a contracted archeological monitor.
  - 1. Permit must be submitted a minimum of 60 days prior to start of work.
- B. Resume and qualifications of proposed Archeological Monitor for the project.
- C. Preliminary Report - Due 4 weeks after completion of the field component.
- D. Final Report/Final Project Deliverables - Due 15 days after receiving Preliminary Report comments.
- E. Daily Work Schedule: Detail construction work in archeologically sensitive areas. Submit to Contracting Officer (CO) 30 days before start of ground disturbing site work.

### 1.4 QUALITY ASSURANCE

- A. As specified in Section 01 11 00 "Summary of Work," orientation session for construction workers and job superintendent will be coordinated by the Contracting Officer and shall be attended by construction workers and job superintendent prior to the start of work. Orientation session will be repeated for changes of key personnel.
- B. Weekly progress meetings, as specified in Section 01 31 00 "Project Management and Coordination" shall include Archeological, and Historical Resource Protection as an agenda item to address:
  - 1. Identification of significant features within the work area and a protection plan for features that will be:
    - a. Protected and avoided.

- b. Protected with minimal impacts (features that will have minimal destruction, damage, or alteration and features that will be temporarily removed, stored, and reinstalled).
  - c. Removed and replaced with materials, design, and workmanship in-kind following the Secretary of the Interior's Standards for the Treatment of Historic Properties.
- C. Archeological Resources Protection Act (ARPA) Permit as specified in the Section.
- D. Report data, GPS information, photographs and final report shall meet the electronic format requirements specified in this Section.

## 1.5 ARCHEOLOGICAL INVESTIGATION BY NON-NPS PERSONNEL

- A. An Archeological Resources Protection Act (ARPA) permit is required for any archeological fieldwork that is performed by a subcontractor.
- B. Permits are issued by the NPS under the Archeological Resources Protection Act of 1979 (ARPA). The NPS does not issue a permit for archeological investigations carried out by NPS archeologists, or to archeologists working on NPS archeological projects under a contract or cooperative agreement.
- C. Permit form and guidance can be found at <https://www.nps.gov/archeology/sites/permits.htm> and <https://www.nps.gov/archeology/npsGuide/permits/overview.htm>
  - 1. Applicants should submit Permit Application (DI Form 1926). Submit permit application in Word (.docx) format to the Contracting Officer.
  - 2. The ARPA permit process typically takes 60 days.

## PART 2 - PRODUCTS

### 2.1 DAILY WORK SCHEDULE

- A. A Daily Work Schedule is required for all work occurring within archeologically sensitive areas. Including;
  - 1. Starting and ending dates of ground-disturbing construction.
  - 2. Locations of temporary facilities, such as barriers, field offices, staging areas, sanitary facilities, borrow pits, and haul and access roads.
  - 3. Types of construction, such as clearing, topsoil stripping, structure or trench excavation, landscaping, and post construction clean-up.
  - 4. Methods and equipment used for each type of construction.
  - 5. Plan for relocating work in the event of temporary work stoppages at each archeologically sensitive area.

### 2.2 ARCHEOLOGICAL MONITORING REPORT

- A. Data Standards

1. GPS Data: Geospatial Data shall meet the requirements of Rocky Mountain National Park Cultural Resource Survey GIS Data Management and Deliverables and National Park Service Cultural Resource Spatial Data Transfer Standards, 2014. Both are available upon request.
2. Photographs: Specifications for taking (TIFF or RAW format) the photographs and labeling the files and disks shall meet the National Register's 2009 Draft Photographic Imaging Policy:
  - a. [https://www.nps.gov/subjects/nationalregister/upload/Photo\\_Policy\\_update\\_2013\\_05\\_15\\_508.pdf](https://www.nps.gov/subjects/nationalregister/upload/Photo_Policy_update_2013_05_15_508.pdf)
3. All final digital files pertaining to the project, including the final report in MS Word and PDF, and all graphics, maps plans, photographs, and supporting materials will be provided via gold, archival CD (750MB or higher).

B. Preliminary Report

1. The monitoring report shall include a summary of the undertaking and description of the project area. It shall include detailed documentation of archeological monitoring, investigations, and discoveries of archeological resources within the areas within the project area. This shall include high-resolution digital photography, and a narrative description of the field methods, and results. The report shall include the steps to taken to protect the resources and documentation of resource impacts.
2. The draft monitoring report shall be submitted electronically within 4 weeks after completion of the field component. The NPS will review the draft monitoring report within 60 days of submittal.

C. Final Report/Project Deliverables

1. The final report and deliverables will be submitted within 5 months after completion of the field component of the project. This includes:
  - a. Three (3) bound, hard copies of the final report.
  - b. GIS data in format specified in this Section.
  - c. The Contractor shall provide two archival disks containing the photographs. .
  - d. With the final deliverables, the contractor shall submit all field records: original or copies of material associated with the project, including field notes, oral interview notes, and copies of primary research materials.

## PART 3 - EXECUTION

### 3.1 BARRICADES

- A. Comply with requirements specified in Section 01 50 00 "Temporary Facilities and Controls."

### 3.2 OBSERVATION

- A. Archeological Monitor will observe all ground-disturbing site work, including construction of temporary facilities, at all archeologically sensitive areas, from a safe location mutually agreed on by Contractor and Monitor. As new ground is broken, Monitor will examine excavated



materials, using construction layout centerline and perimeter staking as a reference point to record locations of findings.

### 3.3 DISCOVERY OF RESOURCES

#### A. Archeological Findings

1. Petroglyphs, artifacts, burial grounds or remains, structural features, ceremonial, domestic, and archeological objects of any nature, historic or prehistoric, found within the construction area, are the property of and will be removed only by the Government. Should Contractor's operations uncover or his employees find any archeological remains, Contractor shall suspend operations at the site of discovery; notify Contracting Officer immediately of the findings; and continue operations in other areas. Included with the notification shall be a brief statement of the location and details of the findings. Should the temporary suspension of work at the site result in delays, or the discovery site require archeological studies resulting in delays or additional work for Contractor, the Contractor will be compensated by an equitable adjustment under the General Provisions of the Contract.
2. The Archeological Monitor will identify and document the discovered resource and an appropriate mitigation strategy will be developed if necessary. If necessary, the NPS Cultural Resource Specialist will consult with the State Historic Preservation Officer (SHPO) in accordance with 36 CFR Part 800.13, Post-review Discoveries. Depending on what is discovered, the NPS Cultural Resource Specialist may also consult with the tribes associated with the area.

#### B. Human Remains

1. If human remains are discovered, the contractor will cease all work, secure the area, and immediately notify the CO of the discovery. The NPS Cultural Resource Specialist will follow procedures outlined in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect the site.

#### C. Confidentiality:

1. All archeological discoveries are confidential and information about those discoveries will remain confidential to the extent that they meet the definitions set forth at Section 304 of the National Historic Preservation Act, Section 9 of the Archeological Resources Protection Act, Native American Graves Protection and Repatriation Act, and similar legislation.

#### D. Additional Findings

1. In addition to archeological findings uncovered by Contractor's operations, if an Archeological Monitor, NPS Cultural Resource Specialist, Contracting Officer, or Inspector discover archeological resources in the area of work, suspend operations at the site of discovery as specified above. Delays; mitigation, if necessary; and further compliance consultation will be handled as specified above.

END OF SECTION 01 35 13 – ARCHEOLOGICAL AND HISTORICAL RESOURCE PROTECTION

## SECTION 01 35 23 - SAFETY REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 35 23 "Safety Requirements" includes establishing an effective accident prevention program and providing a safe environment for all personnel and visitors.

#### 1.2 CONDITIONS PRESENT FOR PROJECT

- A. The existing site related potential safety concerns include but are not limited to: sudden weather changes, wildfire, flooding, animal encounters.
  - 1. Wildfire issues may result in local fire restrictions.
  - 2. Wildlife interactions shall be minimized for everyone's safety.
    - a. No feeding the wildlife.
    - b. Food storage regulations shall be followed.
    - c. Bear, mountain lion, and any unusual sightings shall be reported to the Contracting Officer.
  - 3. The contractor is recommended to include these subjects in the weekly safety meeting on an ongoing basis.

#### 1.3 SUBMITTALS

- A. Accident Prevention Plan/Safety Plan: After contract award and before the Pre-Construction conference, submit for review, an Accident Prevention Plan/Safety Plan. The Contracting Officer will review the proposed Plan. If the plan requires any revisions or corrections, the Contractor shall resubmit the Plan within 10 days. No progress payments will be made until the Plan is accepted.

#### 1.4 QUALITY ASSURANCE

- A. Comply with contract clauses entitled "Accident Prevention" and "Permits and Responsibilities". In case of conflicts between Federal, State, and local safety and health requirements, the most stringent shall apply. Equipment or tools not meeting OSHA requirements will not be allowed on the project sites. Failure to comply with the requirements of this section and related sections may result in suspension of work.
- B. Site Safety Supervisor:
  - 1. Designate authorized onsite representative for preparation and maintenance of the APP.
  - 2. Shall be responsible for:
    - a. Implementation and enforcement of the APP
    - b. Daily safety inspections
    - c. Conducting and documenting weekly and monthly safety meetings

- d. Review of safety requirements at progress meetings
- e. Compilation and maintenance of Safety Data Sheets (SDS) and safety reference materials
- f. Tracking and resolution of safety violations
- g. Site personnel and visitor compliance with site safety and health requirements and APP
- h. Investigation and reporting of accidents and injuries

C. Qualifications of Employees:

- 1. Physically and able to perform their assigned duties in a safe manner.
- 2. Do not allow employees whose ability or alertness is impaired because of prescription or illegal drug use, fatigue, illness, intoxication, or other conditions that may expose themselves or others to injury to perform work.
- 3. Provide operating instructions for equipment. Operators of vehicles, hoisting equipment, and hazardous plant equipment shall be able to understand signs, signals, operating instructions, and be fully capable of operating such equipment. Retain copies of operator licenses and certifications onsite.

## 1.5 ACCIDENT REPORTING

- A. Reportable Accidents: A project reportable accident is defined as medical attention beyond first aid, death, occupational disease, traumatic injury to employees or the public, fires, and property damage by accident in excess of \$100. Notify Contracting Officer immediately in the event of a reportable accident. Within 7 days of a reportable accident, fill out and forward to Contracting Officer an Accident/Property Damage Report (Form CM-22). Form may be obtained from the Contracting Officer.
  - 1. Follow OSHA guidelines for recordkeeping and reporting of reportable accidents sustained by employees of the Contractor and Sub-Contractors.
- B. All Other Accidents: The Contractor shall report all other accidents to the Contracting Officer as soon as possible and assist the Contracting Officer and other officials as required in the investigation of the accident.

## 1.6 RESOURCES

- A. COVID-19 (Coronavirus Disease 2019) information provided below is not intended to provide a complete analysis of requirements for Contractor and is provided as a courtesy.
  - 1. [Coronavirus.gov](https://www.coronavirus.gov) - [www.coronavirus.gov](https://www.coronavirus.gov)
  - 2. Occupational Safety and Health Administration (United States Department of Labor) - [COVID-19](https://www.osha.gov/SLTC/covid-19/) - <https://www.osha.gov/SLTC/covid-19/>
  - 3. Center for Disease Control (CDC)
    - a. [Get the Facts About Coronavirus](https://www.cdc.gov/coronavirus/2019-ncov/index.html) - <https://www.cdc.gov/coronavirus/2019-ncov/index.html>
    - b. [What Construction Workers Need to Know about COVID-19](https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/construction-workers.html) - <https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/construction-workers.html>
  - 4. Federal Emergency Management Agency (FEMA) - [Coronavirus \(COVID-19\) Response](https://www.fema.gov/coronavirus) - <https://www.fema.gov/coronavirus>

5. National Park Service (NPS) - [NPS Public Health Update](https://www.nps.gov/aboutus/news/public-health-update.htm) - <https://www.nps.gov/aboutus/news/public-health-update.htm>

## PART 2 - PRODUCTS

### 2.1 ACCIDENT PREVENTION PLAN/SAFETY PLAN

- A. The Plan shall be written to comply with OSHA and project requirements (a generic plan is not acceptable) including but not limited to the following:
1. Name and qualifications of responsible supervisor to carry out the program.
  2. Weekly and monthly safety meetings.
  3. First aid procedures.
  4. Outline of each phase of the work, the hazards associated with each major phase, and the methods proposed to provide for property protection and safety of the public, National Park Service personnel, and Contractor's employees. Identify the work included under each phase.
  5. Training, both initial and continuing.
  6. Planning for possible emergency situations, such as floods, fires, cave-ins, slides, explosions, power outages, and wind storms. Such planning shall take into consideration the nature of construction, site conditions, and degree of exposure of persons and property (Emergency Action Plan).
  7. Fire Protection.
  8. Fall Protection Plan.
  9. Hazardous Communications Plan.
  10. Drivers Safety.
  11. Infectious Disease Preparedness:
    - a. Contractors are responsible for their employees' safety and the safety of job site visitors during the performance of this contract. We encourage Contractors to follow guidance from the Department of Labor (DOL), Occupational Safety and Health Administration (OSHA), the Centers for Disease Control and Prevention (CDC), and all other applicable local, city, and state mandates. We encourage Contractors to develop policies for infection prevention and an Infectious Disease Preparedness and Response Plan.
    - b. To the extent appropriate, Contractors should include the protective health and safety measures they intend to implement in any accident prevention or safety submittals required under this contract. These plans should contain preventive measures the Contractor intends to follow while performing work on government property as well as responsive and corrective actions to be taken if an employee exhibits symptoms or tests positive for contagion.
    - c. Upon contract award, Contractors should communicate with Contracting Officer regarding Contractor decisions and actions to protect the health and safety of workers for the duration of contract performance under which pandemic conditions exist.



## 2.2 FIRST AID FACILITIES

- A. Provide adequate facilities for the number of employees and the hazards associated with the types of ongoing construction work at the site.

## 2.3 PERSONNEL PROTECTIVE EQUIPMENT (PPE)

- A. Selection shall conform to OSHA Subpart E.

# PART 3 - EXECUTION

## 3.1 DAILY SAFETY INSPECTIONS

- A. Conduct daily safety inspections and maintain daily safety reports which include:
  - 1. Area/operation inspected
  - 2. Date of inspection
  - 3. Identified hazards
  - 4. Corrective actions taken

## 3.2 EMERGENCY INSTRUCTIONS

- A. Post telephone numbers and reporting instructions for ambulance, physician, hospital, fire department, and police in conspicuous locations at the work site.

## 3.3 FIRE AND LIFE SAFETY

- A. Comply with the requirements of NFPA 241 (Standard for Safeguarding Construction, Alteration, and Demolition Operations).
- B. Store hazardous materials in accordance with manufacturer's and OSHA recommendations. Maintain readily available, on site, MSDS for each chemical.
  - 1. Immediately report all spills of hazardous materials to the park.
  - 2. Maintain a spill emergency response kit.

## 3.4 PROTECTIVE EQUIPMENT

- A. Inspect personal protective equipment daily and maintain in a serviceable condition. Clean, sanitize, and repair personal items, as appropriate, before issuing them to another individual.
- B. Inspect and maintain other protective equipment and devices before use and on a periodic basis to ensure safe operation.

### 3.5 SAFETY MEETINGS

- A. As a minimum, conduct weekly 15-minute "toolbox" safety meetings. These meetings shall be conducted by a foreman or supervisor and attended by all construction personnel at the worksite.
- B. Conduct monthly safety meetings for all levels of supervision. Meetings shall be attended by all contractors and subcontractors performing work on the site. Notify the Contracting Officer of meeting dates and times. These meetings shall be used to review the effectiveness of the Contractor's safety effort, to resolve current health and safety problems, to provide a forum for planning safe construction activities, and for updating the Accident Prevention Plan/Safety Plan. The Contracting Officer will attend the meeting and enter the results of the meetings into the daily log.

### 3.6 HARD HATS AND PROTECTIVE EQUIPMENT AREAS

- A. A hard hat area shall be designated by the Contractor. The hard hat area shall be posted by the Contractor in a manner satisfactory to the Contracting Officer.
- B. It is the Contractor's responsibility to require all those working on or visiting the site to wear hard hats and other necessary personal protective equipment at all times. As a minimum, provide two hard hats for use by visitors. Change liners before reissuing hats.

### 3.7 TRAINING

- A. First Aid: Provide adequate training to an adequate number of personnel to ensure prompt and efficient first aid.
- B. Hazardous Material: Train and instruct each employee exposed to hazardous material in safe and approved methods of handling and storage. Hazardous materials are defined as explosive, flammable, poisonous, corrosive, oxidizing, irritating, or otherwise harmful substances that could cause death or injury.

END OF SECTION 01 35 23 - SAFETY REQUIREMENTS

## SECTION 01 40 00 - QUALITY REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 40 00 "Quality Requirements" includes administrative and procedural requirements for quality assurance and quality control.
- B. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements. The quality of all work shall be the responsibility of the Contractor.
  - 1. Specified tests, inspections, and related actions do not limit Contractor's other quality assurance and control procedures that facilitate compliance with the Contract Document requirements.
- C. See Divisions 02 through 49 Sections for specific test and inspection requirements.

#### 1.2 DEFINITIONS

- A. Quality Assurance Services: Activities, actions, and procedures performed before and during execution of the work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
- B. Quality Control Services: Tests, inspections, procedures, and related actions during and after execution of the work to evaluate that actual products incorporated into the work and completed construction comply with requirements.
- C. Mockups: Full-size physical assemblies that are constructed on-site. Mockups are constructed to verify selections made under Sample submittals; to demonstrate aesthetic effects and, where indicated, qualities of materials and execution; to review coordination, testing, or operation; to show interface between dissimilar materials; and to demonstrate compliance with specified installation tolerances. Mockups are not Samples. Unless otherwise indicated, approved mockups establish the standard by which the Work will be judged.
  - 1. Mockups for this project shall not be part of the final work product unless previously approved by the Contracting Officer.
- D. Preconstruction Testing: Tests and inspections that are performed specifically for the project before products and materials are incorporated into the work to verify performance or compliance with specified criteria.
- E. Product Testing: Tests and inspections that are performed by a Nationally Recognized Testing Laboratory (NRTL), a National Voluntary Laboratory Accreditation Program (NVLAP), or a testing agency qualified to conduct product testing, to establish product performance and compliance with industry standards.

- F. Source Quality Control Testing: Tests and inspections that are performed at the source, i.e., plant, mill, factory, or shop.
- G. Field Quality Control Testing: Tests and inspections that are performed on-site for installation of the work and for completed work.
- H. Testing Agency or Laboratory: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.
- I. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.
  - 1. Using a term such as “carpentry” does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as “carpenter.” It also does not imply that requirements specified apply exclusively to trades people of the corresponding generic name.

### 1.3 CONFLICTING REQUIREMENTS

- A. Reference Standards: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Contracting Officer for a decision before proceeding.
- B. Minimum Quality Levels: The quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Contracting Officer for a decision before proceeding.

### 1.4 SUBMITTALS

- A. Quality Control Plan:
  - 1. After contract award and before the Pre-Construction conference, submit for approval a written Contractor Quality Control (CQC) plan.
  - 2. If the plan requires any revisions or corrections, the Contractor shall resubmit the plan within 10 days.
  - 3. The Government reserves the right to require changes in the plan during the contract period as necessary to obtain the quality specified.
  - 4. No change in the approved plan may be made without written concurrence by the Contracting Officer.
- B. Qualification Data: For testing agencies specified in “Quality Assurance” Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.



- C. Contractor's Quality Control Daily Reports: Submit showing all inspections and tests on the first workday following the date covered by the report. Quality Control Supervisor shall utilize the forms attached at the end of this Section or Contractor supplied forms with the same information.
- D. Test Reports
  - 1. Test reports shall be completed by the person performing the test.
  - 2. Use the Daily Test Report Information Sheet form attached at the end of this Section or Contractor supplied form with the same information.
  - 3. Submit Daily Test Information Sheets with Quality Control Daily Reports.
  - 4. Submit failing test results and proposed remedial actions within four hours of noted deficiency.
  - 5. Submit three copies of complete test results no later than one calendar day after the test was performed.
- E. Accessibility Inspection Report:
  - 1. Fill out the applicable sections of the Accessibility Inspection Report and attach to the Quality Control Daily Report.
  - 2. Utilize the attached Accessibility Inspection form to document compliance with the Architectural Barriers Act Accessibility Standards (ABAAS).
  - 3. Inspect at various stages of construction as needed to insure the finished product meets the standards.
  - 4. Submit report not later than one calendar day after the inspection was performed.
- F. Off-Site Inspection Reports: Submit prior to shipment.
- G. If the CQC plan and Quality Control Daily Reports are not submitted as specified, the Contracting Officer may retain all payments until such time a plan is accepted and implemented, or may retain payments for work completed on days there are no Quality Control Daily Reports.
- H. Permits, Licenses, and Certificates: For NPS 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 bearing on performance of the work.
- I. For Special Tests and Inspections: See: Statement of Structural Tests and Special Inspections, JVA, Inc., dated January 17, 2023.

## 1.5 QUALITY ASSURANCE

- A. General: Qualifications paragraphs in this Article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.
- B. Contractors Quality Control Staff:
  - 1. The Contractor's Quality Control Supervisor shall be assigned no other duties.
  - 2. The Contractor's designated Quality Control Supervisor shall be on the project site whenever contract work is in progress.

3. The Contractor's job supervisory staff may be used to assist the Quality Control Supervisor supplemented, as necessary, by additional certified testing technicians.
- C. Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
- D. Manufacturer Qualifications: A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- E. Fabricator Qualifications: A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- F. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or products that are similar to those indicated for this Project in material, design, and extent.
- G. Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
  1. Requirement for specialists shall not supersede building codes and regulations governing the work.
- H. Testing Agency Qualifications: An independent agency with the experience, qualifications and capability to conduct testing and inspecting indicated; and with additional qualifications specified in individual Sections; and where required by Contract, is acceptable to the Contracting Officer.
  1. All measuring devices, laboratory equipment, and instruments shall be calibrated at established intervals against certified standards. Upon request, measuring and testing devices shall be made available for use by the Government for verification tests.
- I. Factory-Authorized Service Representative Qualifications: An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.
- J. Mockups: Before installing portions of the work requiring mockups, build mockups for each form of construction and finish required to comply with the following requirements, using materials indicated for the completed work:
  1. Build mockups in location and of size indicated or, if not indicated, as directed by Contracting Officer.
  2. Notify Contracting Officer fourteen (14) days in advance of dates and times when mockups will be constructed.
  3. Demonstrate the proposed range of aesthetic effects and workmanship.

4. Obtain Contracting Officer's approval of mockups before starting work, fabrication, or construction.
5. Maintain mockups during construction in an undisturbed condition as a standard for judging the completed work.
6. Demolish and remove mockups when directed, unless otherwise indicated.
7. Anticipated mockups include but are not limited to: stone veneer, and integrally colored concrete flatwork. See specifications Div 2-49 for all mockup requirements and specific conditions.

## 1.6 QUALITY CONTROL

- A. The Contractor is responsible for all testing and inspections. Inspect and test work as needed to ensure that the quality of materials, workmanship, construction, finish, and functional performance are in compliance with applicable specifications, drawings, and those required by the Building Code.
  1. Engage a qualified testing agency to perform these quality-control services.
  2. Submit the appropriate report, for each quality-control service.
  3. Testing and inspecting requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
  4. The Contracting Officer may designate test locations.
- B. Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.
- C. Re-testing/Re-inspecting: Provide quality-control services for re-testing and re-inspecting for construction that replaced work that failed to comply with the Contract Documents.
- D. Testing Agency Responsibilities: Cooperate with NPS and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
  1. Notify Contracting Officer and Contractor promptly of irregularities or deficiencies observed in the work during performance of its services.
  2. Determine the location from which test samples will be taken and in which in-situ tests are conducted.
  3. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
  4. Submit 3 copies of the certified written report of each test, inspection, and similar quality-control service through Contractor.
  5. Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the work.
- E. Associated Services: Cooperate with agencies performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
  1. Access to the work.
  2. Incidental labor and facilities necessary to facilitate tests and inspections.

3. Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.
  4. Facilities for storage and field curing of test samples.
  5. Delivery of samples to testing agencies.
  6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
  7. Security and protection for samples and for testing and inspecting equipment at Project site.
- F. Coordination: Coordinate sequence of activities to accommodate required quality assurance and control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspecting.
1. Schedule times for tests, inspections, obtaining samples, and similar activities.

## PART 2 - PRODUCTS

### 2.1 QUALITY CONTROL PLAN

- A. The Quality Control Plan shall include:
1. A list of personnel responsible for quality control and assigned duties. Include each person's qualifications.
  2. A copy of a letter of direction to the Contractor's Quality Control Supervisor outlining assigned duties.
  3. Names, qualifications, and descriptions of laboratories to perform sampling and testing, and samples of proposed report forms.
  4. Methods of performing, documenting, and enforcing quality control of all work.
  5. Methods of monitoring and controlling environmental pollution and contamination as required by regulations and laws.

## PART 3 - EXECUTION

### 3.1 OFF-SITE CONTROL

- A. Items that are fabricated or assembled off-site shall be inspected for quality control at the place of fabrication.

### 3.2 ON-SITE CONTROL

- A. Notification:
1. Notify the Contracting Officer at least 48 hours in advance of the preparatory phase meeting.
  2. Notify the Contracting Officer at least 24 hours in advance of the initial and follow-up phases.



- B. Preparatory Phase: Perform before beginning each feature of work.
1. Review control submittal requirements with personnel directly responsible for quality assurance and quantity control of the work. As a minimum, the Contractor's Quality Control Supervisor and the foreman responsible for the feature of work shall be in attendance.
  2. Review all applicable specifications sections and drawings related to the feature of work.
  3. Ensure that copies of all referenced standards related to sampling, testing, and execution for the feature of work are available on site.
  4. Ensure that provisions have been made for field control testing.
  5. Examine the work area to ensure that all preliminary work has been completed.
  6. Verify all field dimensions and advise the Contracting Officer of discrepancies with contract documents.
  7. Ensure that necessary equipment and materials are at the project site and that they comply with approved shop drawings and submittals.
  8. Document all preparatory phase activities and discussions on the Contractor's Quality Control Daily Report.
- C. Initial Phase:
1. As soon as work begins, inspect and test a representative portion of a particular feature of work for quality of workmanship.
  2. Review control testing procedures to ensure compliance with contract requirements.
  3. Document all initial phase activities and discussions on the Contractor's Quality Control Daily Report. Exact location of initial phase shall be indicated for future reference and comparison with follow-up phases.
- D. Follow-Up Phase: Inspect and test as work progresses to ensure compliance with contract requirements until completion of work.
- E. Additional Preparatory and Initial Phases: Additional preparatory and initial phases may be required on the same feature of work for the following reasons:
1. Quality of on-going work is unacceptable.
  2. Changes occur in the applicable quality control staff, on-site production supervision, or work crew.
  3. Work on a particular feature of work is resumed after a substantial period of inactivity.

### 3.3 DOCUMENTATION

- A. Maintain Quality Control Daily Reports, Daily Test Report Information Sheets, and Accessibility Inspection Reports (attached) of quality control activities and tests.
- B. Quality Control Daily Reports may not be substituted for other written reports required under clauses of the contract, such as Disputes, Differing Site Conditions, or Changes.

### 3.4 ENFORCEMENT

- A. The Contractor shall stop work on any item or feature pending satisfactory correction of any deficiency noted by the quality control staff or the Contracting Officer.

### 3.5 REPAIR AND PROTECTION

- A. General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.
  - 1. Provide materials and comply with installation requirements specified in other Specification Sections. Restore patched areas and extend restoration into adjoining areas with durable seams that are as invisible as possible.
  - 2. Comply with the Contract Document requirements for Division 01 Section 01 73 29 "Cutting and Patching."
- B. Protect construction exposed by or for quality-control service activities.
- C. Repair and protection are Contractor's responsibility.

END OF SECTION 01 40 00 - QUALITY REQUIREMENTS

**CONTRACTOR'S QUALITY CONTROL DAILY REPORT**

REPORT NO. \_\_\_\_\_

SHEET 1 OF \_\_\_\_\_

PROJECT			CONTRACT NO.		DATE	
PARK			CONTRACTOR'S REPRESENTATIVE ON THE JOB			
WEATHER (Rain, Snow, Cloudy, Windy, etc.)	RAINFALL Inches	TEMPERATURE MAX.   MIN.	GROUND CONDITIONS (Dry, Damp, Wet, Frozen, etc.)			
<b>1. PRIME CONTRACTOR</b>						
NO. EMPLOYEES BY JOB CATEGORIES	Hours	HEAVY EQUIPMENT ON JOB	NO. UNITS	HRS. WORKING		
				YES	NO	Comments
WORK PERFORMED BY PRIME CONTRACTOR:						
MATERIALS DELIVERED			OFFICIAL VISITORS TO SITE			
2A. SUBCONTRACTOR, _____: (If more than one subcontractor use copies of following page.)						
NO. EMPLOYEES BY JOB CATEGORIES	Hours	HEAVY EQUIPMENT ON JOB	NO. UNITS	HRS. WORKING		
				YES	NO	Comments
WORK PERFORMED BY SUBCONTRACTOR:						
3. SPECIFIC INSPECTIONS: (Inspections performed, results, and corrective actions)						
4. TESTING: <input type="checkbox"/> Check if any testing was performed today. (Complete and attach Test Report Information Sheets.) Type and Location of Testing: _____						
5. VERBAL INSTRUCTION RECEIVED FROM GOVERNMENT ON CONSTRUCTION DEFICIENCIES OR RE-TESTING REQUIRED:						
6. REMARKS:						
7. CERTIFICATION:						
I certify that the above report is complete and correct and that I, or my authorized representative, have inspected all work performed this day by the prime contractor and each subcontractor and determined that all materials, equipment, and workmanship are in strict compliance with the plans and specifications except as may be noted above. _____ Contractor's Quality Control Representative						

SUBCONTRACTOR WORK CONTINUED:

CONTRACT NO.

REPORT NO. \_\_\_\_\_  
SHEET \_\_\_\_ OF \_\_\_\_

2 SUBCONTRACTOR,

NO. EMPLOYEES BY JOB CATEGORIES	Hours	HEAVY EQUIPMENT ON JOB	NO. UNITS	HRS. WORKING		
				YES	NO	Comments

WORK PERFORMED BY SUBCONTRACTOR:

2 SUBCONTRACTOR,

NO. EMPLOYEES BY JOB CATEGORIES	Hours	HEAVY EQUIPMENT ON JOB	NO. UNITS	HRS. WORKING		
				YES	NO	Comments

WORK PERFORMED BY SUBCONTRACTOR:

2 SUBCONTRACTOR,

NO. EMPLOYEES BY JOB CATEGORIES	Hours	HEAVY EQUIPMENT ON JOB	NO. UNITS	HRS. WORKING		
				YES	NO	Comments

WORK PERFORMED BY SUBCONTRACTOR:

2 SUBCONTRACTOR,

NO. EMPLOYEES BY JOB CATEGORIES	Hours	HEAVY EQUIPMENT ON JOB	NO. UNITS	HRS. WORKING		
				YES	NO	COMMENTS

WORK PERFORMED BY SUBCONTRACTOR:



## DAILY TEST REPORT INFORMATION SHEET

CONTRACT NO. \_\_\_\_\_ REPORT NO. \_\_\_\_\_

SHEET \_\_\_\_\_ OF \_\_\_\_\_

1. Individual Making Inspection or Test: _____	
2. Testing Laboratory; Name: _____	Phone #: _____
Address: _____ _____	
3. Description of Work and Test Method: _____ _____ _____	
4. Location of Samples and Tests or Inspections: _____ _____	
5. Specification Section: _____	
6. Inspection or Test Data: _____ _____ _____	
7. Test Results and Interpretations of Test Results: _____ _____ _____ _____	
8. Comments or Professional Opinion About Compliance of Inspected Work or Tested Work with contract Document Requirements: _____ _____ _____	
9. Recommendations: _____ _____ _____	
10. Corrective Actions Taken: _____ _____ _____	

**CERTIFICATION:**

I certify that the above testing report is complete and correct and that all testing performed this day for this contract is in strict compliance with the plans and specifications except as noted above.

\_\_\_\_\_  
Signature of Inspector

# Accessibility Inspection Report Form Buildings and Facilities

## (Contractor Quality Control (CQC) & Final)

National Park Service (NPS) - Denver Service Center (DSC) | 2-14-19

Park:  
Number:

Project Management Information System (PMIS)

Project:

Contract Number:

Report Number:

Date of Inspection:

Final Inspection: ☐Yes ☐No

### 1 NOTES & REQUIREMENTS

This report covers the most common accessibility requirements. Expand this form for elements not shown. Inspect for compliance with requirements of Architectural Barriers Act Accessibility Standards (ABAAS). Use applicable sections for each inspection. The inspection form is not comprehensive for all ABAAS requirements or all designs. *(Images shown on this report are screen captures from Access-Board.gov > [Architectural Barriers Act \(ABA\) Standards](#).)*

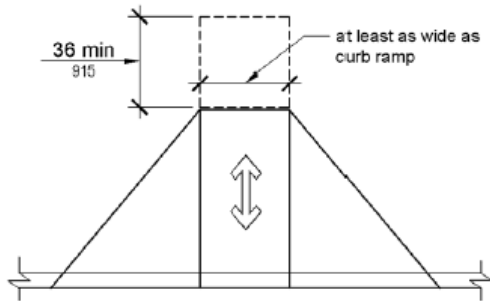
#### Measuring Outdoor Improvements

A measuring device shall be capable of measuring to a precision of 1/16 inch. Angular or slope measuring devices shall be capable of measuring to a precision of 0.1 degree. Elevation measuring devices shall be capable of measuring to a precision of 0.01 feet. Measure slope/cross-slope by subtracting elevations and dividing by distance. Measure flatness using a 10 foot metal straightedge with not to exceed 1/4 inch space between hard surface and metal edge. **ABAAS requirements identified in this sample refer to post construction measurements which include construction tolerances.**

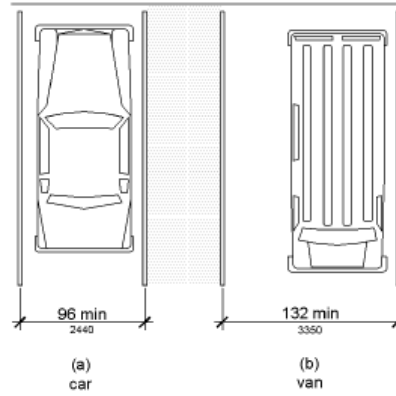
Upon completion of work, Construction Contractor shall complete a final accessibility inspection. List deficiencies in Section 10 and add to punch list. Correct deficiencies in a timely manner. ABAAS construction non-compliance will be replaced at Construction Contractor's expense unless authorized by Contracting Officer (CO). File this report with CQC Daily Report in official project files.

#### 1.1 Parking Spaces & Passenger Loading Zones

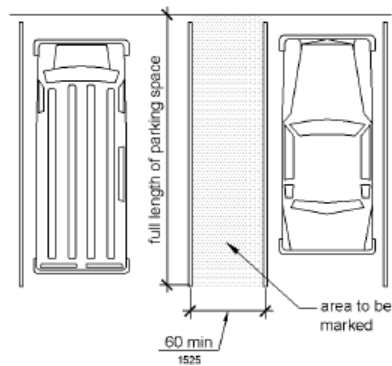
*Access-Board.gov > ABA Standards > [Chapter 4 Accessible Routes](#) > **406 Curb Ramps** & [Chapter 5 General Site and Building Elements](#) > **502 Parking Spaces**:*



**Figure 406.4 Landings at the Top of Curb Ramps**



**Figure 502.2 Vehicle Parking Spaces**



**Figure 502.3 Parking Space Access Aisle**

A. Procedure:

Attach copy of grading plan with each accessible parking space and passenger loading zone running and cross slope readings noted. Measure slopes and cross-slopes at 3 foot intervals.

B. Location/Notes:

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A. ☐Yes ☐No ☐Not Applicable

Accessible spaces and access aisles running slope and cross slope is 1:48 (2%) or less. Measure at 3 foot intervals.

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---

B. ☐Yes ☐No ☐Not Applicable

Car spaces are 96 inches wide minimum and van spaces 132 inches wide measured to striping centerline or face of curb.

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---

- C. ☐Yes ☐No ☐Not Applicable

Access aisles are 60 inches wide minimum measured to striping centerline and adjoin an accessible route.

---

---

- D. ☐Yes ☐No ☐Not Applicable

Curb ramp running slope is 1:12 (8.33%) or less and cross slope is 1:48 (2%) or less. Measure at 3 foot intervals.

---

---

- E. ☐Yes ☐No ☐Not Applicable

Curb ramp has a 36 inch minimum landing length at top and running slope and cross slope are 1:48 (2%) or less.

---

---

- F. ☐Yes ☐No ☐Not Applicable

Curb ramp flared side slopes are 1:10 (10%) or less.

---

---

- G. ☐Yes ☐No ☐Not Applicable

Passenger loading zone (drop-off area) running slope and cross slope are 1:48 (2%) or less. Area has flush curb.

---

---

C. Inspection Results:

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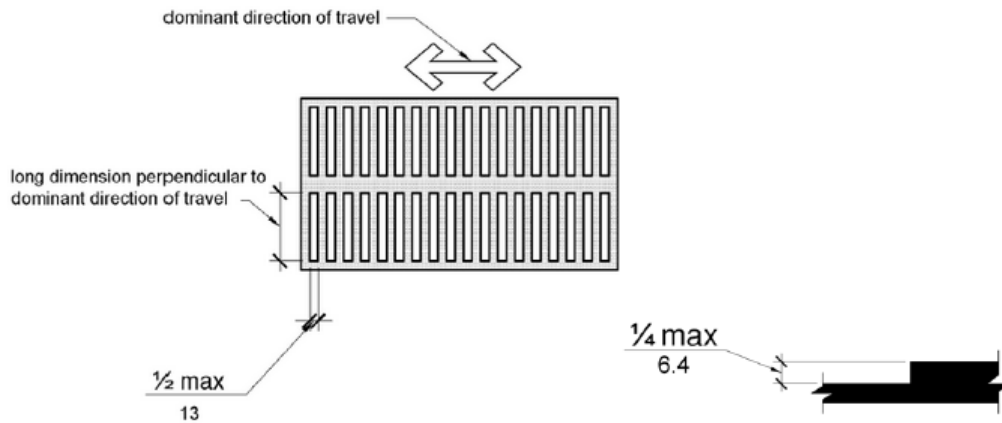
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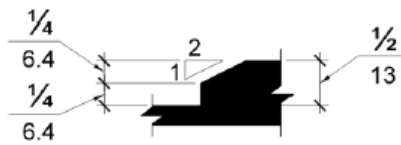
## 1.2 Walking Surfaces & Accessible Routes

Access Board ABA Standards > [Chapter 3 Building Blocks](#) > **302 Floor or Ground Surfaces & 303 Changes in Level:**





**Figure 302.3 Elongated Openings in Floor or Ground Surfaces** **Figure 303.2 Vertical Change in Level**



**Figure 303.3 Beveled Change in Level**

**A. Procedure:**

The accessible route is the pedestrian route from accessible parking and passenger loading zones to and between accessible facilities and features. Attach accessible route and/or grading plan with accessible route highlighted and running and cross slope readings noted.

**B. Location/Notes:**

---



---



---



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- A. ☐ Yes ☐ No ☐ Not Applicable

Floor and ground surfaces are stable, firm, and slip resistant.

Access Board ABA Standards > [Chapter 3 Building Blocks](#) > **302 Floor or Ground Surfaces**

---



---

- B. ☐ Yes ☐ No ☐ Not Applicable

Running slope of all walking surfaces on accessible route is 1:20 (5%) or less. Measure at 3 foot intervals.

---



---

- C. ☐ Yes ☐ No ☐ Not Applicable

Cross slope of walking surfaces is 1:48 (2%) or less. Measure at 3 foot intervals.

---

---

- D. ☐Yes ☐No ☐Not Applicable  
Clear widths of walking surfaces are 36 inches minimum.

---

---

- E. ☐Yes ☐No ☐Not Applicable  
Elongated openings in floor or ground surfaces are 1/2 inch wide or less.

---

---

- F. ☐Yes ☐No ☐Not Applicable  
Curb ramp flared side slopes are 1:10 (10%) or less.

---

---

- G. ☐Yes ☐No ☐Not Applicable  
Elongated openings are perpendicular to direction of travel.

---

---

- H. ☐Yes ☐No ☐Not Applicable  
Accessible route surface changes are 1/2 inch or less with 1/4 inch maximum vertical change.

---

---

- I. ☐Yes ☐No ☐Not Applicable  
Floor drains and grates on accessible route meet all above requirements.

---

---

C. Inspection Results:

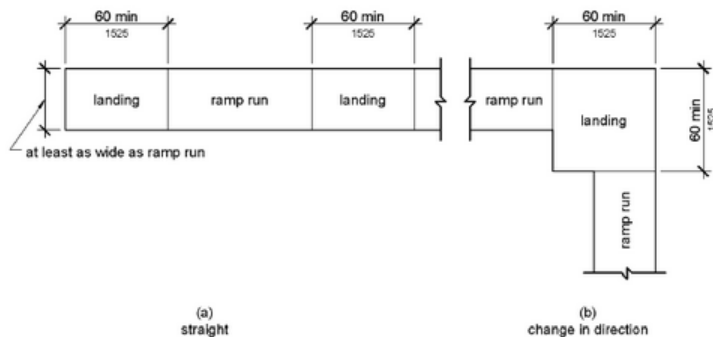
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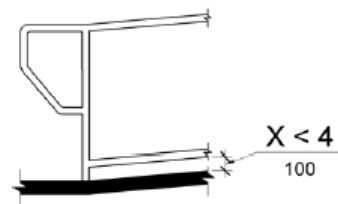
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### 1.3 Ramps



**Figure 405.7 Ramp Landings**



**Figure 405.9.2 Curb or Barrier Edge Protection**

**A. Procedure:**

Ramps are walking surfaces on accessible route steeper than 1:20 (5%) but less than 1:12 (8.33%). Attach grading plan with running and cross slope readings noted.

**B. Location/Notes:**

---



---



---



---

- A. ☐ Yes ☐ No ☐ Not Applicable  
Running slope is 1:12 (8.33%) or less. Measure at 3 foot intervals.

---



---

- B. ☐ Yes ☐ No ☐ Not Applicable  
Cross slope is 1:48 (2%) or less. Measure at 3 foot intervals.

---



---

- C. ☐ Yes ☐ No ☐ Not Applicable  
Clear width is 36 inches minimum and clear width between handrails is 36 inches minimum.

---



---

- D. ☐ Yes ☐ No ☐ Not Applicable  
Rise for ramp run is 30 inches maximum.

---



---

- E. ☐Yes ☐No ☐Not Applicable  
Ramps have landings at top and bottom of each ramp run.

---

---

- F. ☐Yes ☐No ☐Not Applicable  
Landing clear length is 60 inches minimum and running slope and cross slope of landing is 1:48 (2%) or less.

---

---

- G. ☐Yes ☐No ☐Not Applicable  
Ramps with a rise greater than 6 inches have handrails.

---

---

- H. ☐Yes ☐No ☐Not Applicable  
Ramps and landings have edge protection on both sides preventing passage of 4 inch diameter sphere.

---

---

C. Inspection Results:

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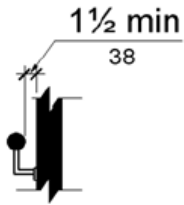
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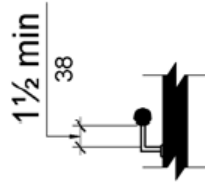
#### 1.4 Handrails

Access Board ABA Standards > [Chapter 5 General Site and Building Elements](#) > **505 Handrails:**

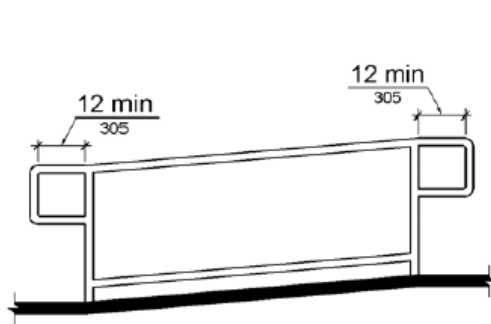




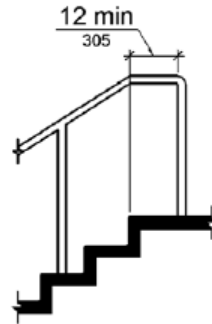
**Figure 505.5 Handrail Clearance**



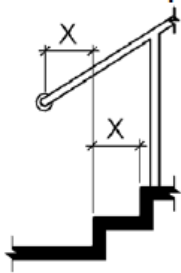
**Figure 505.6 Horizontal Projections Below Gripping Surface**



**Figure 505.10.1 Top and Bottom Handrail Extension at Ramps**



**Figure 505.10.2 Top Handrail Extension at Stairs**



Note: X = tread depth

**Figure 505.10.3 Bottom Handrail Extension at Stairs**

A. Procedure:

Verify each handrail.

B. Location/Notes:

---



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---

A. ☐ Yes ☐ No ☐ Not Applicable

Top of handrail is 34 inches minimum and 38 inches maximum vertically above walking surfaces.

---

---

- B. ☐Yes ☐No ☐Not Applicable  
Handrails extend 12 inches minimum beyond top and bottom of ramp runs.

---

---

- C. ☐Yes ☐No ☐Not Applicable  
Free standing handrails have edge protection preventing passage of 4 inch diameter sphere.

---

---

- D. ☐Yes ☐No ☐Not Applicable  
Handrails extend horizontally 12 inches minimum at top of stairs.

---

---

- E. ☐Yes ☐No ☐Not Applicable  
Handrails extend at slope of stair flight at bottom of stairs minimum one tread depth beyond last riser.

---

---

- F. ☐Yes ☐No ☐Not Applicable  
Handrail clearance is 1-1/2 inches clear minimum to walls and above horizontal attachments.

---

---

C. Inspection Results:

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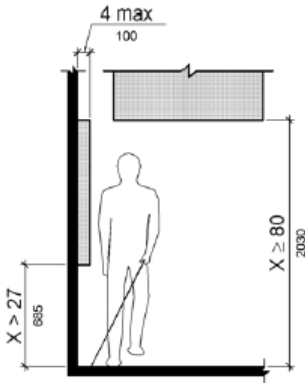
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1.5 Drinking Fountains

Access Board ABA Standards > [Chapter 3 Building Blocks](#) > 307 Protruding Objects:



**Figure 307.2 Limits of Protruding Objects**

**A. Procedure:**

Verify drinking fountains do not create a protruding object. (Two spout heights required for each drinking fountain.)

**B. Location/Notes:**

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- A. ☐ Yes ☐ No ☐ Not Applicable

Spout outlet is 36 inches maximum above finish floor or ground for wheelchair accessible spout.

---



---

- B. ☐ Yes ☐ No ☐ Not Applicable

Spout outlet for standing persons is 38 inches minimum and 43 inches maximum above finish floor.

---



---

- C. ☐ Yes ☐ No ☐ Not Applicable

Drinking fountain is recessed or has exactly 27 inches maximum space from floor to bottom of fountain. (Fountain must meet ABAAS requirements for knee room and requirements for persons with visual disabilities using a cane.)

---



---

**C. Inspection Results:**

## 1.6 Toilet Compartments

Access Board ABA Standards > [Chapter 6 Plumbing Elements and Facilities](#) > 604 Water Closets and Toilet Compartments, 605 Urinals, & 609 Grab Bars:

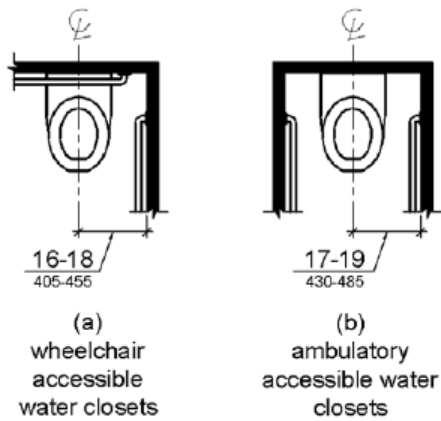


Figure 604.2 Water Closet Location

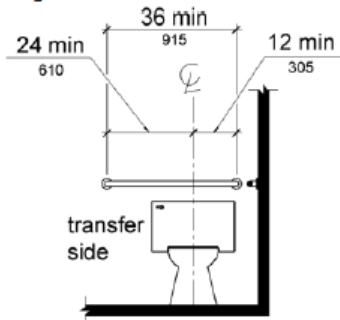


Figure 604.5.2 Rear Wall Grab Bar at Water Closets

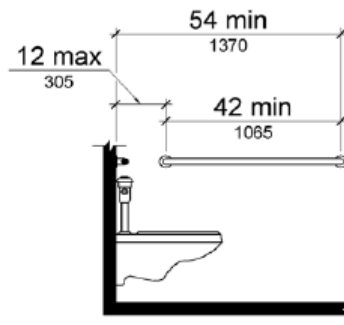
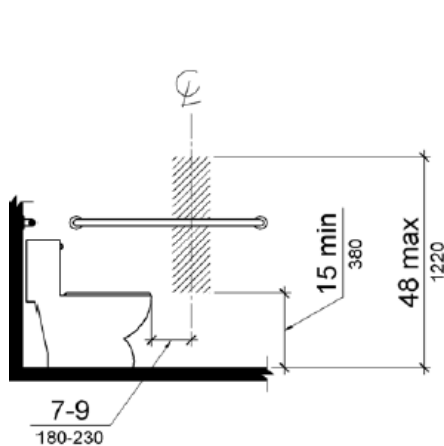
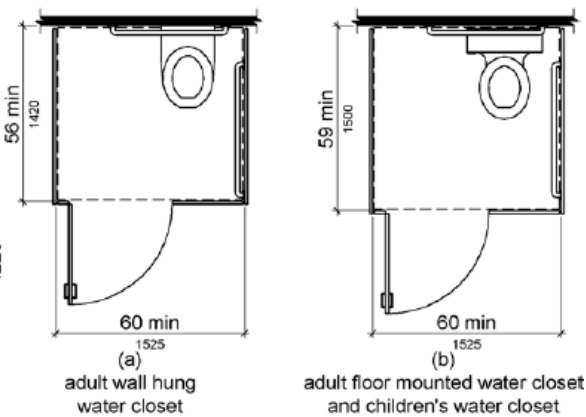


Figure 604.5.1 Side Wall Grab Bar at Water Closets

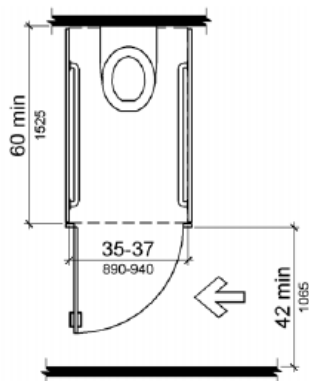




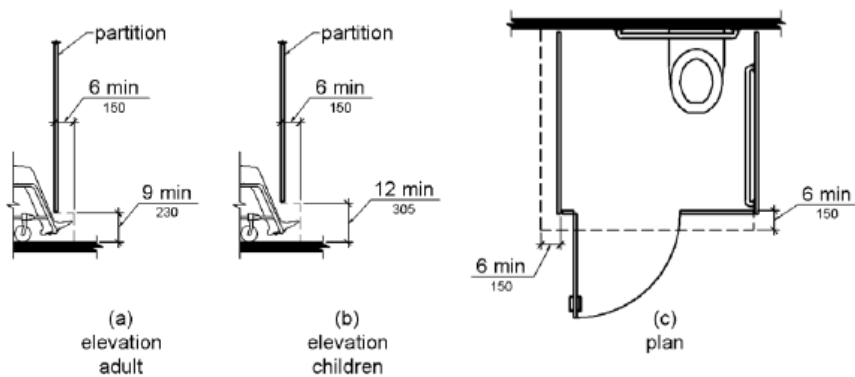
**Figure 604.7 Dispenser Outlet Location**



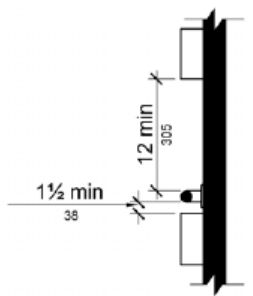
**Figure 604.8.1.1 Size of Wheelchair Accessible Toilet Compartment**



**Figure 604.8.2 Ambulatory Accessible Toilet Compartment**



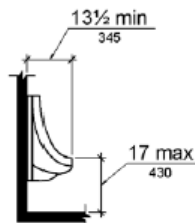
**Figure 604.8.1.4 Wheelchair Accessible Toilet Compartment Toe Clearance**



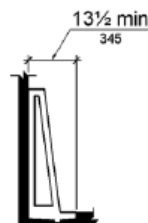
(a)  
projecting objects



(b)  
recessed objects



(a)  
wall hung type



(b)  
stall type

**Figure 609.3 Spacing of Grab Bars**

**Figure 605.2 Height and Depth of Urinals**

A. Procedure:

For toilet compartments, attach floor plan and note as-built dimensions on diagrams below. (Use additional sheet for each restroom.)

B. Location/Notes:

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---

- A. ☐Yes ☐No ☐Not Applicable

Wheelchair accessible compartment is 60 inches wide minimum and 59 inches deep minimum with wheelchair clear space adjacent to toilet.

---



---

- B. ☐Yes ☐No ☐Not Applicable

Ambulatory stall is 60 inches deep minimum, width of 35 inches minimum and 37 inches maximum, and toilet is centered in stall.

---



---

- C. ☐Yes ☐No ☐Not Applicable

Accessible compartment has 32 inch wide door opening minimum with door opening outward, or additional wheelchair clear space for door opening inward.

---



---

- D. ☐Yes ☐No ☐Not Applicable

Seat height is 17 inches minimum and 19 inches maximum measured to top of seat.

- 
- E. ☐Yes ☐No ☐Not Applicable

Urinal rim is 17 inches maximum above finish floor and 13-1/2 inches deep minimum.

---

- F. ☐Yes ☐No ☐Not Applicable

Urinal has a clear floor space of 30 inches wide by 48 inches long minimum for forward approach.

---

- G. ☐Yes ☐No ☐Not Applicable

Side wall grab bar is 42 inches long minimum, located 12 inches maximum from rear wall.

---

- H. ☐Yes ☐No ☐Not Applicable

Rear wall grab bar is 36 inches long minimum, extends from toilet centerline 12 inches minimum one side towards partition or wall and 24 inches minimum other side.

---

- I. ☐Yes ☐No ☐Not Applicable

Grab bar height is 33 inches minimum and 36 inches maximum to top of gripping surface.

---

- J. ☐Yes ☐No ☐Not Applicable

Toilet paper dispensers are 7 inches minimum and 9 inches maximum in front of toilet to centerline of dispenser.

---

- K. ☐Yes ☐No ☐Not Applicable

Toilet paper dispenser outlet is 15 inches minimum and 48 inches maximum above finish floor.

---

- L. ☐Yes ☐No ☐Not Applicable

Centerline of wheelchair stall toilet is 16 inches minimum to 18 inches maximum from side wall.

---

M. ☐Yes ☐No ☐Not Applicable

Sinks and counters are 34 inches maximum above floor with 27 inches minimum knee space. Drain pipes are insulated or concealed.

---

N. ☐Yes ☐No ☐Not Applicable

Space between grab bar and wall/partition and projecting objects below is 1-1/2 inches minimum. Space above is 12 inches minimum.

---

O. ☐Yes ☐No ☐Not Applicable

Wheelchair accessible compartment and ambulatory stall have door pulls on both sides of door near latch.

---

P. ☐Yes ☐No ☐Not Applicable

Hand dryers, towel and soap dispenser outlets are 15 inches minimum and 48 inches maximum above floor. Bottom edge of reflecting mirror surface above sink or countertops are 40 inches maximum above finished floor.

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C. Inspection Results:

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## 1.7 Service Counters and Dining and Work Surfaces

Access Board ABA Standards > [Chapter 9 Built-In Elements](#) > **904 Check-Out Aisles and Sales and Service Counter & 902 Dining Surfaces and Work Surfaces:**

A. Procedure:

Service counters and dining and work surfaces are parallel or forward approach. NPS treats service counters as possible employee work areas which are required to be 34 inches maximum.

B. Location/Notes:



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- A. ☐Yes ☐No ☐Not Applicable

Parallel Approach. Counter is 36 inches long minimum and 36 inches high maximum.

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- B. ☐Yes ☐No ☐Not Applicable

Forward Approach. Counter surface is 30 inches long minimum and 36 inches high maximum with knee space under counter. See ABAAS 306 for adequate depth and toe clearance.

---

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- C. ☐Yes ☐No ☐Not Applicable

Tops of dining and work surfaces are 28 inches minimum and 34 inches maximum above finished floor with adequate knee and toe clearance.

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C. Inspection Results:

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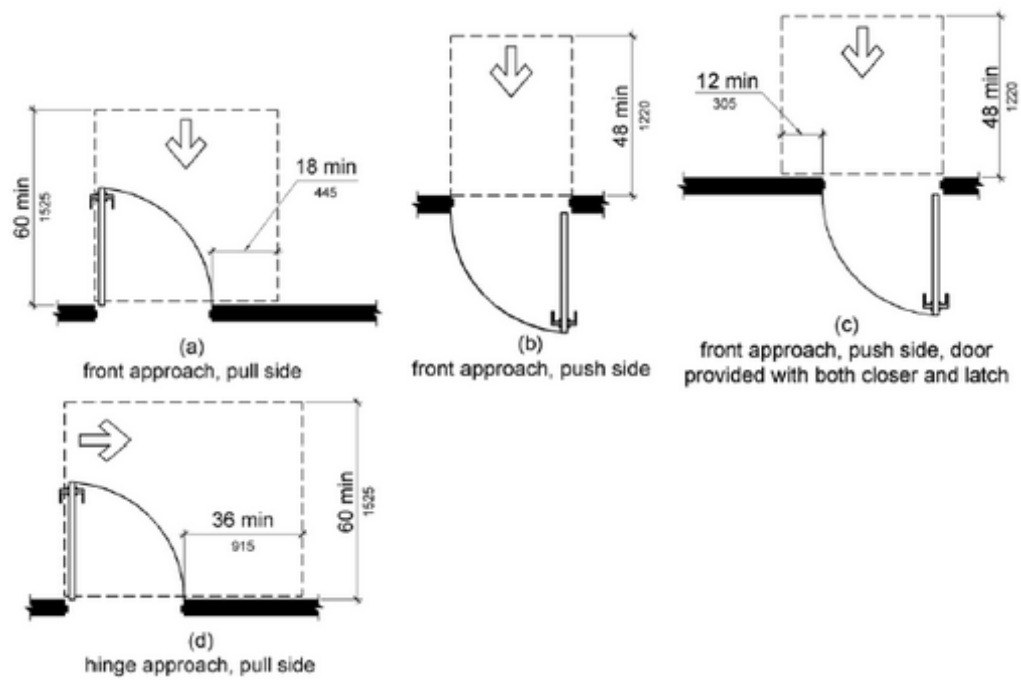
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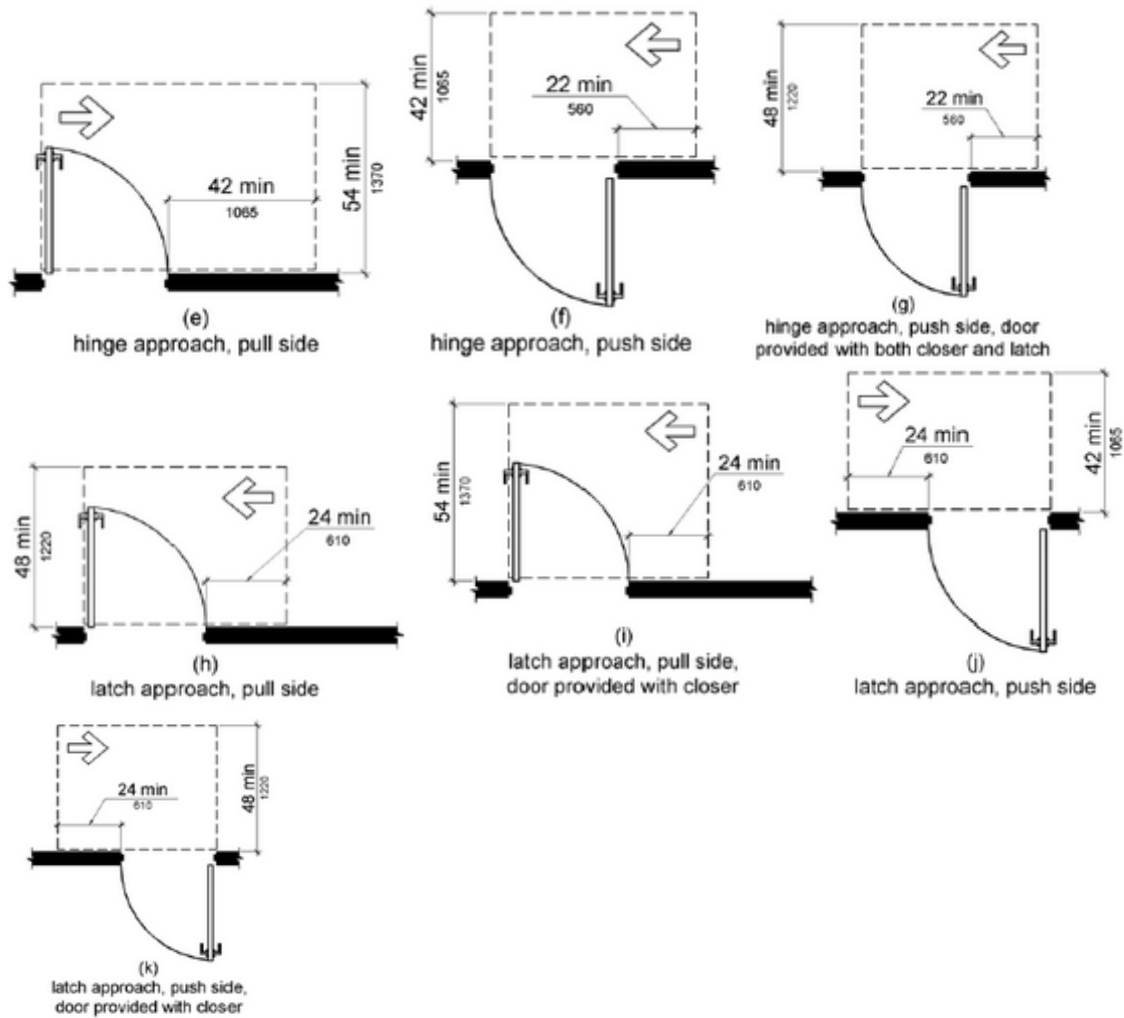
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## 1.8 Doors

Access Board ABA Standards > [Chapter 4 Accessible Routes](#) > **404 Doors, Doorways, and Gates**





**Figure 404.2.4.1 Maneuvering Clearances at Manual Swinging Doors and Gates**

A. Procedure:

Attach accessible route plan with accessible door dimensions and threshold heights.

B. Location/Notes:

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A. ☐Yes ☐No ☐Not Applicable

Door openings on accessible routes provide clear width of 32 inches minimum.

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- B. ☐Yes ☐No ☐Not Applicable

Door closers move door from open position of 90 degrees to 12 degrees from latch is 5 seconds minimum.

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- C. ☐Yes ☐No ☐Not Applicable

Spring hinge doors close from open position of 70 degrees to closed position in 1.5 seconds minimum.

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- D. ☐Yes ☐No ☐Not Applicable

Fire doors have minimum opening force allowable by appropriate administrative authority.

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- E. ☐Yes ☐No ☐Not Applicable

Interior door and gate hardware located 34 inches minimum and 48 inches maximum above finished floor and operable with hinged doors having opening force of 5 pounds maximum.

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- F. ☐Yes ☐No ☐Not Applicable

Thresholds at doors on accessible route are beveled 1/2 inch or less with 1/4 inch maximum vertical change.

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- G. ☐Yes ☐No ☐Not Applicable

Clear floor and wall space provide maneuvering clearances required (all doors on accessible route).

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C. Inspection Results:

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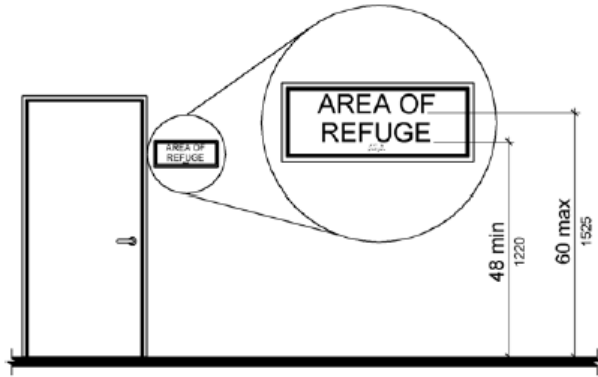
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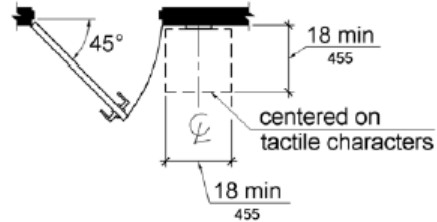
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## 1.9 Signs

Access Board ABA Standards > [Chapter 7 Communication Elements and Features](#) > **703 Signs:**



**Figure 703.4.1 Height of Tactile Characters Above Finish Floor or Ground**



**Figure 703.4.2 Location of Tactile Signs at Doors**

A. Location/Notes:

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A. ☐Yes ☐No ☐Not Applicable

Parking space signs are 60 inches minimum above finish ground surface measured to bottom of sign.

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B. ☐Yes ☐No ☐Not Applicable

Van parking space sign includes designation "van accessible."

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C. ☐Yes ☐No ☐Not Applicable

Tactile characters on signs are 48 inches minimum from lowest tactile character and 60 inches maximum above finished floor from baseline of highest tactile character.

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D. ☐Yes ☐No ☐Not Applicable

Visual characters are 40 inches minimum above finished floor.

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E. ☐Yes ☐No ☐Not Applicable

Sign is located alongside door at latch side.



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- F. ☐Yes ☐No ☐Not Applicable  
Sign is located with clear floor space of 18 inches by 18 inches minimum.

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B. Inspection Results:

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1.10 Other Accessible Features not Covered by Report

A. Procedure:

Inspect elevators, lifts, elements for children, etc. Inspect for compliance with ABAAS requirements.

B. Location/Notes:

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C. Inspection Results:

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1.11 Punch List Items - Summary of Non-Conforming Inspection Results

Add deficiencies. Correct deficiencies in timely manner.

1. Deficiency:

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Corrective Actions Needed/Taken:

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2. Deficiency:

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Corrective Actions Needed/Taken:

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3. Deficiency:

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Corrective Actions Needed/Taken:

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4. Deficiency:

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Corrective Actions Needed/Taken:

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5. Deficiency:

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Corrective Actions Needed/Taken:

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6. Deficiency:

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Corrective Actions Needed/Taken:

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7. Deficiency:

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Corrective Actions Needed/Taken:

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8. Deficiency:

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Corrective Actions Needed/Taken:

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9. Deficiency:

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Corrective Actions Needed/Taken:

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10. Deficiency:

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Corrective Actions Needed/Taken:

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1.12 Photographs & Sketches

Attach to report as needed. Identify location of photographs and sketches.

2 CERTIFICATION

I certify this inspection report is complete and correct and is in compliance with contract documents.

---

Inspector Name (Print)

Inspector Signature  
Date



## Statement of Structural Tests and Special Inspections

National Park Service - Denver Service Center

Park: Rocky Mountain National Park

PMIS: 316223

Project Name: Construct Colorado River District Barn and Tack Shed

Structural Engineering Firm: JVA, Inc.

This Statement of Structural Tests and Special Inspections is being submitted as required by Chapter 17 of the 2021 International Building Code (IBC-21). It includes the following:

1. Seismic requirements
2. Wind requirements
3. Qualification requirements for Inspectors and Testing Technicians
4. Listing of Required Structural Tests and Special Inspections

The Construction Contractor's Quality Control Supervisor will provide copies of all special inspection reports and associated documentation to the Contracting Officer. The Construction Contractor will be required to correct all deficiencies discovered in the Special Inspection and Structural Testing program.

Prepared by:

Jeffrey Schalk, PE

(Type or print name)

Signature

02.27.23

Date



PE or SE Stamp



## **Seismic and Wind Requirements**

### **Seismic Requirements, IBC-21 Section 1704.3.2**

Description of seismic-force-resisting system and designated seismic systems subject to special inspections:

None. Seismic Design Category B; therefore, no special inspection of seismic-force resisting systems are required (IBC 1705.12)

### **Wind Requirements, IBC-21 Section 1704.3.3**

Description of wind-force-resisting system and designated wind systems subject to special inspections:

None. 3-second gust wind speed = 110 mph (ultimate) = 85 mph (allowable) < 110 mph (allowable), Exposure C; therefore, no special inspections of wind-force resisting systems are required (IBC 1705.11)

Instructions:

1. Place an “X” in the column titled “Required?” for all Special Inspections and Tests required for this project.
2. In the column marked “Required Qualifications” provide the qualifications for the special inspector, using the list beginning on page 4, for all required Structural Tests and Special Inspections.
3. For those items listed as “Continuous,” continuous special inspection shall be as defined in Chapter 2, IBC-21.
4. For those items listed as “Periodic” provide the minimum number of tests, i.e. 20% of all field welds, or the amount of work to be inspected (e.g. 10% of all wall surfaces).
5. Attach completed Statement of Structural Tests and Special Inspections to the end of the Specification Section 01 40 00, Quality Requirements.

## **Qualification Requirements for Inspectors and Testing Technicians**

PE/SE	Structural Engineer – licensed PE or SE specializing in the design of buildings and structures
PE/GE	Geotechnical Engineer – licensed PE specializing in soil mechanics and foundations
EIT	Engineer-In-Training – graduate engineer who has passed the Fundamentals of engineering examination

### **American Concrete Institute (ACI) Certification**

ACI-CCSI	Concrete Construction Special Inspector
ACI-LTT	Concrete Laboratory Testing Technician Level 1 or 2
ACI-STT	Concrete Strength Testing Technician
ACI-FTT	Concrete Field Testing Technician – Grade I

### **American Society of Non-Destructive Testing (ASNT) Certification**

Non-Destructive Testing Technician – Level II or III

### **American Welding Society (AWS) Certification**

AWS-CWI	Certified Welding Inspector
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### **Exterior Design Institute (EDI) Certification**

EDI-EIFS	Certified EIFS inspector
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### **International Code Council (ICC) Certification**

ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector
ICC-SSI	Soils Special Inspector
ICC-SFSI	Spray-applied Fireproofing Special Inspector
ICC-SMSI	Structural Masonry Special Inspector
ICC-SSBSI	Structural Steel and Bolting Special Inspector
ICC-SWSI	Structural Welding Special Inspector

### **National Institute for Certification in Engineering Technologies (NICET) Certification**

NICET-CT	Concrete Technician – Levels I, II, III and IV
NICET-GET	Geotechnical Engineering Technician - Levels I, II, III and IV
NICET-ST	Soils Technician - Levels I, II, III and IV

**Other**


### **Listing of Required Structural Tests and Special Inspections**

<b>Required?</b>	<b>Structural Test or Special Inspection</b>	<b>Required Qualifications</b>	<b>Continuous</b>	<b>Periodic</b>	<b>Frequency of Periodic Test or Inspection</b>
<b>General Special Cases (ref: IBC-21 Section 1705.1.1)</b>					
X	1. Inspect post-installed anchor installation to concrete, including anchor type & dimensions, adhesive type, hole size and cleanliness, embedment, and adherence to manufacturer's instructions	ACI-CCSI ICC-RCSI		X	50% of anchors
<b>Steel Construction (ref: IBC-21 Section 1705.2, AISC 360-16 Chapter N, AISC 341-16 Chapter J)</b>					
	<b>Prior to Welding (AISC 360-16 Table N5.4-1)</b>				
X	1. Welding procedure specifications (WPSs) available	AWS-CWI ICC-SWSI	X		
X	2. Manufacturer certifications for welding consumables available	AWS-CWI ICC-SWSI	X		
X	3. Material identification (type/grade)	AWS-CWI ICC-SWSI		X	At project startup
X	4. Welder identification system	AWS-CWI ICC-SWSI		X	At project startup
	5. Fit-up of groove welds (including joint geometry)	AWS-CWI ICC-SWSI			
X	a. Joint preparation			X	50% of welds
X	b. Dimensions (alignment, root opening, root face, bevel)			X	50% of welds
X	c. Cleanliness (condition of steel surfaces)			X	50% of welds
X	d. Tacking (tack weld quality and location)			X	50% of welds
X	e. Backing type and fit (if applicable)			X	50% of welds
X	6. Configuration and finish of access holes	AWS-CWI ICC-SWSI		X	50% of welds
	7. Fit-up of fillet welds	AWS-CWI ICC-SWSI			
X	a. Dimensions (alignment, gaps at root)			X	50% of welds
X	b. Cleanliness (condition of steel surfaces)			X	50% of welds
X	c. Tacking (tack weld quality and location)			X	50% of welds
X	8. Check welding equipment	AWS-CWI ICC-SWSI		X	When onsite
	<b>During Welding (AISC 360-16 Table N5.4-2)</b>				
X	1. Use of qualified welders	AWS-CWI ICC-SWSI		X	50% of welds



Required?	Structural Test or Special Inspection	Required Qualifications	Continuous	Periodic	Frequency of Periodic Test or Inspection
	2. Control and handling of welding consumables	AWS-CWI ICC-SWSI			
X	a. Packaging			X	50% of welds
X	b. Exposure control			X	50% of welds
X	3. No welding over cracked tack welds	AWS-CWI ICC-SWSI		X	50% of welds
	4. Environmental conditions	AWS-CWI ICC-SWSI			
X	a. Wind speed within limits			X	50% of welds
X	b. Precipitation and temperature			X	50% of welds
	5. WPS followed	AWS-CWI ICC-SWSI			
X	a. Settings on welding equipment			X	50% of welds
X	b. Travel speed			X	50% of welds
X	c. Selected welding materials			X	50% of welds
X	d. Shielding gas type/flow rate			X	50% of welds
X	e. Preheat applied			X	50% of welds
X	f. Interpass temperature maintained (min. /max.)			X	50% of welds
X	g. Proper position (F, V, H, OH)			X	50% of welds
X	h. Intermix of filler metals avoided unless approved (ref: AISC 341-16)			X	50% of welds
	6. Welding techniques	AWS-CWI ICC-SWSI			
X	a. Interpass and final cleaning			X	50% of welds
X	b. Each pass within profile limitations			X	50% of welds
X	c. Each pass meets quality requirements			X	50% of welds
	<b>After Welding (AISC 360-16 Table N5.4-3)</b>				
X	1. Welds cleaned	AWS-CWI ICC-SWSI		X	50% of welds
X	2. Size, length and location of welds	AWS-CWI ICC-SWSI	X		
	3. Welds meet visual acceptance criteria	AWS-CWI ICC-SWSI			
X	a. Crack prohibition		X		
X	b. Weld/base-metal fusion		X		
X	c. Crater cross section		X		
X	d. Weld profiles		X		
X	e. Weld size		X		
X	f. Undercut		X		
X	g. Porosity		X		
X	4. Arc strikes	AWS-CWI ICC-SWSI	X		

Required?	Structural Test or Special Inspection	Required Qualifications	Continuous	Periodic	Frequency of Periodic Test or Inspection
X	5. k-area	AWS-CWI ICC-SWSI	X		
X	6. Backing removed and weld tabs removed (if required)	AWS-CWI ICC-SWSI	X		
X	7. Repair activities	AWS-CWI ICC-SWSI	X		
X	8. Document acceptance or rejection of welded joint or member	AWS-CWI ICC-SWSI	X		
X	9. Placement of reinforcing or contouring fillet welds (if required) (ref: AISC 341-16)	AWS-CWI ICC-SWSI	X		
X	10. Backing removed, weld tabs removed and finished, and fillet welds added (if required) (ref: AISC 341-16)	AWS-CWI ICC-SWSI	X		
<b>Nondestructive Testing (AISC 360-16 Section N5.5)</b>					
X	1. Risk Category II Structures - Perform Ultrasonic Testing on 10% of CJP groove welds in butt, T- and corner joints subject to transversely applied tension loading, in materials 5/16 in. thick or greater.	AWS-CWI ICC-SWSI		X	10% of welds
	2. Risk Category III or IV Structures - Perform Ultrasonic Testing on all CJP groove welds subject to transversely applied tension loading in butt, T- and corner joints, in materials 5/16 in. thick or greater.		X		
	3. Access Holes – Perform Magnetic Particle Testing or Liquid Penetrant Testing when the flange thickness exceeds 2 in. for rolled shapes, or when the web thickness exceeds 2 in. for built-up shapes.		X		
	4. Welded Joints Subject to Fatigue		X		
<b>Nondestructive Testing (AISC 341-16 Section J6.2)</b>					
	1. k-area	AWS-CWI ICC-SWSI	X		
	2. CJP Groove weld	AWS-CWI ICC-SWSI	X		
	3. Lamellar tearing	AWS-CWI ICC-SWSI	X		
	4. Beam cope and access hole	AWS-CWI ICC-SWSI	X		
	5. Reduced beam section repair		X		
	6. Weld tab removal	AWS-CWI ICC-SWSI	X		
<b>Prior to Bolting (AISC 360-16 Table N5.6-1)</b>					
	These inspections are not required for snug-tight joints				

Required?	Structural Test or Special Inspection	Required Qualifications	Continuous	Periodic	Frequency of Periodic Test or Inspection
X	1. Manufacturer's certifications available for fastener materials	ICC-SSBSI	X		
X	2. Fasteners marked in accordance with ASTM requirements	ICC-SSBSI		X	50% of bolts
X	3. Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	ICC-SSBSI		X	50% of bolts
X	4. Proper fasteners selected for the joint detail (grade, type, bolt length if threads are to be excluded from shear plane)	ICC-SSBSI		X	50% of bolts
X	5. Connecting elements, including the appropriate faying surface condition and hole preparation, if specified, meet applicable requirements	ICC-SSBSI		X	50% of bolts
X	6. Pre-installation verification testing by installation personnel observed and documented for fastener assemblies and methods used	ICC-SSBSI		X	50% of bolts
X	7. Proper storage provided for bolts, nuts, washers and other fastener components	ICC-SSBSI		X	50% of bolts
<b>During Bolting (AISC 360-16 Table N5.6-2)</b>					
	These inspections are not required for snug-tight joints. These inspections are not required for pretensioned joints and slip-critical joints, when the installer is using the turn-of-nut method with matchmarking techniques, the direct-tension-indicator method, or the twist-off-type tension control bolt method.				
X	1. Fastener assemblies, of suitable condition, placed in all holes and washers (if required) are positioned as required	ICC-SSBSI		X	50% of bolts
X	2. Joint brought to the snug-tight condition prior to the pretensioning operation	ICC-SSBSI		X	50% of bolts
X	3. Fastener component not turned by the wrench prevented from rotating	ICC-SSBSI		X	50% of bolts
X	4. Fasteners are pretensioned in accordance with the RCSC Specification, progressing systematically from the most rigid point toward the free edges	ICC-SSBSI		X	50% of bolts
<b>After Bolting (AISC 360-16 Table N5.6-3)</b>					
X	Document acceptance or rejection of bolted connections	ICC-SSBSI	X		
<b>Other Inspection Tasks (AISC 360-16 Section N5.8)</b>					
X	1. Verify compliance of fabricated steel with the details shown on the approved shop drawings.	PE/SE		X	50% and at least one of each unique condition
X	2. Verify compliance of the erected steel frame with the details shown on the approved erection drawings, including braces, stiffeners, member locations and joint details.	PE/SE		X	50% and at least one of each unique condition

Required?	Structural Test or Special Inspection	Required Qualifications	Continuous	Periodic	Frequency of Periodic Test or Inspection
	3. Anchor rods and other embedments supporting structural steel				
X	a. Verify the diameter, grade, type and length of the anchor rod or embedded item.	ACI-CCSI		X	50% and at least one of each unique condition
X	b. Verify the extent or depth of embedment into the concrete.			X	50% and at least one of each unique condition
	4. RBS requirements, if applicable (ref: AISC 341-16)				
	a. Contour and finish			X	
	b. Dimensional tolerances			X	
	5. Protected zone—no holes and unapproved attachments made by fabricator or erector, as applicable (ref: AISC 341-16)	PE/SE		X	
	6. H-piles - Protected zone—no holes and unapproved attachments made by the responsible contractor, as applicable (ref: AISC 341-16)			X	
<b>Concrete Construction (ref: IBC-21 Table 1705.3)</b>					
X	1. Inspect reinforcing steel, including prestressing tendons, and placement.	ACI-CCSI ICC-RCSI		X	Prior to each pour
X	2. Inspection of reinforcing steel welding in accordance with Steel Construction section above.	ACI-CCSI ICC-RCSI		X	50% of welds
X	3. Inspection of anchors cast in concrete.	ACI-CCSI ICC-RCSI		X	Prior to each pour
X	4. Inspection of anchors post-installed in hardened concrete members.	ACI-CCSI ICC-RCSI	X		50% of anchors
X	5. Verify use of approved design mix.	ACI-CCSI ICC-RCSI		X	Prior to each pour
X	6. Prior to placement fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	ACI-CCSI ICC-RCSI	X		
X	7. Inspect concrete and shotcrete placement for proper application techniques.	ACI-CCSI ICC-RCSI	X		
X	8. Inspect for maintenance of specified curing temperature and techniques.	ACI-CCSI ICC-RCSI		X	After each pour
	9. Inspection of prestressed concrete:				
	a. Application of prestressing forces		X		
	b. Grouting of bonded prestressing tendons in the seismic-force-resisting system.		X		
	10. Erection of precast structural members			X	
	11. Verification of in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior			X	

Required?	Structural Test or Special Inspection	Required Qualifications	Continuous	Periodic	Frequency of Periodic Test or Inspection
	to removal of shores and forms from beams and structural slabs.				
X	12. Inspection formwork for shape, location and dimensions of the concrete member being formed.	ACI-CCSI ICC-RCSI		X	Prior to each pour
<b>Masonry Construction (ref: IBC-21 Section 1705.4)</b>					
X	1. Inspect masonry construction in accordance with IBC-21 Section 1705.4 and TMS 602-16				
	<b>Level A Quality Assurance</b>				
	<b>Tests:</b> None.				
X	<b>Inspection:</b> Verify compliance with the approved submittal and project specifications.			X	
	<b>Level B Quality Assurance</b>				
	<b>Tests:</b>				
	1. Verify slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with TMS 602-16 Specification Article 1.5B.1.b.3 for self-consolidating grout.	ICC-SMSI			
	2. Verify $f'_m$ and $f'_{aac}$ in accordance with TMS 602-16 Specification Article 1.4B prior to construction, except where specifically exempted.	ICC-SMSI			
	<b>Inspection:</b>				
	1. Verify compliance with the approved submittals and project specifications.	ICC-SMSI		X	
	2. At the start of masonry construction, verify:				
	a. Proportions of site-prepared mortar.	ICC-SMSI		X	
	b. Construction of mortar joints.			X	
	c. Grade and size of prestressing tendons and anchorages.				
	d. Location of reinforcement, connectors, prestressing tendons and anchorages.			X	
	e. Prestressing technique.			X	
	f. Properties of thin-bed mortar for AAC masonry. (Continuous inspection is required for the first 5000 square feet of AAC masonry. Periodic inspection is required after the first 5000 square feet of AAC masonry.)		X	X	
	3. Prior to grouting, verify:				
	a. Grout space is clean.	ICC-SMSI		X	
	b. Grade, type and size of reinforcement and anchor bolts, and prestressing tendons and anchorages.			X	



Required?	Structural Test or Special Inspection	Required Qualifications	Continuous	Periodic	Frequency of Periodic Test or Inspection
	c. Placement of reinforcing and connectors, and prestressing tendons and anchorages.			X	
	d. Proportions of site-prepared grout and prestressing grout for bonded tendons.			X	
	e. Construction of mortar joints.			X	
	4. During masonry construction, verify:				
	a. Size and location of structural members.	ICC-SMSI		X	
	b. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames, or other construction.			X	
	c. Welding of reinforcement.		X		
	d. Preparation, construction and protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F).			X	
	e. Application and measurement of prestressing force.		X		
	f. Placement of grout and prestressing grout for bonded tendons is in compliance.		X		
	g. Placement of AAC masonry units and construction of thin-bed mortar joints. (Continuous inspection is required for the first 5000 square feet of AAC masonry. Periodic inspection is required after the first 5000 square feet of AAC masonry.)		X	X	
	5. Observe preparation of grout specimens, mortar specimens and/or prisms.	ICC-SMSI		X	
	<b>Level C Quality Assurance</b>				
	<b>Tests:</b>				
	1. Verify $f'_m$ and $f'_{aac}$ in accordance with TMS 602-16 Specification Article 1.4B prior to construction, and for every 5000 square feet during construction.				
	2. Verify proportions of materials in premixed or pre-blended mortar, prestressing grout, and grout other than self-consolidating grout as delivered to the project site.				
	3. Verify slump flow and Visual Stability Index (VSI) as delivered to the project site in accordance with TMS 602-16 Specification Article 1.5B.1.b.3 for self-consolidating grout				
	<b>Inspection:</b>				
	1. Verify compliance with the approved submittals and project specifications.			X	
	2. Verify:				
	a. Proportions of site-prepared mortar, grout and prestressing grout for bonded tendons			X	

Required?	Structural Test or Special Inspection	Required Qualifications	Continuous	Periodic	Frequency of Periodic Test or Inspection
	b. Grade, type and size of reinforcement and anchor bolts, and prestressing tendons and anchorages			X	
	c. Placement of masonry units and construction of mortar joints.			X	
	d. Placement of reinforcement, connectors and prestressing tendons and anchorages.		X		
	e. Grout space prior to grouting.		X		
	f. Placement of grout and prestressing grout for bonded tendons.		X		
	g. Size and location of structural elements.			X	
	h. Type, size and location of anchors, including other details of anchorage of masonry to structural members, frames or other construction.		X		
	i. Welding of reinforcement.		X		
	j. Preparation, construction and protection of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F).			X	
	k. Application and measurement of prestressing force.		X		
	l. Placement of AAC masonry units and construction of thin-bed mortar joints.		X		
	m. Properties of thin-bed mortar for AAC masonry.		X		
	3. Observe preparation of grout specimens, mortar specimens and/or prisms.		X		
<b>Wood Construction (ref: IBC-21 Section 1705.5)</b>					
X	1. Inspect prefabricated wood structural elements in accordance with Section 1704.2.5	PE/SE		X	50% and one of each unique condition
	2. High load diaphragms:				
	a. Verify sheathing grade and thickness.			X	
	b. Verify nominal size of framing members at adjoining panel edges.			X	
	c. Verify nail or staple diameter and length.			X	
	d. Verify number of fastener lines.			X	
	e. Verify spacing between fasteners in each line and at panel edges.			X	
	3. Shearwalls:				
	a. Verify sheathing grade and thickness.	PE/SE		X	
	b. Verify nominal size of framing members at adjoining panel edges.			X	
	c. Verify nail or staple diameter and length.			X	
	d. Verify number of fastener lines.			X	
	e. Verify spacing between fasteners in each line and at panel edges.			X	

Required?	Structural Test or Special Inspection	Required Qualifications	Continuous	Periodic	Frequency of Periodic Test or Inspection
	f. Location and size of holdowns.			X	
	4. Verify nailing, bolting, anchoring and fastening of:				
	a. Drag struts and collectors.	PE/SE		X	
	b. Braces.			X	
	c. Hold-downs.			X	
	5. Metal-plate-connected wood trusses spanning 60 feet or greater:				
	a. Verify temporary installation restraint/bracing installed in accordance with the approved shop drawings.			X	
	b. Verify permanent individual truss member restraint/bracing installed in accordance with the approved shop drawings.			X	
<b>Soils (ref: IBC-21 Table 1705.6)</b>					
X	1. Verify materials below shallow foundations are adequate to achieve the required bearing capacity.	PE/GE		X	Once after excavation
X	2. Verify excavations are extended to proper depth and have reached proper material.	PE/GE		X	Once prior to pour
X	3. Perform classification and testing of compacted fill materials.	PE/GE		X	Once for each batch
X	4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of compacted fill.	PE/GE	X		
X	5. Prior to placement of controlled fill, observe subgrade and verify that site has been prepared properly.	PE/GE		X	Once prior to backfilling
<b>Wind Resistance (ref: IBC-21 Section 1705.11)</b>					
	1. Provide inspections when required by Section 1705.11.				
<b>Seismic Resistance (ref: IBC-21 Section 1705.12)</b>					
	1. Provide inspections when required by Section 1705.12.	PE/SE		X	
<b>Testing and Qualification for Seismic Resistance (ref: IBC-21 Section 1705.13)</b>					
	1. Test and qualify seismic resistance in accordance with IBC-18 Section 1705.13 and the project specifications.	AWS-CWI ICC-SWSI			

## SECTION 01 42 00 – REFERENCE STANDARDS

### PART 1 - GENERAL

#### 1.1 ENVIRONMENTAL DEFINITIONS

- A. Definitions pertaining to sustainable development: As defined in ASTM E2114 and as specified herein.
- B. Biobased Materials: As defined in the Farm Security and Rural Investment Act, for purposes of Federal procurement of biobased products, "biobased" means a "commercial or industrial product (other than food or feed) that is composed, in whole or in significant part, of biological products or renewable domestic agricultural materials (including plant, animal, and marine materials) or forestry materials." Biobased materials also include fuels, chemicals, building materials, or electric power or heat produced from biomass as defined by The Biomass Research and Development Act of 2000.
  - 1. Biobased content: Amount of biobased carbon in the material or product as a percentage of weight (mass) of total organic carbon in the material or product.
- C. Chain-of-Custody: Process whereby a product or material is maintained under physical possession or control during its entire life cycle.
- D. Deconstruction: Disassembly of buildings for purpose of recovering materials.
- E. Environmentally preferable products: Products and services that have a lesser or reduced effect on the environment in comparison to conventional products and services. Refer to EPA's Final Guidance on [Environmentally Preferable Purchasing Program](#).
- F. Non-Renewable Resource: A resource that exists in a fixed amount that cannot be replenished on a human time scale. Non-renewable resources have potential for renewal only by geological, physical, and chemical processes taking place over of millions of years. Examples include iron ore, coal, and oil.
- G. Recycled Content Materials: Products that contain pre-consumer or post-consumer materials as all or part of their feedstock. Recycled content claim shall be consistent Federal Trade Commission (FTC) Guide for Use of Environmental Marketing Claims.
- H. Renewable Resource: A resource that is grown, naturally replenished, or cleansed, at a rate which exceeds depletion of the usable supply of that resource. A renewable resource can be exhausted if improperly managed. However, a renewable resource can last indefinitely with proper stewardship. Examples include trees in forests, grasses in grasslands, and fertile soil.

#### 1.2 QUALITY ASSURANCE

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied

directly into Contract Documents to the extent referenced. Such standards are made a part of Contract Documents by reference.

- B. Publication Dates: Comply with standards in effect as of date of Contract Documents, unless otherwise indicated.
- C. Conflicting Requirements: Where compliance with two or more standards is specified, and standards may establish different or conflicting requirements for minimum quantities or quality levels, comply with most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Contracting Officer (CO) for decision before proceeding.

### 1.3 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless Contract Documents include more stringent requirements, applicable construction industry standards have same force and effect as if bound or copied directly into Contract Documents to the extent referenced. Such standards are made a part of Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of date of Contract Documents unless otherwise indicated.
- C. Copies of Standards: Each entity engaged in construction on Project should be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with Contract Documents.
  - 1. Where copies of standards are needed to perform a required construction activity, obtain copies directly from publication source.

### 1.4 ABBREVIATIONS AND ACRONYMS

- A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities found in Section 01 42 00 Sources for Reference Publications, [Unified Facilities Guide Specifications](#) (UFGS) (accessible via [Masters](#) website > Downloads section > click on UFGS Master (WBDG Website). Names, telephone numbers, and websites are subject to change and are believed to be accurate and up-to-date as of date of Contract Documents.

XX                      EXAMPLE Association (The)  
                              [www.EXAMPLE.org](#)

- B. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in following list. Names, telephone numbers, and websites are subject to change and are believed to be accurate and up-to-date as of date of Contract Documents.

ICC                      International Code Council                      (888) 422-7233  
                              [www.iccsafe.org](#)



ICC-ES	ICC Evaluation Service, Inc. <a href="http://icc-es.org">icc-es.org</a>	(800) 423-6587 (562) 699-0543
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- C. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in following list. Names, and websites are subject to change and are believed to be accurate and up-to-date as of date of Contract Documents.

ABA & ABAAS United States Access Board	Architectural Barriers Act (ABA) Architectural Barriers Act Accessibility Standards (ABAAS) <a href="http://www.access-board.gov">www.access-board.gov</a>
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CoE	Army Corps of Engineers <a href="http://www.usace.army.mil">www.usace.army.mil</a>
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EPA	Environmental Protection Agency <a href="http://www.epa.gov">www.epa.gov</a>
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FCC	Federal Communications Commission <a href="http://www.fcc.gov">www.fcc.gov</a>
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GSA	General Services Administration <a href="http://www.gsa.gov">www.gsa.gov</a>
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NCHRP	National Cooperative Highway Research Program (See TRB (Transportation Resource Board))
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NIST	National Institute of Standards and Technology <a href="http://www.nist.gov">www.nist.gov</a>
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OSHA	Occupational Safety & Health Administration <a href="http://www.osha.gov">www.osha.gov</a>
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TRB	Transportation Research Board <a href="http://www.nationalacademies.org/trb/transportation-research-board">www.nationalacademies.org/trb/transportation-research-board</a>
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- D. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in following list. Names, telephone numbers, and websites are subject to change and are believed to be accurate and up-to-date as of date of Contract Documents.

ABAAS	Architectural Barriers Act Accessibility Standards <a href="http://www.access-board.gov">www.access-board.gov</a>
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CFR	Code of Federal Regulations Available from Government Printing Office <a href="http://www.govinfo.gov/app/collection/cfr">www.govinfo.gov/app/collection/cfr</a>
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FED-STD      Federal Standard  
(See FS (Federal Specification))

## 1.5 ENVIRONMENTAL REFERENCE STANDARDS

### A. American Forest and Paper Association:

#### 1. Sustainable Forestry Initiative

### B. American Society of Heating Refrigerating and Air Conditioning Engineers (ASHRAE):

- **ASHRAE 52.2**, *Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size*
- **ASHRAE 55**, *Thermal Environmental Conditions for Human Occupancy*
- **ASHRAE 62.1**, *Ventilation for Acceptable Indoor Air Quality*
- **ASHRAE/IESNA 90.1**, *Energy Standard for Buildings, Except Low-Rise Residential Buildings*

### C. American Association of State Highway and Transportation Officials (AASHTO):

- M288 Geotextile Specification for Highway Applications

### D. American Society for Testing and Materials International (ASTM):

- C128 Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate
- C136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates
- C1601 Standard Test Method for Field Determination of Water Penetration of Masonry Wall Surfaces
- C289 Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)
- C311 Test Methods for Sampling and Testing Fly Ash or Natural Pozzolans for Use as a Mineral Admixture in Portland-Cement Concrete
- C33 Standard Specification for Concrete Aggregates
- C593 Standard Specification for Fly Ash and Other Pozzolans for Use With Lime
- C618 Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete
- C989 Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars
- D198 Standard Test Methods of Static Tests of Lumber in Structural Sizes
- D3864 Standard Guide for Continual On-Line Monitoring Systems for Water Analysis
- D3960 Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
- D4017 Standard Test Method for Water in Paints and Paint Materials by Karl Fischer Method
- D4263 Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
- D4444 Standard Test Methods for Use and Calibration of Hand-Held Moisture Meters
- D4491 Standard Test Methods for Water Permeability of Geotextiles by Permittivity
- D4552 Standard Practice for Classifying Hot-Mix Recycling Agents
- D4632 Standard Test Method for Grab Breaking Load and Elongation of Geotextiles
- D4840 Standard Guide for Sampling Chain-of-Custody Procedures

- D4887 Standard Test Method for Preparation of Viscosity Blends for Hot Recycled Bituminous Materials
- D5268 Standard Specification for Topsoil Used for Landscaping Purposes
- D5663 Standard Guide for Validating Recycled Content in Packaging Paper and Paperboard
- D5759 Standard Guide for Characterization of Coal Fly Ash and Clean Coal Combustion Fly Ash for Potential Uses
- D5792 Standard Practice for Generation of Environmental Data Related to Waste Management Activities: Development of Data Quality Objectives
- D5834 Standard Guide for Source Reduction Reuse, Recycling, and Disposal of Solid and Corrugated Fiberboard (Cardboard)
- D5852 Standard Test Method for Erodibility Determination of Soil in the Field or in the Laboratory by the Jet Index Method
- D6155 Standard Specification for Nontraditional Coarse Aggregates for Bituminous Paving Mixtures
- D6245 Standard Guide for Using Indoor Carbon Dioxide Concentrations to Evaluate Indoor Air Quality and Ventilation
- D6270 Standard Practice for Use of Scrap Tires in Civil Engineering Applications
- D6629 Standard Guide for Selection of Methods for Estimating Soil Loss by Erosion
- D692 Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures
- D7186 Standard Practice for Quality Assurance Observation of Roof Construction and Repair
- E1105 Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference
- E1609 Standard Guide for Development and Implementation of a Pollution Prevention Program
- E1686 Standard Guide for Selection of Environmental Noise Measurements and Criteria
- E1780 Standard Guide for Measuring Outdoor Sound Received from a Nearby Fixed Source
- E1827 Standard Test Methods for Determining Airtightness of Buildings Using an Orifice Blower Door
- E1861 Standard Guide for Use of Coal Combustion By-Products in Structural Fills
- E2114 Standard Terminology for Sustainability Relative to the Performance of Buildings
- E2128 Standard Guide for Evaluating Water Leakage of Building Walls
- E2129 Standard Practice for Data Collection for Sustainability Assessment of Building Products
- E241 Standard Guide for Limiting Water-Induced Damage to Buildings
- E2432 Standard Guide for General Principles of Sustainability Relative to Buildings
- E413 Standard Classification for Rating Sound Insulation
- E779 Standard Test Method for Determining Air Leakage Rate by Fan Pressurization
- E90 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
- F2034 Standard Specification for Sheet Linoleum Floor Covering
- F2170 Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes

E. Center for Resource Solutions

- Green-e program

- F. Environmental Protection Agency (EPA):
  - Comprehensive Procurement Guidelines
  - ENERGY STAR
  - Environmentally Preferable Purchasing Program Final Guidance
  - Indoor Air Quality Building Education and Assessment Model (I-BEAM)
  - National Environmental Performance Track
  - Pollution Prevention (P2)
- G. Forest Stewardship Council:
  - Chain-Of-Custody
  - Forest Management
- H. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA):
  - IAQ Guidelines for Occupied Buildings Under Construction
- I. Southcoast Air Quality Management District:
  - 1168 Adhesive And Sealant Applications
- J. US Green Building Council:
  - LEED™ 2009 Green Building Rating System
  - LEED™ v4 (version 4) Green Building Rating System

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 42 00 – REFERENCE STANDARDS

## SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 50 00 "Temporary Facilities and Controls" includes requirements for temporary utilities, support facilities, and security and protection facilities.
- B. Shared Use of Maintenance Area
  - 1. The maintenance year will be open to the NPS staff during construction.
  - 2. Contractor shall develop a traffic routing and phasing plan for maintaining NPS staff vehicular access through the maintenance parking at all times.
  - 3. Temporary closures of portions of the maintenance area may be necessary for brief, intermittent periods. Night work may be considered to minimize disruption of access and placement of steel plates over work areas to facilitate access during non-work hours will be permitted contingent on Contracting Officer approval.
    - a. Temporary closures of longer than 10 minutes shall be coordinated in advance with park staff.
    - b. Temporary closures of 10-30 minutes shall be discussed in advance during weekly progress meetings.
    - c. Temporary closures of greater than 30 minutes shall be requested from the Contracting Officer 7 days (measured from receipt of request) prior to date and of closure and shall include method of operation for emergency vehicle access to and from east side of park during closure. This type of closure shall be approved in writing by the Contracting Officer prior to the contractor putting this type of closure in place.
  - 4. Emergency Vehicle Access is required. Contractor shall coordinate with dispatch to ensure access is provided through the maintenance area and site at all times.

#### 1.2 USE CHARGES

- A. General: Cost or use charges for temporary facilities shall be included in the Contract Sum as required.
- B. Water Service: Water from existing water system owned and operated by NPS is available for use without metering and without payment of use charges.
  - 1. Water available at the site is limited by the size of the well to approximately 400 gal/day.
- C. Electric Power Service: Electricity feed from Maintenance Building is available for use without metering and without payment of use charges.

#### 1.3 SUBMITTALS

- A. Construction Staging and Phasing Plan: Contractor shall submit staging/phasing plan for review and approval by the Contracting Officer. Plan shall include:



1. One lane coming into the maintenance area at all times.
2. One lane exiting the maintenance area at all times.
3. Optimize vehicular circulation and parking within the maintenance area at all times.
4. Emergency vehicle access to be maintained at all times.
5. Construction vehicle inspection area.
6. Traffic Management Plan: identification of traffic control measures and safety devices, including cutsheets and/or equipment information for variable message signs. Plan shall include but are not limited to:
  - a. Type, number, and location of signs
  - b. Temporary signs to be on tripods (not posts)
  - c. Placement of flaggers
  - d. Placement of cones/fencing and barricades
  - e. Construction vehicle access points (accessing temporary roadway)
  - f. Pedestrian crossing points (construction staff only)
7. Method of Operation for instances when access – incoming or outgoing or both – must be interrupted. Plan shall include but are not limited to:
  - a. Duration of anticipated delays
  - b. Use of pilot cars (if applicable)
  - c. Notification procedures
  - d. Emergency vehicle access procedures

#### 1.4 QUALITY ASSURANCE

- A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.
- B. Environmental Protection: Provide environmental protection as required by authorities having jurisdiction and as indicated in the Contract Documents. Coordinate with requirements of the following:
  1. Regulatory Requirements.
  2. Indoor Air Quality (IAQ) Management.
  3. Noise & Acoustics Management.
  4. Environmental Management.
  5. Construction Waste Management.
  6. Storm Water Management, including procedures for containment and response for leaks and spills.

#### 1.5 PROJECT CONDITIONS

- A. Temporary Use of Permanent Facilities: Installer of each permanent service shall assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before NPS acceptance, regardless of previously assigned responsibilities.
- B. Temporary Interruption of Services to NPS staffed buildings: Temporary interruption of services shall not be permitted. Contractor shall provide temporary utilities during the potential interruption such that no downtime is experienced.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Temporary materials may be new or used but must be adequate in capacity for the required usage, must not create unsafe conditions, and must not violate requirements of applicable codes and standards.
- B. Pavement: Comply with Division 32 Sections "Asphalt Paving" and "Concrete Paving."
- C. Portable Chain-Link Fencing: Minimum 2-inch, 9-gage, galvanized steel, chain-link fabric fencing; minimum 6 feet high with galvanized steel pipe posts; minimum 2-3/8-inch- OD line posts and 2-7/8-inch- OD corner and pull posts, with 1-5/8-inch- OD top and bottom rails. Provide concrete or galvanized steel bases for supporting posts. **Driving posts for fencing is not permitted without prior approval of the Contracting Officer.**
- D. Safety Barrier Fence: Orange plastic fencing not permitted.
- E. Barrier Tape: Yellow tape Imprinted with "CAUTION: CONSTRUCTION AREA", manufactured by Reef Industries, Inc., Houston, Texas, or approved equal.
- F. Flag Stakes: 3.5 inch x 2.5 inch, orange, on 21" wire stem.
- G. Concrete Barriers: Commonly referred to as "Jersey Barrier" for protection of workers and the general public when vehicles are traveling adjacent to open excavations or the work area.
- H. Posts for Temporary Signage: Shall be on tripod legs or weighted bases. **Driving posts for signage is not permitted without prior approval of the Contracting Officer.**

### 2.2 TEMPORARY FACILITIES

- A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.
- B. Storage and Fabrication Sheds: Temporary weather tight sheds or other covered facilities for storage of materials subject to weather damage. Number and size of structures shall be subject to Contracting Officer's approval.

### 2.3 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.
- B. HVAC Equipment: Unless Contracting Officer authorizes use of permanent HVAC system, provide vented, self-contained, liquid-propane-gas or fuel-oil heaters with individual space thermostatic control.
  - 1. Use of gasoline-burning space heaters, open-flame heaters, or salamander-type heating units is prohibited.

2. Heating Units: Listed and labeled for type of fuel being consumed, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
  3. Permanent HVAC System: use of permanent HVAC system for temporary use during construction is not permitted.
- C. Spill Kits: Shall be commercially obtained spill kits of sufficient size for potential spill impact. Spill kit shall be clearly labeled to the type of spill it has been developed for and shall include at minimum:
1. Spill kits must be within 100' of equipment capable of spills at all times.
  2. Bin to contain spill kit contents and for use during spill containment.
  3. Absorbent socks.
  4. Absorbent cushions.
  5. Absorbent pads,
  6. Disposal bags and ties.
  7. Personal protective equipment – gloves and goggles.
- D. Traffic Equipment
1. Provide all barricades, lights, danger signals, warning signs, traffic cones, barriers, signage, and other equipment needed to safely direct publicly owned vehicles through the construction site.

## PART 3 - EXECUTION

### 3.1 INSTALLATION, GENERAL

- A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.
1. Locate facilities to limit site disturbance and as directed by the Contracting Officer.
  2. Temporary utilities for Contractor trailer to be above ground.
- B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

### 3.2 TEMPORARY UTILITY INSTALLATION

- A. General: Install temporary service or connect to existing service.
1. Arrange with utility company, NPS, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
- B. Storm Sewers and Drainage: Provide temporary dewatering or bypass systems for construction.
- C. Potable water is available on site from existing water system, **limited to 400 gal/day**. For site supplied water, connection location(s) to be approved by the Contracting Officer. The Contractor is required to provide and install an approved backflow prevention device as well as piping if necessary to access and extract water from the provided source. Limit the amount of water used

from Park sources to amount approved by Contracting Officer. Coordinate the scheduled use of this water source with the Contracting Officer. Facilities must be cleaned and maintained in a condition acceptable to the NPS. At Substantial Completion, restore these facilities to condition of water system upgrade final product.

- D. Sanitary Facilities: Provide temporary toilets, and wash facilities for use by construction personnel.
  - 1. Place in approved locations secluded from public observation and convenient to work stations. Relocate as work progress requires.
    - a. Contracting Officer shall approve locations.
  - 2. Maintain and clean toilet facilities at least weekly.
  - 3. Completely remove sanitary facilities on completion of work.
  - 4. Temporary toilets shall be locked when contractor is not onsite.
- E. Heating and Cooling: Provide temporary heating and cooling required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of low temperatures or high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed.
  - 1. Use of permanent heating and cooling system will not be allowed without written authorization from Contracting Officer. This is not advised as use of the permanent system prior to substantial completion and beginning of the government's warranty period muddies the beginning of the warranty.
  - 2. Provide and maintain adequate approved facilities, as required for safety and construction requirements, during the progress of the work. Provide ample clearance around stoves and heaters and all chimney and vent connections to prevent ignition of combustible material
  - 3. Install and maintain temporary filters when air handling equipment is used for temporary heating and cooling. This is not advised as use of the permanent system prior to substantial completion and beginning of the government's warranty period muddies the beginning of the warranty.
  - 4. Warranties for equipment used for temporary heating and cooling shall start on date of Final Acceptance.
- F. Ventilation and Humidity Control: Provide temporary ventilation required by construction activities for curing or drying of completed installations or for protecting installed construction from adverse effects of high humidity. Select equipment that will not have a harmful effect on completed installations or elements being installed. Coordinate ventilation requirements to produce ambient condition required and minimize energy consumption.
- G. Electric Power Service: Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
  - 1. Anticipate intercepting and extending (as needed) existing electrical service previously feeding barn building for use as construction power service. Existing barn was fed from Maintenance Building to the north. It is anticipated that this underground line will be de-energized at time of mobilization, coordinate re-energization with NPS once temporary service is constructed.
  - 2. No generators shall be left on overnight when no work is occurring.

- H. Lighting: Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
  - 1. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
  - 2. At worksites where traffic control measures have been used to shift path of travel, lights complying with Dark Sky requirements shall be used overnight even when no work is occurring. The intent is to provide vehicles with a safe path through the worksite.
  - 3. At worksites not adjacent to the road, no lights shall be left on overnight when no work is occurring.
- I. Telephone Service: There is a telephone service line available on site for Contractor's use. Make arrangements with Telephone Company to establish service and pay all costs.
  - 1. Cellphone Coverage: Coverage is undependable in the work zone and varies by provider.

### 3.3 SUPPORT FACILITIES INSTALLATION

- A. General: Comply with the following:
  - 1. Provide incombustible construction for offices, shops, and sheds located within construction area or within 50 feet of building lines. Comply with NFPA 241.
  - 2. Maintain support facilities until near Substantial Completion. Remove structures, equipment, and furnishings, and terminate services after punch list is 100 percent completed or when directed by Contracting Officer. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to Contracting Officer.
- B. The Contracting Officers/CMR Field Office not required.
- C. Traffic Controls: Erect and maintain barricades, lights, danger signals, and warning signs in accordance with Manual on Uniform Traffic Control Devices (MUTCD 2009 with revisions 1 and 2, May 2012) edition.
  - 1. Protect existing site improvements to remain including curbs, pavement, and utilities.
  - 2. Maintain access for fire-fighting equipment and access to fire hydrants at all times.
  - 3. Illuminate barricades and obstructions at night; keep safety lights burning from sunset to sunrise.
  - 4. Adequately barricade and protect open cuts in or adjacent to thoroughfares.
  - 5. Protect pedestrian traffic by guardrails or fences.
  - 6. When pedestrian traffic is detoured onto a roadway, provide temporary walkways with protection as required at ends and overhead. For walkways, use lumber running parallel to direction of traffic movement and provide ramps at changes of elevation.
  - 7. Cover pipes, hoses, and power lines crossing sidewalks and walkways with troughs using beveled edge boards.
  - 8. Install barrier tape where directed by Contracting Officer. Keep a minimum of two rolls on site at all times.
  - 9. Temporary signs to be on tripods (driven posts is prohibited).
- D. Parking: Use designated limits of construction for construction personnel.



- E. Dewatering Facilities and Drains: Comply with requirements of authorities having jurisdiction. Maintain Project site, excavations, and construction free of water.
  - 1. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining properties nor endanger permanent Work or temporary facilities.
  - 2. Remove snow and ice as required to minimize accumulations.
- F. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.
  - 1. Dumpsters on site shall not contain scented or food waste unless it is a dedicated metal bear-resistant bin, such as those provided by [www.bearsaver.com](http://www.bearsaver.com) or [www.bearicuda.com](http://www.bearicuda.com) or an approved equal.
- G. Snow Removal:
  - 1. The contractor will be responsible for snow removal within the work area throughout the period of performance.

### 3.4 SECURITY AND PROTECTION FACILITIES INSTALLATION

- A. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.
- B. Temporary Erosion and Sedimentation Control: Refer to Section 01 57 13 “Temporary Erosion and Sediment Control”.
- C. Stormwater Control: Comply with authorities having jurisdiction. Provide barriers in and around excavations and subgrade construction to prevent flooding by runoff of storm water from heavy rains.
- D. Leak and Spill Prevention: Repair leaks on equipment immediately. Do not use equipment that is leaking. Keep a supply of acceptable absorbent materials at the job site in the event of spills. Acceptable absorbent materials are those that are manufactured specifically for the containment and clean up of hazardous materials.
- E. Spill Kits: Provide spill kits within 100 feet of any activity or equipment that has the potential to produce a spill of oil, fuel, or fluid other than water within the boundaries of the park.
  - 1. Spill kit shall be of a type suitable for the fluid at risk of spilling.
  - 2. Workers shall be trained in the use of spill kits and shall be kept informed of the location of the nearest spill kit.
  - 3. Spill kits shall be kept in every contractor vehicle on the site.
- F. Tree and Plant Protection: Refer to Section 01 11 00 “Summary of Work”.
- G. Pest Control: Follow NPS requirements and practices to minimize attraction and harboring of rodents, roaches, and other pests and to perform extermination and control procedures at regular intervals so Project will be free of pests and their residues at Substantial Completion. Perform control operations lawfully, using environmentally safe materials.

- H. Limits of Construction: Before construction operations begin, furnish and install flag stakes and chain-link fencing.
1. Extent of Flag Stakes: Provide temporary flagging, spaced every 50' LF along the approved construction limits. Additional flagging may be required around features and as identified by the Contracting Officer. Contractor to coordinate flagging placement schedule with the Contracting Officer. Contractor to provide, install and maintain flagging as determined by the Contracting Officer. Written approval is required prior to any construction limit adjustments.
  2. Extent of Fence: Reference the drawings for a segment of road requiring temporary chain link fencing along the approved construction limits. Fencing to be placed along both sides of the road adjacent to the wetlands. Contractor to coordinate fencing placement schedule with the Contracting Officer.
  3. Contractor to provide, install and maintain flagging as determined by the Contracting Officer. Written approval is required prior to any construction limit adjustments.
  4. No construction activities shall occur before limits are clearly defined or delineated.
  5. Fence shall be free standing. Driving posts for fencing is not permitted without prior approval of the Contracting Officer
- I. Security Enclosure and Lockup: Install substantial temporary enclosure around partially completed areas of construction. Provide lockable entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.
- J. Barricades, Warning Signs, and Lights: Comply with requirements of MUTCD for erecting structurally adequate barricades, including warning signs and lighting.
- K. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
1. Where heating or cooling is needed and permanent enclosure is not complete, insulate temporary enclosures.
- L. Animal Protection: Overnight at open trenches, provide textured ramps to allow trapped animal to escape. Slope must be 3:1 (run:rise) slope or less. If ramp meeting this slope requirement is not possible given the size of the hole, the trench must be covered with secured plywood cover.
- M. Temporary Fire Protection: Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241.
1. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of National Park Service Authority Having Jurisdiction.
  2. Hot work permits, approved through the Contracting Officer by the park's structural fire coordinator, are required for any hot work. Submittal of permit request is required no less than one week in advance of the work. Do not proceed until notified by the Contracting Officer that the permit has been approved.
  3. Responsible Person: A capable and qualified person shall be placed in charge of fire protection. The responsibilities shall include locating and maintaining fire protective equipment and establishing and maintaining safe torch cutting and welding procedures.
  4. Smoking: Smoking within buildings or temporary storage sheds is prohibited.

5. Welding operations, with combustion-type temporary heating units, and similar sources of fire ignition shall be performed in accordance with OSHA requirements for Welding, Cutting, and Brazing. Notify Contracting Officer prior to any welding operations. Comply with NPS regulations as applicable.
6. Develop and supervise an overall fire-prevention and -protection program for personnel at Project site. Instruct personnel in methods and procedures.
7. Hazard Control: Take all necessary precautions to prevent fire during construction. Do not store flammable or combustible liquids in existing buildings. Provide adequate ventilation during use of volatile or noxious substances.
8. Spark Arresters: Equip all gasoline or diesel powered equipment used during periods of potential fire hazards or in potential forest and grass fire locations with spark arresters approved by the USDA Forest Service.
  - a. Written determinations of periods and areas of potential fire hazard will be issued by Contracting Officer.
9. Buildings: Furnish a minimum of one extinguisher for each 1,500 square feet of area or major fraction thereof.
  - a. Travel distance from any work station to the nearest extinguisher shall not exceed 75 feet.
10. Vehicles and Equipment: Provide one extinguisher on each vehicle or piece of equipment.

### 3.5 OPERATION, TERMINATION, AND REMOVAL

- A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.
- B. Maintenance: Maintain facilities in good operating condition until removal.
  1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.
  2. Ensure that storage of food, garbage, and other attractants are at all times properly secured to reduce potential conflict with wildlife.
- C. Temporary Facility Changeover: Do not change over from using temporary security and protection facilities to permanent facilities until Substantial Completion.
- D. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.
  1. Materials and facilities that constitute temporary facilities are property of Contractor.
  2. At Substantial Completion, clean and renovate permanent facilities used during construction period.

END OF SECTION 01 50 00 - TEMPORARY FACILITIES AND CONTROLS

## SECTION 01 57 19.11 – INDOOR AIR QUALITY MANAGEMENT

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 57 19.11 “Indoor Air Quality Management” includes:
  - 1. Special requirements for Indoor Air Quality (IAQ) management during construction operations.
    - a. Control of emissions during construction.
    - b. Moisture control during construction.
  - 2. Procedures for testing baseline IAQ. Baseline IAQ requirements specify maximum indoor pollutant concentrations for acceptance of the facility.

#### 1.2 DEFINITIONS

- A. Definitions pertaining to sustainable development: As defined in ASTM E2114.
- B. Adequate ventilation: Ventilation, including air circulation and air changes, required to cure materials, dissipate humidity, and prevent accumulation of particulates, dust, fumes, vapors, or gases.
- C. Hazardous Materials: Any material that is regulated as a hazardous material in accordance with 49 CFR 173, requires a Material Safety Data Sheet (MSDS) in accordance with 29 CFR 1910.1200, or which during end use, treatment, handling, storage, transportation or disposal meets or has components which meet or have the potential to meet the definition of a Hazardous Waste in accordance with 40 CFR 261. Throughout this specification, hazardous material includes hazardous chemicals.
  - 1. Hazardous materials include: pesticides, biocides, and carcinogens as listed by recognized authorities, such as the Environmental Protection Agency (EPA) and the International Agency for Research on Cancer (IARC).
- D. Indoor Air Quality (IAQ): The composition and characteristics of the air in an enclosed space that affect the occupants of that space. The indoor air quality of a space refers to the relative quality of air in a building with respect to contaminants and hazards and is determined by the level of indoor air pollution and other characteristics of the air, including those that impact thermal comfort such as air temperature, relative humidity and air speed.
- E. Interior final finishes: Materials and products that will be exposed to interior occupied spaces; including flooring, wall covering, finish carpentry, and ceilings.
- F. Packaged dry products: Materials and products that are installed in dry form and are delivered to the site in manufacturer's packaging; including carpets, resilient flooring, ceiling tiles, and insulation.

- G. Wet products: Materials and products installed in wet form, including paints, sealants, adhesives, special coatings, and other materials which require curing.

### 1.3 QUALITY ASSURANCE

- A. Inspection and Testing Lab Qualifications: Minimum of 5 years experience in performing the types of testing specified herein.

### 1.4 SUBMITTALS

- A. Indoor Air Quality (IAQ) Management Plan: After award and before the Pre-construction conference, prepare and submit an IAQ Management Plan including, but not limited to, the following:

1. Procedures for control of emissions during construction.
  - a. Identify schedule for application of interior finishes: Identify each interior finish that either generates odors, moisture, or vapors or is susceptible to adsorption of odors and vapors, and indicate air handling zone, sequence of application, and curing times.
  - b. Identify potential sources of odor and dust.
  - c. Identify construction activities likely to produce odor or dust.
  - d. Identify areas of project potentially affected, especially occupied areas.
  - e. Evaluate potential problems by severity and describe methods of control.
  - f. Describe construction ventilation to be provided, including type and duration of ventilation, use of permanent HVAC systems, types of filters and schedule for replacement of filters.
  - g. Describe cleaning and dust control procedures.
  - h. Describe coordination with commissioning procedures.
2. Procedures for moisture control during construction.
  - a. Identify porous materials and absorptive materials.
  - b. Identify schedule for inspection of stored and installed porous and absorptive materials.
3. Revise and resubmit Plan as required by Contracting Officer.
  - a. Approval of Contractor's Plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations.

- B. Product Data:

1. Submit product data for filtration media used during construction and during operation. Include Minimum Efficiency Reporting Value (MERV).
2. Material Safety Data Sheets: Submit MSDSs for inclusion in Operation and Maintenance Manual for the following products.



- a. Adhesives.
- b. Caulking and sealants.
- c. Insulating materials.
- d. Paint.
- e. Clear finish for wood surfaces.
- f. Lubricants.
- g. Cleaning products.

C. Inspection and Test Reports:

- 1. Moisture control inspections.
- 2. Moisture content testing.
- 3. Moisture penetration testing.
- 4. Microbial Growth testing.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 IAQ MANAGEMENT - EMISSIONS CONTROL

- A. During construction operations, follow the recommendations in SMACNA IAQ Guidelines for Occupied Buildings under Construction.
- B. HVAC Protection:
  - 1. Seal return registers during construction operations.
  - 2. Provide temporary exhaust during construction operations
  - 3. To the greatest extent possible, isolate and/or shut down the return side of the HVAC system during construction. When ventilation system must be operational during construction activities, provide temporary filters at all air inlets (returns) and at all locations for filters prescribed in the design.
  - 4. Contractor shall bear the cost of cleaning required due to failure to protect ducts and equipment from construction dust.
- C. Source Control: Provide low and zero VOC materials as specified.
- D. Pathway Interruption: Isolate areas of work as necessary to prevent contamination of clean or occupied spaces. Provide pressure differentials and/or physical barriers to protect clean or occupied spaces.
- E. Housekeeping: During construction, maintain project and building products and systems to prevent contamination of building spaces.
- F. Temporary Ventilation: For materials/products that generally require ventilation for off gassing, provide an ACH (air changes per hour) of 1.5 or more and as follows:
  - 1. Provide minimum 48 hour pre-ventilation of packaged dry products prior to installation. Remove from packaging and ventilate in a secure, dry, well-ventilated space free from

- strong contaminant sources and residues. Provide a temperature range of 60 degrees F minimum to 90 degree F maximum continuously during the ventilation period. Do not ventilate within limits of Work unless otherwise approved by Contracting Officer.
2. Provide adequate ventilation during and after installation of interior wet products and interior final finishes.
  3. Provide filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 as determined by ASHRAE 52.2 during construction. Coordinate with work of Division 23 (15), Heating Ventilating and Air Conditioning (HVAC).
- G. Scheduling: Schedule construction operations involving wet products prior to packaged dry products to the greatest extent possible.
- H. Flush-Out: After construction ends, prior to occupancy and with all interior finishes installed, perform a building flush-out by supplying a total air volume of 14,000 cu.ft. of outdoor air per sq.ft. of floor area while maintaining an internal temperature of at least 60 degrees F and relative humidity no higher than 60%.
1. Obtain Contracting Officers concurrence that construction is complete enough before beginning flush-out.
  2. If additional construction involving materials that produce particulates or any of the specified contaminants is conducted during or after flush-out.
  3. Install new HVAC filtration media in all locations identified to have permanent filtration in the contract documents after completion of flush-out and before occupancy or further testing.
- I. Positive Pressure Air Flow Equipment
1. Provide filtration media with a Minimum Efficiency Reporting Value (MERV) of 8 as determined by ASHRAE 52.2 during construction. Coordinate with work of Division 23 (15), Heating Ventilating and Air Conditioning (HVAC).

### 3.2 IAQ MANAGEMENT - MOISTURE CONTROL

- A. Housekeeping:
1. Keep materials dry. Protect stored on-site and installed absorptive materials from moisture damage.
  2. Verify that installed materials and products are dry prior to sealing and weatherproofing the building envelope.
  3. Store interior absorptive materials only after building envelope is sealed and weatherproofed.
- B. Inspections: Document and report results of inspections; state whether or not inspections indicate satisfactory conditions.
1. Examine materials for dampness as they arrive. If acceptable to Contracting Officer, dry damp materials completely prior to installation; otherwise, reject materials that arrive damp.
  2. Examine materials for mold as they arrive and reject materials that arrive contaminated with mold.

3. Inspect stored and installed absorptive materials regularly for dampness and mold growth. Inspect after each rain event.
  - a. Where stored on-site or installed absorptive materials become wet, notify Contracting Officer. Inspect for damage. If acceptable to the Contracting Officer, dry completely prior to closing in assemblies; otherwise, remove (in accordance with the Waste Management Plan) and replace with new materials.
4. Site drainage: Verify that final grades of site work and landscaping drain surface water and ground water away from the building.
5. Weather-proofing: Inspect moisture control materials as they are being installed. Include the following:
  - a. Air barrier: Verify air barrier is installed without punctures and/or other damage. Verify air barrier is sealed completely.
  - b. Flashing: Verify correct shingling of the flashing for roof, walls, windows, doors, and other penetrations.
  - c. Vapor Barrier: Verify that vapor barrier is installed in accordance with the Contract documents.
  - d. Insulation layer: Verify insulation is installed without voids.
  - e. Roofing: In accordance with ASTM D7186 Standard Practice for Quality Assurance Observation of Roof Construction and Repair
6. Plumbing: Verify satisfactory pressure test of pipes and drains is performed before closing in and insulating lines.
7. HVAC: Inspect HVAC system as specified in Section 01 91 14 "Total Building Commissioning". And, inspect HVAC to verify:
  - a. condensate pans are sloped and plumbed correctly;
  - b. access panels are installed to allow for inspection and cleaning of coils and ductwork downstream of coils;
  - c. ductwork is air sealed;
  - d. duct insulation is installed and sealed; and
  - e. refrigerant line insulation are installed and sealed.

C. Schedule:

1. Schedule work such that absorptive materials, including but not limited to porous insulations, paper-faced gypsum board, ceiling tile, and finish flooring, are not installed until they can be protected from rain and construction-related water.
2. Weather-proof as quickly as possible. Schedule installation of moisture-control materials, including but not limited to air barriers, flashing, exterior sealants and roofing, at the earliest possible time.

D. Testing for Moisture Content: Test moisture content of porous materials and absorptive materials to ensure that they are dry before sealing them into an assembly. Document and report results of testing. Where tests are not satisfactory, dry materials and retest. If satisfactory results cannot be obtained with retest, remove and replace with new materials.

1. Concrete: Moisture test prior to finish flooring application as specified in Division 09. Moisture test must be within manufacturer's installation parameters prior to installation of floor finish.

- a. ASTM D4263 Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
    - b. ASTM F1869 Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride
    - c. ASTM F2170 Test Method for Determining Relative Humidity in Concrete Floor Slabs Using In Situ Probes
  2. Wood: Moisture test as per ASTM D4444 - Standard Test Methods for Use and Calibration of Hand-Held Moisture Meters; unless otherwise indicated acceptable upper limits for wood products are < 20% at center of piece; < 15% at surface.
- E. Testing for Moisture Penetration:
1. Windows: Test as per ASTM E1105 Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference; unless otherwise indicated, acceptable upper limits are no leakage for 60 minutes.
  2. Exterior Walls:
    - a. Air tightness of the enclosure test: ASTM E779 Standard Test Method for Determining Air Leakage Rate by Fan Pressurization or ASTM E1827 Standard Test Methods for Determining Air tightness of Buildings Using an Orifice Blower Door; acceptable upper limits are 0.25 CFM/sf or less at 50 Pascal's.
    - b. Water Leakage: Review as per ASTM E2128 Standard Guide for Evaluating Water Leakage of Building Walls.

END OF SECTION 01 57 19.11 – INDOOR AIR QUALITY MANAGEMENT

## SECTION 01 57 19.12 – NOISE & ACOUSTICS MANAGEMENT

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 57 19.12 “Noise and Acoustics Management” includes:

1. Special requirements for noise and acoustics management during demolition, excavation, and construction operations.

#### 1.2 DEFINITIONS

- A. Ambient noise level: The total noise associated with a given environment, being usually a composite of normal or existing sounds from all sources near and far, excluding the noise source at issue.
- B. Daytime: The hours from 8 a.m. to 5 p.m. on weekdays and 8 a.m. to 5 p.m. on weekends and holidays.
- C. Nighttime: All non-daytime hours.
- D. Property line: The real or imaginary line along the ground surface and its vertical extension, which separates real property owned or controlled by one person from contiguous real property owned or controlled by another person or from any public right-of-way or from any public space.
- E. Receiving noise area: Any real property where people live or work and where noise is heard, excluding the project or source area.

### PART 2 - PRODUCTS (Not Used)

### PART 3 - EXECUTION

#### 3.1 NOISE MANGEMENT

- A. Noise Control: Perform demolition, excavation, and construction operations to minimize noise. Perform noise-producing work in less sensitive hours of the day or week as directed by the Contracting Officer.
- B. Repetitive and/or intermittent, high-level noise: Is to be limited to the extent possible. Permitted only during the Daytime.

1. Maximum permissible construction equipment noise levels at 50 feet:

<u>EARTHMOVING</u>	<u>dB(A)</u>	<u>MATERIALS HANDLING</u>	<u>dB(A)</u>
Front Loaders	75	Concrete Mixers	75
Backhoes	75	Concrete Pumps	75



Dozers	75	Cranes	75
Tractors	75	Derricks Impact	75
Scrapers	80	Pile Drivers	95
Graders	75	Jack Hammers	75
Trucks	75	Rock Drills	80
Pavers, Stationary	80	Pneumatic Tools	80
Pumps	75	Saws	75
Generators	75	Vibrators	75
Compressors	75		

C. Ambient Noise:

1. Maximum noise levels (dB) for receiving noise area at property line shall be as follows:

- |    |                                      |                                    |
|----|--------------------------------------|------------------------------------|
| a. | Residential receiving area           | Daytime: 65 dB<br>Nighttime: 45 dB |
| b. | Commercial/Industrial receiving area | Daytime: 67 dB<br>Nighttime: 65 dB |

2. In the event the existing local ambient noise level exceeds the maximum allowable receiving noise level (dB), the receiving noise level maximum for construction operations shall be adjusted as follows:

- |    |   |
|----|---|
| a. | Residential receiving area: Maximum 3 additional dB above the local ambient as measured at property line.               |
| b. | Commercial/Industrial receiving area: Maximum 5 additional dB above the local ambient as measured at the property line. |

### 3.2 FIELD QUALITY CONTROL

A. Assess potential effects of construction noise on park visitors and NPS staff in accordance with ASTM E1686 and as follows:

1. Ambient noise measurement: Measure at 100 feet beyond the construction limit at a height of at least four (4) feet above the immediate surrounding surface. Average the ambient noise level over a period of at least 15 minutes.

B. Monitor noise produced from construction operations in accordance with ASTM E1780.

END OF SECTION 01 57 19.12 – NOISE & ACOUSTICS MANAGEMENT

## SECTION 015723 - TEMPORARY STORM WATER POLLUTION PREVENTION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Construction disturbances one acre of soil disturbance and above require an NPDES and CDPHE permit and a Stormwater Pollution Prevention Plan (SWPPP) must be submitted to the Authority Having Jurisdiction (AHJ) for review and approval. This project is greater than one acre of soil disturbance.
- B. NPS Standards and Guidelines require that water quality be protected at all times to ensure compliance with the Organic Act. The Contractor shall prepare a Storm Water Pollution Prevention Plan (SWPPP) for each project subject to the requirements of the NPDES program and CDPHE.
- C. This Section includes implementing measures to prevent temporary storm water pollution during construction activities and preparation of a SWPPP.

#### 1.2 DEFINITIONS

- A. Environmental Pollution and Damage: The presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances; or degrade the utility of the environment for aesthetic, cultural, or historical purposes.
- B. SWPPP: Plan written specifically for project site with over one acre of disturbance, which identifies potential sources of pollution, practices to be used to reduce pollutants, and method to assure compliance. Plan shall be in conformance with this specification section and CDPHE requirements.

#### 1.3 SUBMITTALS

- A. After contract award and before the pre-construction conference, prepare and submit: A SWPPP in conformance with NPS and CDPHE guidelines and adherence to all applicable construction storm water management practices.

#### 1.4 QUALITY ASSURANCE

- A. The Contractor shall prepare and submit a plan to the Contracting Officer and CDPHE for review and concurrence.
- B. Orientation Meeting: The Contractor shall be responsible for arranging and conducting a SWPPP meeting/briefing to inform all parties scheduled to be on-site during the project of the measures to be implemented for storm water pollution prevention. This may be included as part of the Pre-Construction Meeting.

1. Installation of silt fences, storm drain protection, and all other forms of storm water pollution prevention control shall not begin until after this meeting has occurred.

## PART 2 - PRODUCTS

### 2.1 STORM WATER POLLUTION PREVENTION PLAN

#### A. Provide a SWPPP which includes the following information:

1. General Information Narrative: Site information, responsible parties, project scope, activities and materials with the potential to pollute storm water.
2. Provide details for the all specific Best Management Practices (BMPs) to be implemented for this project.
3. Vicinity map extending approximately one quarter mile beyond the boundaries of the construction site showing the construction site, surface water bodies, known springs and wetlands, known wells, general topography, and the anticipated discharge location(s) where the construction site's storm water discharges to a storm drain system or other water body. A U.S. Geological Survey (USGS) quad map may be used for showing the project site and a one-quarter mile extension beyond the property boundaries of the construction site.
4. Project site map, clearly show boundaries of the construction site and location of BMPs, including symbols for the location of BMPs. Map shall include surface water bodies, wetlands and tributaries, topography, storm drain system intake location, and SWPPP discharge points.
5. Spill prevention, including methods of containment and equipment and supplies to be stored on site for leaks and spills.
6. Implementation, inspection and maintenance schedule.
7. Any additional information required as part of the CDPHE stormwater permitting process.

### 2.2 EROSION CONTROL PRODUCTS:

#### A. Use of straw or rice products, including “certified weed free” products, shall not be permitted. Acceptable materials for erosion control blankets and sediment logs include excelsior or coir fiber products. Jute or cotton shall be used as netting in erosion control blankets and sediment logs; plastic netting is not permitted in blankets or sediment logs.

1. Acceptable manufactures for erosion control blankets and sediment logs include;
  - a. American Excelsior (Curlex)
  - b. Tensar
  - c. Approved Equal

#### B. Sediment Logs

1. Fully biodegradable.
2. Fiber: Great Lakes Aspen, naturally seed free, curled, interlocking fibers with barbed edges,

3. Netting: Totally encased, durable biodegradable tubular netting with knotted ends. Netting shall be burlap or other plant fiber. Biodegradable plastic is not acceptable.
4. Sediment log shall be Curlex Sediment Log as manufactured by American Excelsior Company, Arlington, TX, 76011, (800) 777-SOIL or approved equal.

C. Erosion Control Blankets

1. Blanket
  - a. Naturally seed free Great Lakes Aspen curled wood excelsior with 80% of the fiber  $\geq$  6-inches in length.
  - b. 100% biodegradable.
  - c. Excelsior wood fiber
  - d. Top and bottom of blanket covered with biodegradable jute netting.
  - e. Staples shall be 100% biodegradable with a U-shaped top.
  - f. Erosion Control Blanket shall be Curlex II FibreNet as manufactured by American Excelsior Company, Arlington, TX, 76011, (800) 777-SOIL or approved equal.
2. Staples
  - a. Staples shall be E-Staple as manufactured by American Excelsior Company, Arlington, TX, 76011, (800) 777-SOIL or approved equal.

## 2.3 LEAKS AND SPILLS

A. Plan shall include:

1. Standard Operating Procedures for minor spills, for paint, stain, solvent, glue, which are less than reportable quantities, including equipment and supplies to be stored on site.
2. Standard Operating Procedures for minor fuel or oil spills, which are less than 5 gallons, including equipment and supplies to be stored on site.
3. Standard Operating Procedures for small fuel or oil spills, 5 gallons to less than 25 gallons, including equipment and supplies to be stored on site.
4. Standard Operating Procedures significant fuel or oil spills, 25 gallons or more which are less than five gallons, including equipment and supplies to be stored on site.

## PART 3 - EXECUTION

### 3.1 ENVIRONMENTAL PROTECTION

- A. Protection of Natural Resources: Comply with applicable regulations and these specifications. Preserve the natural resources within the project boundaries and outside the limits of work performed under this Contract in their existing condition or restore to an equivalent or improved condition as approved by the Contracting Officer.
- B. Construction Zone: Arrange construction activities to minimize erosion to the maximum practical extent.
  1. Clearing, excavation, and grading shall be limited to those areas of the project site necessary for construction. Minimize the area exposed and unprotected.

### 3.2 UNDER-AN-ACRE STORM WATER POLLUTION PREVENTION PLAN

- A. Review and Acceptance: The Contractor and the Contracting Officer will jointly review the submitted SWPPP and agree to any needed revisions. The Contractor shall incorporate all revisions, sign, and submit the revised plan to the Contracting Officer. The final plan will be the document enforced on the project.
  - 1. The Contractor shall maintain a current copy of the SWPPP and all associated records and forms at the jobsite throughout the duration of the project.
  - 2. The SWPPP shall be available at all times for inspection and use of the Contracting Officer.
  - 3. Approval of Contractor's SWPPP will not relieve the Contractor of responsibility for compliance with applicable environmental regulations.
- B. Implementation: Implement the SWPPP as required throughout the construction period and maintain all BMPs in proper working order.
  - 1. Do not perform clearing and grubbing or earthwork until the SWPPP has been implemented.

### 3.3 PLAN REVISIONS

- A. Plan Revisions: It may be necessary to revise the SWPPP during construction to make necessary improvements, revisions, or to respond to unforeseen conditions noted during construction or site inspections.
- B. Negligence: Provide additional temporary BMPs made necessary by Contractor's errors or negligence at no additional cost to the Government.

### 3.4 EROSION CONTROL MEASURES

- A. Erosion control measures shall consist of any and all BMPs for storm water discharges, including but not limited to silt fencing, barrier protectors, straw bales, temporary soil retention blankets and stabilizers, excelsior drainage filters, sediment traps, berms, concrete wash-outs, hazardous material storage areas and waste management.
- B. Erosion control measures shall be used to contain only direct precipitation in the construction zone. The contained water shall be allowed to percolate into the ground or drain slowly through the drainage filter sediment traps.
- C. Reduce runoff velocity as well as direct surface runoff around and away from all fuel containment, storage, and borrow areas.
- D. Divert surface runoff around and away from cut and fill slopes.
- E. Excess water used for dust control shall be contained within the demolition areas by the erosion control measures.



- F. The Contractor shall prevent the deposition of materials onto paved areas. The Contractor shall inspect the paved areas for deposited materials weekly and remove the materials immediately.
- G. Furnish, install, maintain, and operate necessary control measures and other equipment necessary to prevent storm water pollution as described in the approved SWPPP.
- H. Before the work begins, sufficient equipment shall be available on the site to assure that the operation and adequacy of the SWPPP can be maintained.

### 3.5 MAINTENANCE OF TEMPORARY FACILITIES

- A. Ensure BMPs structures remain effective throughout excavation and grading operations. Relocate structures as necessary.
- B. Inspect control structures after each significant rainfall. Promptly repair breaches which occur.
- C. The Contractor shall remove entrapped sediment after each storm.

### 3.6 REPORTING

- A. If a discharge occurs or if the project receives a written notice or order from any regulatory agency, the Contractor will immediately notify the Contracting Officer and will file a written report to the AHJ within seven days of the discharge event, notice, or order. Corrective measures shall be implemented immediately following the discharge, notice, or order. The report to the AHJ shall contain the following items at a minimum:
  - 1. The date, time, location, nature of operation, and type of discharge, including the cause or nature of the notice or order.
  - 2. The BMPs deployed before the discharge event, or prior to receiving the notice or order.
  - 3. The date of deployment and type of BMPs deployed after the discharge event, or after receiving the notice or order, including additional BMPs installed or planned to reduce or prevent re-occurrence.
  - 4. An implementation and maintenance schedule for any affected BMPs.

### 3.7 SEDIMENT DISPOSAL

- A. Sediment excavated from BMPs shall be disposed on the site with general fill, or with topsoil. Sediment shall be allowed to dry out as required before reuse.
- B. Contractor shall place the sediment removed from traps and other structures where it will not enter a storm drain or watercourse and where it will not immediately reenter the basin.

### 3.8 REMOVAL OF TEMPORARY STORM WATER POLLUTION CONTROL MEASURES

- A. All temporary control measures shall be removed with permission of the Contracting Officer within 20 working days after final acceptance of the project, and/or once grading is completed and slopes have stabilized.

END OF SECTION 015723

## SECTION 01 67 00 - PRODUCT REQUIREMENTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 67 00 "Product Requirements" includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and environmental requirements.

#### 1.2 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.
- B. Basis-of-Design Product Specification: Where a specific manufacturer's product is named and accompanied by the words "basis of design," including make or model number or other designation, to establish the significant qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics for purposes of evaluating comparable products of additional manufacturers named in the specification.
- C. Definitions pertaining to sustainable development: As defined in ASTM E2114.
- D. Biobased Materials: As defined in the Farm Security and Rural Investment Act, for purposes of Federal procurement of biobased products, "biobased" means a "commercial or industrial product (other than food or feed) that is composed, in whole or in significant part, of biological products or renewable domestic agricultural materials (including plant, animal, and marine materials) or forestry materials." Biobased materials also include fuels, chemicals, building materials, or electric power or heat produced from biomass as defined by The Biomass Research and Development Act of 2000.
  - 1. Biobased content: The amount of biobased carbon in the material or product as a percentage of weight (mass) of the total organic carbon in the material or product.
- E. Chain-of-Custody: Process whereby a product or material is maintained under the physical possession or control during its entire life cycle.
- F. Environmentally preferable products: Products and services that have a lesser or reduced effect on the environment in comparison to conventional products and services. Refer to EPA's Final Guidance on Environmentally Preferable Purchasing for more information <http://www.epa.gov/epp/guidance/finalguidancetoc.htm>.
- G. Stewardship: Responsible use and management of resources in support of sustainability.
- H. Sustainability: The maintenance of ecosystem components and functions for future generations.

1. Recycled Content Materials: Products that contain pre-consumer or post-consumer materials as all or part of their feedstock. Recycled content claim shall be consistent with ISO 140001 Standard for the Use of Environmental Marketing Claims.
2. Rapidly Renewable Material: Material made from plants that are typically harvested within a ten-year cycle.
3. Regional Materials: Materials that are manufactured and extracted, harvested, or recovered within a radius of 500 miles from the Project location.

### 1.3 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

### 1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.
- B. Delivery and Handling:
  1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
  2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
  3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
  4. Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.
  5. Contractor is encouraged to obtain materials in biodegradable or recyclable/reusable packaging which uses the minimum amount of packaging possible.
- C. Storage:
  1. Store products to allow for inspection and measurement of quantity or counting of units.
  2. Store materials in a manner that will not endanger Project structure.
  3. Store products that are subject to damage by the elements, under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.
  4. Store cementitious products and materials on elevated platforms.
  5. Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.
  6. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
  7. Protect stored products from damage and liquids from freezing.
  8. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

## 1.5 PACKAGING

- A. Where Contractor has the option to provide one of the listed products or equal, preference shall be given to products with minimal packaging and easily recyclable packaging as defined in ASTM D5834.
- B. Maximize use of source reduction and recycling procedures outlined in ASTM D5834.

## 1.6 ENVIRONMENTALLY PREFERABLE PRODUCTS

- A. Provide environmentally preferable products to the greatest extent possible.
  - 1. To the greatest extent possible, provide products and materials that have a lesser or reduced effect on the environment considering raw materials acquisition, production, manufacturing, packaging, distribution, reuse, operation, maintenance, and/or disposal of the product.
  - 2. Eliminate the use of ozone depleting compounds during and after construction where alternative environmentally preferable products are available, consistent with either the Montreal Protocol and Title VI or the Clean Air Act Amendments of 1990, or equivalent overall air quality benefits that take into account life cycle impacts.
  - 3. Use products meeting or exceeding EPA's recycled content recommendations for EPA-designated products. Use materials with recycled content such that the sum of post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 10% (based on cost) of the total value of the materials in the project.

## 1.7 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
  - 1. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Contracting Officer.
  - 2. Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for Contracting Officer.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.
  - 1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
  - 2. Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.
  - 3. Refer to Divisions 02 through 49 Sections for specific content requirements and particular requirements for submitting special warranties.

- C. Submittal Time: Comply with requirements in Division 01 Section 01 77 00 "Closeout Procedures."

## PART 2 - PRODUCTS

### 2.1 PRODUCT SELECTION PROCEDURES

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
  2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
  3. Government reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
  4. Where products are accompanied by the term "as selected," Contracting Officer will make selection.
  5. Where products are accompanied by the term "match sample," sample to be matched is Governments.
  6. Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.
- B. Product Selection Procedures:
1. Product: Where Specifications name a single product and manufacturer, provide the named product that complies with requirements or approved equal.
  2. Manufacturer/Source: Where Specifications name a single manufacturer or source, provide a product by the named manufacturer or source that complies with requirements or approved equal.
  3. Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements or approved equal.
  4. Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements or approved equal.
  5. Available Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed, or an unnamed product, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
  6. Available Manufacturers: Where Specifications include a list of manufacturers, provide a product by one of the manufacturers listed, or an unnamed manufacturer, that complies with requirements. Comply with provisions in Part 2 "Comparable Products" Article for consideration of an unnamed product.
  7. Product Options: Where Specifications indicate that sizes, profiles, and dimensional requirements on Drawings are based on a specific product or system, provide the specified product, system, or approved equal.



8. Basis-of-Design Product: Where Specifications name a product and include a list of manufacturers, provide the specified product or a comparable product by one of the other named manufacturers, or approved equal. Drawings and Specifications indicate sizes, profiles, dimensions, and other characteristics that are based on the product named.
9. Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches the sample. Contracting Officers decision will be final on whether a proposed product matches.
  - a. If no product available within specified category matches and complies with other specified requirements, comply with provisions in Part 2 "Product Substitutions" Article for proposal of product.
10. Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.
  - a. Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, Contracting Officer will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.
  - b. Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, Contracting Officer will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

## 2.2 COMPARABLE PRODUCTS

- A. Conditions: Contracting Officer will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Contracting Officer will return requests without action, except to record noncompliance with these requirements:
  1. Evidence that the proposed product does not require revisions to the Contract Documents, that it is consistent with the Contract Documents and will produce the indicated results, and that it is compatible with other portions of the Work.
  2. Detailed comparison of significant qualities of proposed product with those named in the Specifications. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.
  3. Evidence that proposed product provides specified warranty.
  4. List of similar installations for completed projects with project names and addresses and names and addresses of architects and Contracting Officers, if requested.
  5. Samples, if requested.

## PART 3 - EXECUTION

### 3.1 PROTECTION AFTER INSTALLATION

- A. Provide adequate coverings as necessary to protect installed materials from damage resulting from natural elements, traffic, and subsequent construction. Remove when no longer needed.

END OF SECTION 01 67 00 - PRODUCT REQUIREMENTS

## SECTION 01 73 29 - CUTTING AND PATCHING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 73 29 "Cutting and Patching" includes procedural requirements for cutting and patching on buildings without Historic Fabric

#### 1.2 QUALITY ASSURANCE

- A. Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.
- B. Operational Elements: Do not cut and patch operating elements and related components in a manner that results in reducing their capacity to perform as intended or that results in increased maintenance or decreased operational life or safety.
  - 1. Operational elements inside the pump house are all anticipated to be replaced. Sequence of construction shall ensure that new operational elements shall be protected from damage from removal of pump house roof.
- C. Miscellaneous Elements: Do not cut and patch miscellaneous elements or related components in a manner that could change their load-carrying capacity, that results in reducing their capacity to perform as intended, or that results in increased maintenance or decreased operational life or safety.
- D. Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in Contracting Officer's opinion, reduce the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

#### 1.3 SUBMITTAL

- A. Cutting and Patching Plan: Submit a Plan describing procedures at least 10 days before the time cutting and patching will be performed, requesting approval to proceed. Include the following information:
  - 1. Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.
  - 2. Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.
  - 3. Products: List products to be used and firms or entities that will perform the Work.
  - 4. Dates: Indicate when cutting and patching will be performed.

5. Utility Services and Mechanical/Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted.
6. Structural Elements: Where cutting and patching involve adding reinforcement to structural elements, submit details and engineering calculations showing integration of reinforcement with original structure. Do not cut and patch structural elements in a manner that could change their load carrying capacity or increase deflection.
7. Contracting Officer's: Obtain approval of cutting and patching plan before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.
8. Contractor shall submit a written notification if, during the work of demolition and cutting, conditions are discovered which significantly vary from those shown in the drawings. Information regarding existing construction or conditions is based on available documentation and limited probe and field observations, which may or may not truly reflect existing conditions.

#### 1.4 WARRANTY

- A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void existing warranties.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  1. If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.
  1. Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.
  2. Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Temporary Support: Provide temporary support of Work to be cut.
- B. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- C. Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- D. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

### 3.3 PERFORMANCE

- A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.
  - 1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  - 1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  - 2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
  - 3. Concrete: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
  - 4. Excavating and Backfilling: Comply with requirements in applicable Division 31 Sections where required by cutting and patching operations.
  - 5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
  - 6. Proceed with patching after construction operations requiring cutting are complete.
- C. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.
  - 1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
  3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
  4. Ceilings: Patch, repair, or re-hang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.
  5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a weather tight condition.
- D. Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION 01 73 29 - CUTTING AND PATCHING



## SECTION 01 73 40 - EXECUTION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 73 40 "Execution" includes general procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Examination.
  - 2. Preparation.
  - 3. Construction layout.
  - 4. Field engineering and surveying.
  - 5. General installation of products.
  - 6. Quantity Surveys.
  - 7. Progress cleaning.
  - 8. Starting and adjusting.
  - 9. Protection of installed construction.
  - 10. Correction of the Work.

#### 1.2 SUBMITTALS

- A. Certificates: Submit certificate signed by land surveyor or professional engineer certifying that location and elevation of improvements comply with requirements.
- B. Landfill Receipts: Submit copy of receipts issued by a landfill facility, licensed to accept hazardous materials, for hazardous waste disposal.
- C. Certified As-built Surveys: Submit two copies signed by land surveyor or professional engineer.
- D. Quantity Surveys: Submit electronic copies showing quantities of work performed and actual construction completed and in place.

#### 1.3 QUALITY ASSURANCE

- A. Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing land-surveying services of the kind indicated.

## PART 2 - PRODUCTS (Not Used)

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Existing Conditions, Utilities and Site Improvements: The existence and location of site improvements, underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities and other construction affecting the Work.
  - 1. Before construction, verify the existence and location and elevations of existing construction including mechanical and electrical systems and services, sanitary sewer, storm sewer, and water-service piping.
  - 2. Before construction, verify the location and points of connection of utility services.
  - 3. Furnish location data for work related to Project that must be performed by public utilities serving Project site.
- B. Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 2. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
  - 3. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
  - 4. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.
- C. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to the Contracting Officer in accordance with Section 01 31 00 "Project Management and Coordination".

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the existing benchmarks. If discrepancies are discovered, notify Contracting Officer promptly.
- B. General: Engage a land surveyor or professional engineer to lay out the Work using accepted surveying practices.
  - 1. Establish benchmarks and control points to set lines of construction and elsewhere as needed to locate each element of Project.
  - 2. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
  - 3. Inform installers of lines and levels to which they must comply.
  - 4. Check the location, level and plumb, of every major element as the Work progresses.
  - 5. Notify the Contracting Officer when deviations from required lines and levels exceed allowable tolerances.
  - 6. Close site surveys with an error of closure equal to or less than the established standard.
- C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.
- D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.
- E. Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by NPS.

### 3.4 FIELD ENGINEERING

- A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations. Controls that are destroyed by Contractor will be replaced by the Contractor at their expense.
  - 1. Existing Monuments: All benchmarks, land corners, and triangulation points, established by other surveys, existing within the construction area shall be preserved. If existing monuments interfere with the work, secure written permission before removing them.
- B. Benchmarks: Establish and maintain a minimum of two permanent benchmarks on Project site, referenced to data established by survey control points. Comply with NPS requirements for type and size of benchmark.
  - 1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

- C. Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

### 3.5 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
  - 2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
  - 3. Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.
- B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
- C. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- D. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.
- E. Tools and Equipment: Do not use tools or equipment that produce harmful noise levels.
- F. Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.
- G. Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.
  - 1. Mounting Heights: Where mounting heights are not indicated, mount components at heights directed by the Contracting Officer.
  - 2. Allow for building movement, including thermal expansion and contraction.
  - 3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- H. Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, arrange joints for the best visual effect. Fit exposed connections together to form hairline joints.
- I. Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

### 3.6 QUANTITY SURVEYS

- A. Quantity surveys shall be conducted, and the data derived from these surveys shall be used in computing the quantities of work performed and the actual construction completed and in place.
- B. The Contractor shall conduct the original and final surveys and surveys for any periods for which progress payments are requested. All these surveys shall be conducted under the direction of the Contracting Officer unless the Contracting Officer waives this requirement in a specific instance. The Government shall make such computations as are necessary to determine the quantities of work performed or finally in place. The Contractor shall make the computations based on the surveys for any periods for which progress payments are requested.
- C. Promptly upon completing a survey, the Contractor shall furnish the originals of all field notes and all other records relating to the survey or to the layout of the work to the Contracting Officer, who shall use them as necessary to determine the amount of progress payments. The Contractor shall retain copies of all such material furnished to the Contracting Officer.

### 3.7 PROGRESS CLEANING

- A. General: Clean Project site and work areas daily, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.
  - 1. Comply with requirements in NFPA 241 for removal of combustible waste materials and debris.
  - 2. Do not hold materials more than 7 days during normal weather or 3 days if the temperature is expected to rise above 80 deg F.
  - 3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.
- B. Site: Maintain Project site free of waste materials and debris.
- C. Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.
  - 1. Remove liquid spills promptly.
  - 2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate.
  - 3. Contractor shall provide progress cleaning that minimizes sources of food, water, and harborage available to pests.
- D. Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.
  - 1. Utilize non-toxic cleaning materials and methods.
    - a. Comply with GS 37 for general purpose cleaning and bathroom cleaning.
    - b. Use natural cleaning materials where feasible. Natural cleaning materials include:

- 1) Abrasive cleaners: substitute 1/2 lemon dipped in borax.
  - 2) Ammonia: substitute vinegar, salt and water mixture, or baking soda and water.
  - 3) Disinfectants: substitute 1/2 cup borax in gallon water.
  - 4) Drain cleaners: substitute 1/4 cup baking soda and 1/4 cup vinegar in boiling water.
  - 5) Upholstery cleaners: substitute dry cornstarch.
- E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- F. Exposed Surfaces : Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.
- G. Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.
- H. During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.
- I. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.
- J. Limiting Exposures: Supervise construction operations to assure that no part of the construction completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.
- K. Final Cleaning: At completion of Work, remove all remaining waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all exposed surfaces; leave Project clean and ready for occupancy.
1. Provide final cleaning in accordance with ASTM E1971.

### 3.8 STARTING AND ADJUSTING

- A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.
- B. Adjust operating components for proper operation without binding. Adjust equipment for proper operation.
- C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
- D. Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Division 01 Section 01 40 00 "Quality Requirements."



### 3.9 PROTECTION OF INSTALLED CONSTRUCTION

- A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.
- B. Comply with manufacturer's written instructions for temperature and relative humidity.

### 3.10 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction at the Contractors expense. Restore damaged substrates and finishes. Comply with requirements in Division 01 Section 01 73 29 "Cutting and Patching."
  - 1. Repairing or removing and replacing includes, but is not limited to, replacing defective parts, replacing non-compliant construction, replacing cracked concrete, replacing deficient asphalt, replacing utilities, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Restore permanent facilities used during construction to their specified condition.
- C. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.
- D. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
- E. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION 01 73 40 - EXECUTION

## SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 74 19 "Construction Waste Management and Disposal" includes administrative and procedural requirements for the following:
  - 1. Salvaging nonhazardous demolition and construction waste.
  - 2. Recycling nonhazardous demolition and construction waste.
  - 3. Disposing of nonhazardous demolition and construction waste.

#### 1.2 DEFINITIONS

- A. Construction Waste: Building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
- B. Demolition Waste: Building and site improvement materials resulting from demolition or selective demolition operations.
- C. Solid Waste: Garbage, debris, sludge, or other discharged material (except hazardous waste) including solid, liquid, semisolid, or contained gaseous materials resulting from domestic, industrial, commercial, mining, or agricultural operations.
- D. Debris: Non-hazardous solid waste generated during the construction, demolition, or renovation of a structure which exceeds 2.5 inch (60 mm) particle size that is: a manufactured object; plant or animal matter; or natural geologic material (e.g. cobbles and boulders). A mixture of debris and other material such as soil or sludge is also subject to regulation as debris if the mixture is comprised primarily of debris by volume, based on visual inspection.
- E. Disposal: Removal off-site of demolition and construction waste and subsequent sale, recycling, reuse, or deposit in landfill or incinerator acceptable to authorities having jurisdiction.
- F. Environmental Pollution and Damage: The presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances; or degrade the utility of the environment for aesthetic, cultural, or historical purposes.
- G. Garbage: Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.
- H. Hazardous Materials: Any material that is regulated as a hazardous material in accordance with 49 CFR 173, requires a Material Safety Data Sheet (MSDS) in accordance with 29 CFR 1910.1200, or which during end use, treatment, handling, storage, transportation or disposal meets or has components which meet or have the potential to meet the definition of a Hazardous Waste in accordance with 40 CFR 261.

- I. Recycle: Recovery of demolition or construction waste for subsequent processing in preparation for reuse.
- J. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

### 1.3 PERFORMANCE GOALS

- A. General: As a goal, this project shall minimize the creation of construction, deconstruction, and demolition waste to protect and restore natural habitat and resources. Factors that contribute to waste such as over packaging, improper storage, ordering error, poor planning, breakage, mishandling, and contamination shall be minimized. A Waste Management Plan shall be developed to ensure that to the extent practical, existing site and building materials are reused, salvaged, or recycled. Waste disposal in landfills shall be minimized.
- B. Salvage /Recycle Goals: To extent practical, develop waste management plan that results in end-of-Project rates for salvage/recycling of 50 percent by weight of total waste generated by the Work. The following waste categories, at a minimum, shall be diverted from a landfill:
  - 1. Land clearing debris (chipped debris can be used on site for mulch or erosion control)
  - 2. Clean dimensional wood, palettes
  - 3. Plywood, OSB, and particle board
  - 4. Concrete (can be ground and used for fill on site)
  - 5. Asphaltic concrete (can be ground and used for fill on site)
  - 6. Cardboard, paper, packaging, newsprint
  - 7. Metals (from banding, stud trim, piping, rebar, roofing, other trim, steel, iron, galvanized sheet steel, stainless steel, aluminum, copper, zinc, lead, brass, and bronze)
  - 8. Gypsum drywall—unpainted
  - 9. Non-hazardous paint and paint cans
  - 10. Beverage containers: Aluminum, glass, and plastic containers
  - 11. Insulation
  - 12. Ceiling grid and tiles
  - 13. Ductwork
  - 14. Wiring
  - 15. Other mixed construction and demolition waste as appropriate
- C. If any additional waste materials encountered during the deconstruction/demolition or construction phase are found to contain lead, asbestos, PCBs, (such as fluorescent lamp ballasts), or other harmful substances, they are to be handled and removed in accordance with local, state, and federal laws and requirements concerning hazardous waste.
- D. Salvage/Recycle Requirements: Government goal is to salvage and recycle as much nonhazardous demolition and construction waste as possible.

#### 1.4 SUBMITTALS

- A. Waste Management Plan: After award of the contract and prior to the scheduled Pre-Construction Conference, the Contractor shall submit a draft Waste Management Plan to the Contracting Officer for approval. Submit electronic copy of the plan. Revise and resubmit Plan as required by the Contracting Officer. Approval of the Contractor's Plan will not relieve the Contractor of responsibility for compliance with applicable environmental regulations.
- B. Landfill and Incinerator Disposal Records: For hazardous materials only indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.
- C. Closeout Submittals
  - 1. With Closeout Submittals, submit a summary of the Project Waste Management Plan worksheet for solid waste disposal and diversion.
    - a. Include the following information:
      - 1) Quantity of Construction and Demolition Waste Sent to Landfill. Quantity may be recorded in lbs, tons, cy compacted or cy uncompacted.
      - 2) Quantity of Construction Waste and Demolition Waste salvaged or recycled. Itemize type of waste and include quantity of each. Itemized items may include: asphalt, wood pallets, etc.
      - 3) Waste Reduction Calculations: Calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.

#### 1.5 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Waste Management Meeting: Conduct separate meeting or cover in the Pre-Construction Conference and comply with requirements in Section 01 31 00 "Project Management and Coordination." Review methods and procedures related to waste management including, but not limited to, the following:
  - 1. Review and discuss waste management plan including responsibilities of Waste Management Coordinator.
  - 2. Review and finalize procedures for materials separation and verify availability of containers and bins needed to avoid delays.
  - 3. Review procedures for periodic waste collection and transportation to recycling and disposal facilities.
  - 4. Review waste management requirements for each trade.

## PART 2 - PRODUCTS

### 2.1 WASTE MANAGEMENT PLAN

- A. General: Develop plan consisting of waste identification and waste reduction work plan.
- B. Waste Identification: Indicate anticipated types and quantities of demolition, site-clearing and construction waste generated by the Work.
- C. Waste Reduction Work Plan: List each type of waste and whether it will be salvaged, recycled, or disposed of in landfill or incinerator.
  - 1. Salvaged Materials for Reuse: List materials that will be salvaged and reused in this Project.
  - 2. Recycled Materials: List materials that will be recycled in this Project.
  - 3. Disposed Materials: Indicate how and where materials will be disposed of.
  - 4. Handling and Transportation Procedures: Include method that will be used for separating recyclable waste including sizes of containers, container labeling, and designated location on Project site where materials separation will be located.

## PART 3 - EXECUTION

### 3.1 PLAN IMPLEMENTATION

- A. General: Implement waste management plan as approved by the Contracting Officer. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.
- B. Waste Management Coordinator: Identify a waste management coordinator to be responsible for implementing, monitoring, and reporting status of waste management work plan. Coordinator shall be present at Project site full time for duration of Project.
- C. The Contractor shall establish contacts with local recycling and reuse companies to set up the lines of responsibility. Contractor shall be responsible for coordinating with these companies in terms of identifying materials, pickup schedules, and standard quality for recycled materials.
- D. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
- E. Separation facilities:
  - 1. The Contractor shall designate and the Contracting Officer shall approve a specific area or areas to facilitate separation of materials for potential reuse, salvage, recycling, and return.
  - 2. Waste and recycling bins are to be placed near each other, and close to the point of waste generation but out of the traffic pattern.
  - 3. Recycling and waste bin areas are to be kept neat and clean and clearly marked in order to avoid co-mingling of materials.

4. Bins shall be protected during non-working hours from off-site contamination.
  5. The garbage dumpsters should be checked periodically to monitor recyclables being thrown away or if there are undocumented materials that could be recycled.
- F. Materials handling procedures: Materials to be recycled shall be protected from contamination and shall be handled, stored, and transported in a manner that meets the requirements set by the designated facilities for acceptance. Establish a defined area for the operations of each trade, especially woodcutting so that off-cuts will be kept in one area and can be sorted by dimension for future reuse.

### 3.2 SALVAGING DEMOLITION WASTE

- A. Salvaged Items: No items to be salvaged by the Contractor.
- B. Salvaged Items for Sale and Donation: Not permitted on Project site.

### 3.3 RECYCLING DEMOLITION AND CONSTRUCTION WASTE, GENERAL

- A. General: Recycle paper and beverage containers used by on-site workers.
- B. Procedures: Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at Project site to the maximum extent practical.
  1. Provide appropriately marked containers or bins for controlling recyclable waste until they are removed from Project site. Include list of acceptable and unacceptable materials at each container and bin.
    - a. Inspect containers and bins for contamination and remove contaminated materials if found.
  2. Stockpile processed materials on-site without intermixing with other materials. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  3. Stockpile materials away from construction area. Do not store within drip line of remaining trees.
  4. Store components off the ground and protect from the weather.
  5. Remove recyclable waste off Governments property and transport to recycling receiver or processor.

### 3.4 RECYCLING DEMOLITION WASTE

- A. Asphaltic Concrete Paving: Break up and transport paving to asphalt-recycling facility.
  1. Crush asphaltic concrete paving and screen to comply with requirements in Division 31 Section "Earth Moving".
- B. Concrete: Remove reinforcement and other metals from concrete and sort with other metals.
  1. Pulverize concrete to maximum 1-1/2-inch size.



### 3.5 RECYCLING CONSTRUCTION WASTE

#### A. Packaging:

1. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store in a dry location.
2. Polystyrene Packaging: Separate and bag materials.
3. Pallets: As much as possible, require deliveries using pallets to remove pallets from Project site. For pallets that remain on-site, break down pallets into component wood pieces and comply with requirements for recycling wood.
4. Crates: Break down crates into component wood pieces and comply with requirements for recycling wood.

#### B. Site-Clearing Wastes: Chip brush, branches, and trees at landfill facility.

#### C. Wood Materials:

1. Clean Cut-Offs of Lumber: Grind or chip into small pieces.
2. Clean Sawdust: Bag sawdust that does not contain painted or treated wood.

### 3.6 DISPOSAL OF WASTE

#### A. General: Except for items or materials to be salvaged, recycled, or otherwise reused, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.

1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

#### B. Burning: Do not burn waste materials.

#### C. Disposal: Transport waste materials off Government's property and legally dispose of them.

END OF SECTION 01 74 19 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

## SECTION 01 77 00 - CLOSEOUT PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 77 00 "Closeout Procedures" includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
  - 1. Project Record Drawings.
  - 2. Closeout Submittals.
  - 3. Substantial Completion and Final Inspection.
  - 4. Final Acceptance of the Work.
  - 5. Warranties.
  - 6. Final Cleaning.

#### 1.2 PROJECT RECORD DRAWINGS

- A. Maintain one complete full-size set of contract drawings and one full-size set of vendor-supplied drawings. Clearly mark changes, deletions, and additions using National Park Service drafting standards to show actual construction conditions. Show additions in red, deletions in green and special instructions in blue.
- B. Keep record drawings current. Make record drawings available to the Contracting Officer for inspection at the time of monthly progress payment requests. If project record drawings are not current, the Contracting Officer may retain an appropriate amount of the progress payment.
- C. On completion of the total project, submit complete record drawings. Include all shop drawings, sketches, and additional drawings that are to be included in the final set, with clear instructions showing the location of these drawings.
  - 1. Submittal shall include electronic scans of all submitted physical documents.
  - 2. Contractor may elect to maintain electronic as builts. These may be submitted in PDF form in place of scanned hardcopies.
  - 3. Contractor shall do one or the other, not both, to avoid information occurring on one version of the record drawings and not the other version.

#### 1.3 CLOSEOUT SUBMITTALS

- A. A list of closeout requirements is attached at the end of the Division 1 specifications. The intent is to provide an overall summary of requirements and not a comprehensive list. The terms and conditions of the contract require meeting the requirements of the individual specification sections regardless of what is included on the list. Submit the following before requesting final inspection:
  - 1. Submit specific warranties, guarantees, workmanship bonds, final certifications, and similar documents.

2. Submit NPS required forms for occupancy, Fire Sprinkler/Alarm acceptance, and any other similar forms or certificates.
3. Submit Project Record Documents and operation and maintenance manuals and similar final record information.
4. Environmental Record Documents: As specified as follows:
  - a. IAQ Management Plan: As specified in Section 01 57 19.11 "Indoor Air Quality (IAQ) Management".
  - b. Product Data for filtration media: As specified in Section 01 57 19.11 "Indoor Air Quality (IAQ) Management".
  - c. Moisture Control inspections and reports: As specified in Section 01 57 19.11 "Indoor Air Quality (IAQ) Management".
  - d. MSDS Data: As specified in Section 01 57 19.11 "Indoor Air Quality (IAQ) Management" and Section 01 81 13 "Sustainable Design Requirements".
  - e. Chain-of-Custody Data: As specified in Section 01 81 13 "Sustainable Design Requirements".
  - f. Final Summary Of Solid Waste Disposal And Diversion: As specified in Section 01 74 19 "Construction Waste Management".
  - g. Commissioning Report: As specified in Section 01 91 14 "Total Building Commissioning".
5. Submit a summary of the Project Waste Management Plan worksheet for solid waste disposal and diversion. Include the following information:
  - a. Quantity of Construction and Demolition Waste Sent to Landfill. Quantity may be recorded in lbs, tons, cy compacted or cy uncompacted.
  - b. Quantity of Construction Waste and Demolition Waste salvaged or recycled. Itemize type of waste and include quantity of each. Itemized items may include: asphalt, wood pallets, etc.
  - c. Waste Reduction Calculations: Calculated end-of-Project rates for salvage, recycling, and disposal as a percentage of total waste generated by the Work.
6. Posted Operating Instructions: As specified in the individual sections. Furnish operating instructions attached to or posted adjacent to equipment. Include wiring diagrams, control diagrams, control sequence, start-up, adjustment, operation, lubrication, shut-down, safety precautions, procedures in the event of equipment failure, and other items of instruction recommended by the manufacturer.
7. Deliver tools, spare parts, extra materials, and similar items to location designated by Contracting Officer. Label with manufacturer's name and model number where applicable.
  - a. Special Tools: One set of special tools required to operate, adjust, dismantle, or repair equipment. Special tools are those not normally found in possession of mechanics or maintenance personnel.
8. Keys and Keying Schedule: Submit all keys including duplicates. Wire all keys for each lock securely together. Tag and plainly mark with lock number, equipment identification, or panel or switch number, and indicate location, such as building and room name or number.
9. Make final changeover of permanent locks and deliver keys to Contracting Officer. Advise Park personnel of changeover in security provisions.
10. Submit approved pre-functional checklists and functional performance testing reports from the commissioning documentation.
  - a. Equipment start-up requires coordination with the commissioning process. Refer to Section 01 91 14 "Total Building Commissioning" Equipment shall not be "temporarily" started for commissioning.
11. Submit test and balance report.

12. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
13. Complete final cleaning requirements, including touchup painting.
14. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
15. Instruct NPS personnel in operation, adjustment, and maintenance of products, equipment, and systems.

#### 1.4 SUBSTANTIAL COMPLETION AND FINAL INSPECTION

- A. When project, or designated portion of project, is substantially complete, request in writing a final inspection. Upon receipt of written request that project is substantially complete, the Contracting Officer will proceed with inspection within 10 days of receipt of request or will advise the Contractor of items that prevent the project from being designated as substantially complete.
- B. If, following final inspection, the work is determined to be substantially complete, Contracting Officer will prepare a Punch List to be corrected before final acceptance and issue a Letter of Substantial Completion. Contractor shall complete the work described on the Punch List within 30 calendar days, as weather permits. If the Contractor fails to complete the work within this time frame, the Contracting Officer may either replace or correct the work with an appropriate reduction in the contract price or charge for re-inspection costs in accordance with the Inspection of Construction clause of the contract.
- C. If, following final inspection, the work is not determined to be substantially complete; Contracting Officer will notify Contractor in writing. After completing work, Contractor shall request a new final inspection. All re-inspection costs may be charged against the Contractor in accordance with the Inspection of Construction clause of the contract.
- D. Construction related activities outside the approved limits of construction are prohibited. Any construction related activities, such as but not limited to; construction access, grading, fill, tie back grades, trenching and improvements outside the approved limits of disturbance that requires repair or remediation as determined by the Contracting Officer shall be completed at the Contractor's own expense.

#### 1.5 FINAL ACCEPTANCE OF THE WORK

- A. Prior to requesting inspection for verification of completion of all outstanding items:
  1. Complete commissioning requirements of Section 01 91 14 "Total Building Commissioning", unless approved in writing by the Contracting Officer. Exceptions to this are required seasonal and approved deferred testing.
- B. After all deficiencies have been corrected, a Letter of Final Acceptance will be issued.

## 1.6 WARRANTIES

- A. Submittal Time: Submit written warranties on request of Contracting Officer for designated portions of the Work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- C. Provide additional copies of each warranty to include in operation and maintenance manuals.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. See Section 01 73 40 "Execution" for information on cleaning agents.

## PART 3 - EXECUTION

### 3.1 FINAL CLEANING

- A. General: Provide 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: 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 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.
    - g. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
    - h. Sweep concrete floors broom clean in unoccupied spaces.

- i. 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.
  - j. Remove labels that are not permanent.
  - k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.
    - 1) Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.
  - l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
  - m. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
  - n. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
  - o. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
  - p. Leave Project clean and ready for occupancy.
- C. Pest Control: Make a final inspection and rid Project of rodents, insects, and other pests.
- D. Waste Disposal: Comply with requirements of Division 01 Section 01 74 19 "Construction Waste Management and Disposal."

END OF SECTION 01 77 00 - CLOSEOUT PROCEDURES



## SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 78 23 “Operation and Maintenance Data” includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:
  - 1. Manuals, General.
  - 2. Operation and maintenance information for systems, subsystems, and equipment, products, materials and finishes.
- B. See Divisions 02 through 49 Sections for additional operation and maintenance manual requirements for the Work in those Sections.

#### 1.2 SUBMITTALS

- A. Draft Manual: Submit in draft form at least 15 days before final inspection. Contracting Officer will return copy with comments within 15 days of receipt.
  - 1. Format: Submit draft operations and maintenance manuals in PDF electronic file format or in hardcopy format.
    - a. PDF electronic file. Assemble each manual into a composite electronic file. Submit on digital media acceptable to Contracting Officer.
    - b. Hardcopy, submit one copy.
- B. Final Manual: Correct or modify each manual to comply with Contracting Officer’s comments and submit final corrected manual within 15 days of receipt of Contracting Officers comments.
  - 1. Format: Submit final operations and maintenance manuals in PDF electronic file format and hardcopy format.
    - a. PDF electronic file. Assemble manual into a composite electronic file with clearly labelled index/bookmarks. Submit on digital media acceptable to Contracting Officer.
    - b. Hardcopy, submit three copies.
    - c. Hardcopy, submit four copies.

#### 1.3 QUALITY ASSURANCE

- A. Coordinate with Section 01 91 14 “Total Building Commissioning.” The Commissioning Agent shall review the Operation and Maintenance Manuals for systems that were commissioned.

## PART 2 - PRODUCTS

### 2.1 MANUALS, GENERAL

A. Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

1. Project Title.
2. Location.
3. Park.
4. Contract Number.
5. Prime Contractors Name and Address.
6. All subcontractors' names and addresses including portions of project completed by each subcontractor.
7. Date of Substantial Completion.

B. Manual Contents:

1. Contractor shall provide both electronic and hard copy versions of the Operations and Maintenance Manuals.
2. Binders: White, commercial quality, hard back, 3-ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic window sleeve on front and spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.
  - a. Cover Sheet: Identify each binder on front and spine, with the project title, location, park, contract number, prime contractor's name and address, and date of substantial completion. Insert cover sheet into clear plastic view pocket on front of binder. Insert sheet into clear plastic view pocket on spine with title "OPERATION AND MAINTENANCE MANUAL," and Project title or name.
  - b. Data: Fill binders to no more than 75 percent of capacity. Punch holes shall not obscure any data.
  - c. Manufacturers' Data: Provide originals for color or copyrighted data. Black and white data may be originals or clean, good quality reproductions. Copies produced by facsimile transmission and sheets with stamps will not be acceptable. Include only sheets that apply to items installed.
  - d. Vendor Furnished As-Built Drawings: Maximum 24-inch by 36-inch sheets with minimum character or lettering size of 1/8 inch. Reduced-size reproductions may be provided instead of full-size drawings if the reproductions are clear and legible. If reduced-size drawings are used, identify as "REDUCED SIZE" and provide graphic scales, if applicable.
  - e. Custom Data: Data supplemented by drawings and schematics necessary to describe systems adequately.
  - f. Schedules: Schedules reflecting final, as-installed conditions.
  - g. Data that is poorly reproduced or in any way illegible will be rejected.
3. Drawings:
  - a. If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.
  - b. If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes.

4. PDFs
  - a. PDFs shall be clearly organized and labelled. This may be achieved by keeping component PDFs separate and the file name clearly identifying the subject. OR This may be achieved in a single comprehensive PDF that is indexed/bookmarked with clear labelling such that the user may jump to a specific subject with a couple clicks. Contractor shall confirm strategy with Contracting Officer prior to submittal of O&M manual.
  - b. Final PDFs shall be submitted on a clearly labeled thumb drive and directly through an FTP site for park download.

## 2.2 OPERATION AND MAINTENANCE INFORMATION FOR SYSTEMS AND EQUIPMENT

### A. Operation Requirements

1. Content: In addition to requirements in this Section, include operation data required in individual Specification Sections and equipment descriptions, operating standards, operating procedures, operating logs, wiring and control diagrams, and license requirements.
2. Descriptions: Include the following:
  - a. Product name and model number.
  - b. Manufacturer's name.
  - c. Equipment identification with serial number of each component.
  - d. Equipment function.
  - e. Operating characteristics.
  - f. Limiting conditions.
  - g. Performance curves.
  - h. Engineering data and tests.
  - i. Complete nomenclature and number of replacement parts.
3. Operating Procedures: Include start-up, break-in, and control procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; and required sequences for electric or electronic systems.
4. Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.
5. Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

### B. Maintenance Requirements for Systems and Equipment

1. Content: For each system, subsystem, and piece of equipment not part of a system, include source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below.
2. Source Information: For each product, list name, address, and telephone number of Installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.
3. Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including maintenance instructions, drawings and diagrams for maintenance, nomenclature of parts and components, and recommended spare parts for each component part or piece of equipment:

4. Maintenance Procedures: Include test and inspection instructions, troubleshooting guide, disassembly instructions, and adjusting instructions, that detail essential maintenance and environmental procedures.
5. Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.
6. Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.
7. Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.
8. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

## 2.3 PRODUCT MAINTENANCE INFORMATION

- A. Source Information: For each product, list name, address, and telephone number of installer or supplier and maintenance service agent.
- B. Product Information: Include the following, as applicable:
  1. Product name and model number.
  2. Manufacturer's name.
  3. Color, pattern, and texture.
  4. Material and chemical composition.
  5. Reordering information for specially manufactured products.
- C. Environmental Requirements
  1. Identify environmentally preferable products incorporated into the Project. Include: product model; manufacturer's name, address, phone, and website; and local technical representative, if any
    - a. Describe maintenance procedures associated with environmentally preferable materials and systems.
    - b. Material Safety Data Sheets: Include MSDSs as specified.
- D. Maintenance Procedures: Include manufacturer's written recommendations and inspection procedures, types of cleaning agents, methods of cleaning, schedule for cleaning and maintenance, and repair instructions.
- E. Repair Materials and Sources: Include lists of materials and local sources of materials and related services.
- F. Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. At start of project, begin accumulating operation and maintenance data. Install all data in binders within 30 days after delivery of items. As custom written data and test results are produced, add them to the operation and maintenance data file.
- B. A list of Operation and Maintenance requirements has been attached at the end of Division 01 specifications. The intent is to provide an overall summary of requirements and not a comprehensive list. The terms and conditions of the contract require meeting the requirements of the individual specification sections regardless of what is included on the list.
- C. Keep operation and maintenance data current. Make operation and maintenance binders available to the Contracting Officer for inspection at the time of monthly progress payment requests. If operation and maintenance binders are not current the Contracting Officer may retain an appropriate amount of the progress payment.

### 3.2 MANUAL PREPARATION

- A. Manual Contents: Including but not limited to:
  - 1. Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents.
  - 2. Custom Written Data: For data not in manufacturer's standard literature, provide text, drawings, and schematics specifically applicable to installed systems. Include step-by-step descriptions of operating procedures; identification of individual components and their functions; descriptions of how system components relate to one another and operate together to accomplish a common process or function; and sequence of operation for system control circuits. For seasonally operated systems, provide start-up and shutdown instructions.
  - 3. Vendor Furnished As-Built Drawings: Provide for each electrical and each mechanical control system.
    - a. For each control system, provide control circuit schematic drawings. Identify each wire and terminal block number. Show terminal numbers on all control devices. Show control wires and devices remote from the control panel.
    - b. For each control panel, provide a general arrangement drawing showing location of each control component and terminal block on the panel front and interior. Include a materials list of all panel-mounted control components as well as field-installed control components remote from the panel, identifying components, manufacturer, model number, and initial set points or sensing ranges of devices where applicable.
    - c. For packaged equipment systems, provide general arrangement drawings showing interrelationships of the various items of equipment and components.
    - d. In addition to the control wiring schematic, provide a power wiring schematic drawing showing the power flow to each motor. Identify each power conductor. Show all over-current protection and motor starting devices.

- B. Comply with Section 01 77 00 "Closeout Procedures" for schedule for submitting operation and maintenance documentation.

END OF SECTION 01 78 23 - OPERATION AND MAINTENANCE DATA



Closeout and Operation & Maintenance (O&M) Requirements Template

National Park Service (NPS) - Denver Service Center (DSC) | 1-27-21

Topic	Specification Section	Requirement	Submittal Date	Completed	Received by Park
Project Record Drawings					
	26 05 26	As-built locations of grounding features			
	33 10 00	As-built locations of Water Utilities			
	33 32 00	Record Drawings of OWTS as constructed			
System Demonstration and Training	08 33 23	Demonstration & Training by factory authorized representative			
	26 09 23	Demonstration of lighting control devices			
	28 31 11	Software operating and upgrade manuals, program software backup, device address list, printout of software application and graphic screens			
Tools Spare Parts Equipment					
Extra Stock					
	07 46 46	Furnish Extra Materials			
	09 91 00	Furnish Extra Materials			
	09 93 00	Furnish Extra Materials			
	09 96 00	Furnish Extra Materials			
	26 24 16	Keys, Circuit Breakers			
	27 15 00	Connecting Blocks, Device Plates - Extra Materials			
	28 31 11	Detector Bases, Keys and Tools, Audible and Visual Notification Appliances			
Reports					
	03 10 00	Product Test Reports			
	03 20 00	Field Quality Control Reports			
	05 12 00	Field Quality Control Reports			
	06 10 00	Evaluation Reports			
	07 10 00	Evaluation Reports			
	08 10 00	Field Quality Control Reports			
	06 17 45	Evaluation Reports			
	07 41 13.16	Product Test Reports			
	07 41 13.16	Field Quality Control Reports			
	07 72 53	Product Test Reports			
	07 92 00	Product Test Reports			
	07 92 00	Preconstruction field-adhesion-test reports			
	07 92 00	Field-adhesion-test reports			
	08 33 23	Product Test Reports			
	09 30 13	Product Test Reports			
	23 05 93	TAB Report			
	23 81 26	Startup Service Report			
	26 05 19	Field quality-control test reports			
	26 05 26	Source quality-control test reports			
	26 05 73	Coordination Study Report			
	26 08 00	Construction Checklists			
	26 09 23	Field quality-control test reports			
	26 24 16	Field quality-control test reports			
	26 27 13	Field quality-control test reports			
	26 28 16	Field quality-control test reports			
	26 41 13	Field inspection reports			
	26 43 13	Field quality-control test reports			
	26 51 00	Field quality-control test reports			
	27 05 26	Field quality-control test reports			
	27 13 00	Source and field quality-control test reports			
	27 15 00	Source and field quality-control test reports			
	32 13 00	Field Quality Control test reports			
	33 10 00	Field Quality Control test reports			
	33 32 00	Field Quality Control test reports			
Keys & Keying Schedule					
	03 30 00	Under-slab Vapor retarder - 10 Yrs			
	07 25 00	Warranty - 10 Yrs			
	07 41 13.16	Panel Failure warranty - 2 Yrs			
	07 46 46	warranty - 25 Yrs			
	07 62 00	Warranty - 10 Yrs			
	07 92 00	Warranty - 5 yrs			
	08 32 22	Sliding Door - 3 Yrs			
	08 32 22	Metal Finish - 5 Yrs			
	08 32 22	Barn Door Hardware - Lifetime (Limited)			
	08 32 22	Glazing - 10 Yrs			
	08 33 23	Warranty - 2 Yrs			
	08 33 23	Maintenance Data			
	08 36 13	Warranty - 2 Yrs			

Topic	Specification Section	Requirement	Submittal Date	Completed	Received by Park
O&M Data Warranties Guarantees	08 36 13	Finish warranty - 10 Yrs			
	08 36 13	Maintenance Data			
	08 41 13.16	Finish warranty - 20 Yrs			
	08 52 00	Glazing - 20 Yrs			
	08 52 00	Aluminum-Cladding Finish - 20 Yrs			
	08 62 00	Warranty - 10 Yrs			
	08 62 00	Maintenance Data			
	08 71 00	Waranty - 5 Yrs			
	09 65 16.13	Waranty - 5 Yrs			
	10 14 23.16	Waranty - 5 Yrs			
	10 28 00	Warranty - 10 Yrs			
	10 28 00	Maintenance Data			
	10 44 16	Warranty - 6 Yrs			
	10 44 16	Maintenance Data			
	11 30 15	Warranty - 2 Yrs			
	13 34 19	Warranty - 20 Yrs			
	22 05 19	Operation and Maintenance Data: For meters and gages to include in operation and maintenance manuals.			
	22 11 19	Operation and Maintenance Data			
	22 13 16	Listed manufacturers to provide labeling and warranty of their respective products			
	22 13 19	Operation and Maintenance Data: For sanitary waste piping specialties to include in emergency, operation, and maintenance manuals.			
	22 33 00	Operation and Maintenance Data			
	22 33 00	Warranty Letter			
	23 05 19	Operation and Maintenance Data: For meters and gages to include in operation and maintenance manuals.			
	23 23 00	Operation and Maintenance Data			
	23 33 00	Operation and Maintenance Data			
	23 34 23	Operation and Maintenance Data			
	23 81 26	Operation and Maintenance Data			
	23 81 26	Warranty Letter			
	23 82 39.13	Operation and Maintenance Data			
	23 82 39.16	Operation and Maintenance Data			
	26 05 53	Identification Schedule			
	26 08 00	O&M Data: Electrical Systems and Components			
	26 09 23	O&M Data: Devices and Manuals			
	26 24 16	O&M Data, Warranty			
	26 27 13	O&M Data			
	26 27 26	O&M Data			
	26 28 16	O&M Data			
	26 41 13	Certification, Warranty			
	26 43 13	Maintenance Data, Warranty			
	26 51 00	O&M Data, Product Information, Warranties			
	28 31 11	O&M Data, Warranty, Software and Firmware Operational Documentation,			
	31 00 00	Warranty Letter			
	32 12 00	Warranty Letter			
	33 10 00	Warranty Letter			
	33 10 00	Operation and Maintenance Data			

## SECTION 01 79 00 - DEMONSTRATION AND TRAINING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 79 00 "Demonstration and Training" includes administrative and procedural requirements for instructing NPS personnel, including the following:
  - 1. Demonstration of operation of systems, subsystems, and equipment.
  - 2. Training in operation and maintenance of systems, subsystems, and equipment, including environmental considerations.
  - 3. Demonstration and training video.
- B. See Divisions 02 through 49 Sections for specific requirements for demonstration and training for products in those Sections.

#### 1.2 GENERAL REQUIREMENTS

- A. A list of System Demonstration and Training requirements is attached at the end of Division 01 specifications. The intent is to provide an overall summary of requirements and not a comprehensive list. The terms and conditions of the contract require meeting the requirements of the individual specification sections regardless of what is included on the list.

#### 1.3 SUBMITTALS

- A. Demonstration and Training Video: Submit two (2) copies of each DVD for all training sessions within seven (7) days of end of each training module.
  - 1. Label each DVD with the date of demonstration or training, the instructor's name

#### 1.4 QUALITY ASSURANCE

- A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project.
- B. Instructor Qualifications: A factory-authorized service representative experienced in operation and maintenance procedures and training.
- C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not schedule training program until operation and maintenance data has been reviewed and approved by Contracting Officer.

## PART 2 - PRODUCTS

### 2.1 INSTRUCTION PROGRAM

- A. Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections, and as follows:
- a. Operation and maintenance of Lighting Control Devices.
  - b. Operation and maintenance of Fire Alarm System.
  - c. Operation and maintenance of Mechanical Equipment and Systems.
  - d. Operation and maintenance of On-Site Wastewater Treatment Systems (OWTS).

#### 1. Environmental Topics

- a. Overview of environmental issues related to the building industry.
- b. Overview of environmental issues related to the Project.
- c. Review of site specific procedures and management plans implemented during construction:
  - 1) Regulatory Requirements.
  - 2) Indoor Air Quality (IAQ) Management.
  - 3) Noise & Acoustics Management.
  - 4) Environmental Management.
  - 5) Construction Waste Management.
- d. Review of site specific procedures and management plans to be implemented during operation and maintenance.
  - 1) Include review of environmentally-related aspects of the Operations and Maintenance Manual.

- B. Training Modules: For each module, include instruction for the following:

1. Basis of System Design, Operational Requirements, and Criteria: Include system and equipment descriptions, operating standards, regulatory requirements, equipment function, operating characteristics, limiting conditions, and performance curves.
2. Documentation: Review emergency, operations, and maintenance manuals; Project Record Documents; identification systems; warranties and bonds; and maintenance service agreements.
3. Emergencies: Include instructions on stopping; shutdown instructions; operating instructions for conditions outside normal operating limits; instructions on meaning of warnings, trouble indications, and error messages; and required sequences for electric or electronic systems.
4. Operations: Include startup, break-in, control, and safety procedures; stopping and normal shutdown instructions; routine, normal, seasonal, and weekend operating instructions; operating procedures for emergencies and equipment failure; and required sequences for electric or electronic systems.
5. Adjustments: Include alignments and checking, noise, vibration, economy, and efficiency adjustments.

6. Troubleshooting: Include diagnostic instructions and test and inspection procedures.
7. Maintenance: Include inspection procedures, types of cleaning agents, methods of cleaning, procedures for preventive and routine maintenance, and instruction on use of special tools.
8. Repairs: Include diagnosis, repair, and disassembly instructions; instructions for identifying parts; and review of spare parts needed for operation and maintenance.

## PART 3 - EXECUTION

### 3.1 INSTRUCTION

- A. Engage qualified instructors to instruct NPS personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
- B. Scheduling: Provide instruction at mutually agreed on times.
  1. Schedule training with NPS through the Contracting Officer with at least seven (7) days advance notice.
  2. Conduct training sessions after the equipment or system has been accepted and turned over to the Government. Coordinate with commissioning requirements.
  3. Individual sections specify the duration of training required. If no duration is listed, provide training of sufficient duration to adequately cover the subjects.

### 3.2 DEMONSTRATION AND TRAINING VIDEO

- A. General: Record demonstration and training video. Record each training module separately. Include instructions and demonstrations, board diagrams, and other visual aids, but not student practice.
- B. Video Format: Digital Video Disc (DVD).
- C. Video Recording: Record all of the above sessions with high resolution equipment. The instructor's voice shall be clearly audible and understandable on the DVD. Utilize a supplemental microphone worn by the instructor
- D. Narration: Describe scenes on video by dubbing audio narration off-site after video is recorded. Include description of items being viewed. Describe vantage point, indicating location, direction (by compass point), and elevation or story of construction.
  1. DVDs with poor video or audio quality will be rejected and the training recorded again.

END OF SECTION 01 79 00 - DEMONSTRATION AND TRAINING

## SECTION 01 81 13 - SUSTAINABLE DESIGN REQUIREMENTS FOR NON LEED™ PROJECTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section 01 81 13 “Sustainable Design Requirements for Non LEED™ Projects” includes general requirements and procedures for compliance with the Federal Sustainability requirements. This project is not seeking LEED™ certification but shall comply with the applicable Federal Sustainability requirements. These requirements include laws (Executive Orders and regulations), management policies, building codes and standards, Federal directives, and NPS guidelines.
- B. Many of the Federal requirements can be achieved only through intelligent and integrated design of the project and are beyond the control of the Contractor. However, certain requirements relate to the products and procedures used for construction. Therefore, the full cooperation of the Contractor and subcontractors is essential to successful compliance with the Federal requirements.
- C. Contractors shall familiarize themselves with the relevant requirements and provide the necessary information and instruction to all subcontractors and installers.
  - 1. Some requirements involve quantifying percentages by weight; these require careful recordkeeping and reporting by the Contractor.
  - 2. See <http://www.nps.gov/dscw/dssustain.htm> for a list of Federal Sustainability requirements. The applicable Federal Sustainability requirements are also summarized on the project’s NPS Project Sustainability Checklist. Contractor is responsible for providing the necessary information in the “Construction” column of the checklist.
- D. Related Sections:
  - 1. See Divisions 01 through 49 Sections for sustainability requirements specific to the work of each of these Sections.

#### 1.2 DEFINITIONS

- A. Chain-of-Custody Certificates: Certificates signed by manufacturers certifying that wood used to make products was obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship." Certificates shall include evidence that manufacturer is certified for chain of custody by an FSC-accredited certification body.
- B. LEED™: Leadership in Energy & Environmental Design. A sustainability rating system developed by the United States Green Building Council.



- C. **Rapidly Renewable Materials:** Materials made from plants that are typically harvested within a 10-year or shorter cycle. Rapidly renewable materials include products made from bamboo, cotton, flax, jute, straw, sunflower seed hulls, vegetable oils, or wool.
- D. **Recycled Content:** The recycled content value of a material assembly shall be determined by weight.
  - 1. "Post-consumer" material is defined as waste material generated by households or by commercial, industrial, and institutional facilities in their role as end users of the product, which can no longer be used for its intended purpose.
  - 2. "Pre-consumer" material is defined as material diverted from the waste stream during the manufacturing process. Excluded is reutilization of materials such as rework, regrind, or scrap generated in a process and capable of being reclaimed within the same process that generated it.
- E. **Biopreferred Products:** Commercial or industrial products (other than food or feed) that are composed in whole, or in significant part, of biological products, renewable agricultural materials (including plant, animal, and marine materials), or forestry materials and includes biobased intermediate ingredients or feedstocks.

### 1.3 FEDERAL SUSTAINABILITY DOCUMENTATION SUBMITTALS

- A. Most of the Federal sustainability documentation submittals are aggregations of submittals already required in relevant technical specifications. They are mentioned here to insure that they are collected and organized together to efficiently document compliance with sustainability requirements.
- B. Provide preliminary submittals to NPS indicating how the following Federal requirements will be met:
  - 1. **Recycled Content:** List of specified/proposed materials with recycled content. Indicate cost, post-consumer recycled content, and pre-consumer recycled content for each product having recycled content.
  - 2. **Certified Wood:** Product data and/or chain-of-custody certificates for products containing certified wood. Include statement indicating cost for each certified wood product.
  - 3. **Construction IAQ Management Plan – During Construction:**
    - a. Construction indoor-air-quality management plan.
    - b. Product data for temporary filtration media.
    - c. Product data for filtration media used during occupancy.
    - d. **Construction Documentation:** Six photographs at three different times during the construction period, along with a brief description of the SMACNA approach employed, documenting implementation of the indoor-air-quality management measures, such as protection of ducts and on-site stored or installed absorptive materials.
  - 4. **Construction IAQ Management Plan – Before Occupancy:**

- a. Signed statement describing the building air flush-out procedures including the dates when flush-out was begun and completed and statement that filtration media was replaced after flush-out.
  - b. Product data for filtration media used during flush-out and during occupancy.
5. Low Emitting Materials – Adhesives and Sealants: Product data for adhesives and sealants used inside the weatherproofing system indicating VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D.
6. Low Emitting Materials – Paints and Coatings: Product data for paints and coatings used inside the weatherproofing system indicating chemical composition and VOC content of each product used. Indicate VOC content in g/L calculated according to 40 CFR 59, Subpart D.
7. Low Emitting Materials - Flooring: Product data for products containing composite wood or agrifiber products or wood glues indicating that they do not contain urea-formaldehyde resin.
8. Biopreferred Products: Provide a list of all bio-based products used on this project.

## PART 2 - PRODUCTS

### 2.1 RECYCLED CONTENT OF MATERIALS

- A. Recycled Content: Provide building materials with recycled content such that post-consumer recycled content plus one-half of pre-consumer recycled content constitutes a minimum of 10 percent of cost of materials used for Project.
  1. Cost of pre-consumer recycled content of an item shall be determined by dividing weight of pre-consumer recycled content in the item by total weight of the item and multiplying by cost of the item.
  2. Do not include furniture, mechanical and electrical components, and specialty items in the calculation.

### 2.2 BIOPREFERRED PRODUCTS

- A. Bio-based products found the USDA Biopreferred Products list (<http://www.biopreferred.gov/>) shall be used where applicable on this project.

### 2.3 LOW-EMITTING MATERIALS

- A. For applications that are inside the weatherproofing system, use adhesives and sealants that comply with the VOC content limits in specification divisions 2-49.
- B. For field applications that are inside the weatherproofing system, use paints and coatings that comply with the VOC content limits in specification divisions 2-49.
- C. Do not use composite wood or agrifiber products or adhesives that contain urea-formaldehyde resin.

## PART 3 - EXECUTION

### 3.1 MEASUREMENT AND VERIFICATION

- A. Coordinate with Divisions 2-49 for project requirements regarding the installation of building level metering equipment to measure energy, water, and electric usage.

### 3.2 INDOOR-AIR-QUALITY MANAGEMENT

- A. Coordinate with Section 01 57 19.11 "Indoor Air Quality Management" for managing indoor air quality during construction and prior to occupancy.

END OF SECTION 01 81 13 - SUSTAINABLE DESIGN REQUIREMENTS FOR NON LEED™ PROJECTS

## SECTION 01 91 14 – TOTAL BUILDING COMMISSIONING

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. General requirements for coordinating and scheduling commissioning.
2. Commissioning meetings
3. Commissioning reports
4. Use of test equipment, instrumentation, and tools for commissioning.
5. Construction checklists, including, but not limited to, installation checks, startup, and performance tests.
6. Commissioning tests
7. Adjusting, verifying, and documenting identified systems and assemblies.

Work included under this section includes a complete and thorough investigation of equipment and systems indicated in Part 3 of section. In order to ensure proper installation and operation of components and systems. Contractor shall perform commissioning as described herein to accomplish the tasks, and goals of commissioning. Systems to be evaluated include but are not limited to:

1. HVAC (Heating, Ventilation, and Air Conditioning) components and equipment.
2. Mechanical and Plumbing Systems.
3. Building Envelope (walls, roof, windows, infiltration, etc.)
4. Life Safety Systems (Fire Alarm)
5. Electrical Systems
6. Luminaires
7. Lighting Control System
8. Grounding System
9. Lightning Protection

##### B. Building commissioning activities and documentation are described in the following reference material: United States Green Building Council (USGBC) Leadership in Energy and Environmental Design (LEED™) rating program, American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Guideline 0-2005, The Commissioning Process, and National Institute of Building Sciences (NIBS) Guidelines.

##### C. National Park Service (NPS) personnel, Green Consultant, and Architect/Engineer, are not responsible for construction means, methods, job safety, or management function related to commissioning on job site.

##### D. Related Sections:

1. 01 31 00 - Project Management and Coordination
2. 01 33 23 - Submittal Procedures
3. 01 40 00 - Quality Requirements
4. 01 57 19.11 - Indoor Air Quality (IAQ) Management

5. 01 57 19.12 - Noise and Acoustics Management
6. 01 77 00 - Closeout Procedures
7. 01 78 23 - Operation and Maintenance Data
8. 01 79 00 - Demonstration and Training
9. 01 81 13 - Sustainable Design Requirements

## 1.2 DEFINITIONS

- A. Acceptance Criteria: Threshold of acceptable work quality or performance specified for a commissioning activity.
- B. Basis-of-Design Document: Document prepared by Designer that records concepts, calculations, decisions, and product selections used to comply with Owner's Project Requirements and to suit applicable regulatory requirements, standards, and guidelines.
- C. Total Building Commissioning (TBC): Quality-focused process for verifying and documenting that facility, systems and assemblies are planned, designed, installed, and tested to comply with Owner's Project Requirements. Requirements specified here are limited to construction phase commissioning activities.
- D. Construction Checklist: Form used by Contractor to verify appropriate components are on site, ready for installation, correctly installed and functional.
- E. Contractor's Commissioning Representative (CCxR): Contractor's designated individual to coordinate, manage, and execute commissioning processes of the contracting organizations.
- F. Commissioning Plan (CCxP): Plan that provides structure, schedule and coordination planning for commissioning process proposed specifically for this project. CCxP includes Personnel, activities, and a description of Infrastructure, and list of instruments and logging devices that will be used during Commissioning.
- G. Deficiency: Condition in the installation or function of a component, piece of equipment or system not in compliance with Contract Documents, does not perform properly or is not complying with Basis of Design.
- H. Functional Performance Test (FPT): Test of dynamic function and operation of equipment and systems using manual (direct observation) or monitoring methods. Functional testing is the dynamic testing of systems (rather than just components) under full operation (e.g., the chiller pump is tested interactively with the chiller functions to see if the pump ramps up and down to maintain the differential pressure setpoint). Systems are tested under various modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, fire alarm, power failure, etc. The systems are run through all the control system's sequences of operation and components are verified to be responding as the sequences state. Traditional air or water test and balancing (TAB) is not functional performance testing, in the commissioning sense of the word. TAB's primary work is setting up the system flows and pressures as specified, while functional testing is verifying that which has already been set up. The CCxR develops the sequentially written functional test procedure forms, and oversees and documents the actual testing, which is performed by the installing contractor or vendor. The CCxR creates worksheets from these forms which include procedures required to accommodate

actual equipment, means and methods used in the project. Functional Performance Tests are performed after pre-functional checklists and startup is complete.

- I. Manual Test: Using hand-held instruments, control system readouts or direct observation to verify performance (contrasted to analyzing electronically monitored data taken over time to make the "observation").
- J. Monitoring: Recording of parameters (flow, current, status, pressure, etc.) of equipment operation using data loggers or the trending capabilities of control systems.
- K. Owner's Project Requirements: Document originated by Designer that details functional requirements of project and expectations of use and operation, including project goals, measurable performance criteria, cost considerations, benchmarks, success criteria, and supporting information. Document is updated, with input from Contracting Officer (CO) as required as project is finished.
- L. Pre-functional Checklist: List of items to inspect and elementary component tests to conduct to verify proper installation of equipment. Pre-functional checklists are primarily static inspections and procedures to prepare equipment or system for initial operation (e.g., belt tension, oil levels ok, labels affixed, gages in place, sensors calibrated, etc.). However, some pre-functional checklist items entail simple testing of the function of a component, a piece of equipment or system (such as measuring voltage imbalance on a three-phase pump motor of a chiller system). Pre-functional" refers to "before" functional testing. Pre-functional checklists augment and are combined with the equipment manufacturer's start-up checklist.
- M. Seasonal Performance Tests: Functional Performance Tests deferred until system(s) will experience seasonal conditions closer to their design conditions.
- N. Systems Manual: System focused composite document that includes operational manual, maintenance manual, and additional information of use to Government during Occupancy and Operation Phase.

### 1.3 COMMISSIONING TEAM

- A. Members Appointed by Contractor(s): Individuals, each having authority to act on behalf of the entity he or she represents, explicitly organized to implement the commissioning process through coordinated action.
  - 1. CCxR (Contractor's Commissioning Representative): CCxR shall be approved by Contracting Officer and satisfy as many of the following requirements as possible:
    - a. Certified in Commissioning by nationally accredited organization (i.e. Associated Air Balance Council (AABC), Association of Energy Engineers (AEE), Building Commissioning Association (BCA), and National Environmental Balancing Bureau (NEBB))
    - b. Acted as principal Commissioning Authority where total building commissioning approach (including building envelope) was used for at least three projects of comparable size, type, and scope.
    - c. Technical training in Mechanical, Electrical, and/or fire protection engineering.
    - d. Past commissioning experience.



- e. Knowledge of national codes.
  - f. Leadership in Energy and Environmental Design (LEED) Accredited Professional.
  - g. Experience in energy-efficient design and control strategy optimization.
  - h. Specific experience with specialty systems relative to particular facility type (i.e. Federal blast and progressive collapse requirements, security systems, etc.).
- 2. Contractor Quality Control (CQC) Supervisor
  - 3. Other Representatives may include Project superintendents, installers, suppliers, and specialists.

B. Members Appointed by Contracting Officer:

- 1. Representatives of facility user and operation and maintenance personnel.
- 2. Architect and engineering design professionals.

#### 1.4 CONTRACTOR'S RESPONSIBILITIES

- A. Contractor shall assign representatives with expertise and authority to act on its behalf to participate in and perform commissioning process activities including:
- 1. Perform commissioning tests, as required by technical specifications. Evaluate performance deficiencies identified in test reports and, in collaboration with entity responsible for system and equipment installation, recommend corrective action.
  - 2. Record and resolve commissioning issues.
  - 3. Attend commissioning team meetings held on monthly basis.
  - 4. Integrate and coordinate commissioning process activities with overall project schedule.
  - 5. Review Construction Checklist attached at end of specification section.
  - 6. Complete electronic construction checklists as contract work is completed and provide to Contracting Officer on a weekly basis.
  - 7. Complete commissioning process test procedures.
  - 8. Provide maintenance orientation and inspection for systems, assemblies, equipment, and components based on contract requirements.
  - 9. Provide Commissioning Plan and documentation for final commissioning documentation.
  - 10. Provide measuring instruments and logging devices to record test data and provide data acquisition equipment to record data for complete range of testing for required test period.

#### 1.5 COMMISSIONING DOCUMENTATION

- A. Provide the following information:
- 1. Review of systems manual, submittals, documents, and other commissioning reports
  - 2. Identification of installed systems, assemblies, equipment, and components including design changes that occurred during the construction phase
  - 3. Commissioning Plan including Process activities and schedule for completing construction checklists and manufacturer's pre-start and startup checklists for systems, assemblies, equipment, and components to be verified and tested
  - 4. Certificate of readiness certifying systems, subsystems, equipment, and associated controls are ready for testing
  - 5. Test and inspection reports and certificates

6. Corrective action documents
7. Testing, adjusting, and balancing reports

## 1.6 SUBMITTALS

- A. Two-week look-ahead schedules: Schedule showing the next two weeks of commissioning related construction activity to include completion dates for each element of commissioning documentation for each major system or subsystem as identified in 1.1.B.
- B. Certificates of readiness.
- C. Contractor's Commissioning Representative Qualifications.
- D. Commissioning Plan: Submit within 30 calendar days of authorization to proceed.
  1. Update as necessary during the work to reflect progress on components and systems.
- E. Pre functional checklists.
- F. Owner's project requirements.
- G. Functional performance test forms: Submit minimum 30 calendar days prior to testing
- H. List of test instrumentation, equipment, and monitoring devices. Include:
  1. Make, model, serial number, and application for each instrument, equipment, and monitoring device.
  2. Brief description of intended use.
  3. Calibration record showing:
    - a. Calibration agency, including name and contact information
    - b. Last date of calibration
    - c. Range of values for which calibration is valid
    - d. Certification of accuracy
    - e. National Institute of Standards and Technology (NIST) traceability certification for calibration equipment.
    - f. Due date of the next calibration.
- I. Deficiency Report and Resolution Record: Document items of non-compliance in materials, installation or operation. Document results from start-up/pre-functional checklists, functional performance testing, and short-term diagnostic monitoring. Include details of components or systems found to be non-compliant with drawings and specifications. Identify adjustments and alterations required to correct system operation and identify who is responsible for making corrective changes.
  1. Update as necessary during work to reflect progress on components and systems. Submit updated versions monthly.
- J. Closeout Documentation

1. Closeout documents for commissioned equipment and systems shall be submitted prior to functional performance testing. These include:
  - a. Record Documents and Drawings
  - b. Start-up certificates for commissioned equipment with start-up requirements
  - c. Systems Manual
  - d. Include TAB, startup, and Control System check-out reports.
2. Operation and Maintenance (O&M) Submittals (refer to requirements of technical specifications):
  - a. Training plan: Include for each training session:
    - 1) Dates, start and finish times, and locations
    - 2) Outline of the information to be presented
    - 3) Names and qualifications of presenters
    - 4) List of texts and materials required to support training

## PART 2 - PRODUCTS

### 2.1 TEST EQUIPMENT

#### A. Instrumentation shall:

1. Be of sufficient quality and accuracy to test and measure system performance within tolerances required to determine adequate performance.
2. Be calibrated on manufacturer's recommended intervals calibration tags permanently affixed to instrument being used.
3. Be maintained in good repair and operation condition throughout duration of use on this project.

#### B. Standard testing equipment required to perform startup and initial checkout and required functional performance testing shall be provided by Contractor for equipment being tested.

#### C. Required commissioning equipment (sensors, transducers, data loggers, etc.) not integral to the systems or equipment installed shall be provided by Contractors Commissioning Representative and shall not become property of the Government.

### 2.2 PRE-FUNCTIONAL CHECKLIST:

#### A. Prepare pre functional checklists for equipment and systems to be commissioned.

#### B. Pre-functional checklists shall be complementary to Commissioning Plan and Commissioning Schedule.

- 2.3 FUNCTIONAL TEST PROCEDURE FORMS: Prepare functional test procedure forms for each piece of equipment and each system to be commissioned.
- 2.4 FUNCTIONAL PERFORMANCE WORKSHEETS:
- A. Prepare Functional Performance worksheets, consisting of test procedures and expected results of testing.
- 2.5 REPORT FORMAT AND ORGANIZATION
- A. General Format and Organization:
1. Bind report in three-ring binders.
  2. Label front cover and spine of each binder with report title, volume number, project name, Contractor's name, and date of report.
  3. Record report on compact disk.
  4. Electronic Data: Portable document format (PDF); a single file with outline-organized bookmarks for major and minor tabs and tab contents itemized for specific reports.
- B. Commissioning Report:
1. Include table of contents and an index to each test.
  2. Include major tabs for each Specification Section.
  3. Include minor tabs for each test.
  4. Within each minor tab, include:
    - a. Test specification.
    - b. Pre-startup reports.
    - c. Approved test procedures.
    - d. Test data forms, completed and signed.
    - e. Commissioning issue reports, showing resolution of issues, and documentation related to resolution of issues pertaining to a single test. Group data forms, commissioning issue reports showing resolution of issues, and documentation related to resolution of issues for each test repetition together within minor tab, in reverse chronological order (most recent on top).

## PART 3 - EXECUTION

- 3.1 COMMISSIONING PROCESS
- A. Following activities outline general commissioning tasks (requiring development, execution, etc.) and order in which they occur.
1. Commissioning Scoping Meeting
  2. Finalize Owner's Project Requirements
  3. Commissioning Plan
  4. Prepare pre-functional checklists.
  5. Prepare functional performance worksheets.

6. Perform Start-Up/Pre-Functional Checks in accordance with manufacturer's recommendations and pre-functional checklists.
7. Functional Performance Testing in accordance with functional performance worksheets
8. Deficiency Report and Resolution Record
9. Operation and Maintenance Documentation
10. Operations and Maintenance Training
11. Deferred Testing

### 3.2 TOTAL BUILDING COMMISSIONING (TBC) REQUIREMENTS

- A. TBC during construction, acceptance, and warranty phases is intended to achieve following specific objectives:
1. Verify that systems and equipment meet Owner's Project Requirements.
  2. Verify equipment is what was submitted and approved.
  3. Verify and document equipment is installed and started per manufacturer's recommendations, industry accepted minimum standards, and Contract Documents.
  4. Verify and document equipment and systems receive complete operational checkout by installing contractors.
  5. Verify and document equipment capacity and system efficiency.
  6. Verify performance of building envelope. Document testing and conformance to Contract Documents.
  7. Verify completeness of operations and maintenance materials.
  8. Ensure Governments operating personnel are adequately trained on operation and maintenance of building equipment.

### 3.3 COMMISSIONING SCOPING MEETING

- A. Commissioning Scoping Meeting:
1. Schedule, coordinate, and facilitate a scoping meeting.
  2. Review each building system to be commissioned, including intended operation, commissioning requirements, and completion and start-up schedules.
  3. Establish scope of work, tasks, schedules, deliverables, and responsibilities for implementation of Commissioning Plan.
  4. Attendance: Commissioning Team members.

### 3.4 COMMISSIONING PLAN

- A. Commissioning Plan: Develop commissioning plan to identify how commissioning activities will be integrated into general construction and trade activities. Commissioning plan shall identify how commissioning responsibilities are distributed. Intent of plan is to evoke questions, expose issues, and resolve issues with input from entire commissioning team early in construction.
1. Identify who will be responsible for producing various procedures, reports, Contracting Officer notifications and forms.
  2. Include commissioning tasks and activities in overall project schedule. Tag individual activities so they can be filtered at later date.

3. List and describe each test/acceptance procedure, including acceptance criteria.

### 3.5 START-UP/PRE-FUNCTIONAL CHECKLISTS

- A. Start-Up/Pre-Functional Checklists: Complete pre-functional checklists prior to start up. Checklist shall help verify that systems are complete and operational, so functional performance testing can be scheduled.
  1. Verify equipment installed is what was approved on Submittal.
  2. Manufacturer's start-up checklists and other technical documentation guidelines may be used as basis for pre-functional checklists.

### 3.6 FUNCTIONAL PERFORMANCE TESTING

- A. Functional Performance Testing: Test procedures fully describe system configuration and steps required for each test.
  1. Test Methods: Functional performance testing and verification may be achieved by direct manipulation of system inputs (i.e. heating or cooling sensors), manipulation of system inputs (i.e. software override of sensor inputs), , or short-term monitoring of system inputs and outputs using standalone data loggers. A combination of methods may be required to completely test complete sequence of operations. CCxR shall determine which method or combination of methods is most appropriate.
  2. Setup: Each test procedure shall be performed under conditions that simulate normal operating conditions as closely as possible. Where equipment requires integral safety devices to stop/prevent equipment operation unless minimum safety standards or conditions are met, functional performance test procedures shall demonstrate actual performance of safety shutoffs in real or closely simulated conditions of failure.
  3. Sampling: Multiple identical pieces of non-life-safety or non-critical equipment may be functionally tested using a sampling strategy. If, after three attempts at testing the specified sample percentage, failures are still present, remaining units shall be tested at Contractors' expense.
- B. Prepare functional performance test procedure forms to accommodate actual installed equipment and systems.
- C. Coordinate, execute, and record results of functional performance testing.
  1. Coordinate retesting as necessary until satisfactory performance is verified.
  2. Verify intended operation of individual components and system interactions under various conditions and modes of operation.

### 3.7 DEFICIENCY REPORT AND RESOLUTION RECORD

- A. Deficiency Report and Resolution Record: Document items of non-compliance in materials, installation or operation.



- B. Non-Conformance. Non-conformance and deficiencies observed shall be addressed immediately. Notify responsible parties and provide recommended actions to correct deficiencies.
1. Corrections of minor deficiencies identified may be made during tests at discretion of CCxR. In such cases the deficiency and resolution shall be documented on procedure form.
  2. For identified deficiencies:
    - a. If no dispute on deficiency and responsibility to correct it:
      - 1) CCxR documents deficiency and adjustments or alterations required to correct it. Contractor corrects deficiency and notifies CCxR that equipment is ready to be retested.
      - 2) CCxR reschedules test and test is repeated until satisfactory performance is achieved.
    - b. If there is a dispute about a deficiency or who is responsible:
      - 1) Deficiency is documented CCxR on non-compliance form.
      - 2) Resolutions are made at lowest management level possible. Additional parties are brought into discussions as needed. Contractor shall have responsibility for resolving construction deficiencies. If a design revision is deemed necessary and approved by Contracting Officer, Architect/Engineer (A/E) shall have responsibility for providing design revision. CCxR documents resolution process.
      - 3) Once interpretation and resolution have been decided, appropriate party corrects deficiency and notifies CCxR that equipment is ready to be retested. CCxR reschedules test and test is repeated until satisfactory performance is achieved.
  3. Cost of Retesting: Costs for retesting shall be charged to Contractor.

### 3.8 OPERATIONS AND MAINTENANCE TRAINING

- A. Training: Develop Training Plan. Coordinate and execute training programs with CxA.
1. Stress and enhance importance of system interactions, troubleshooting, and long-term preventive maintenance and operation programs.

### 3.9 DEFERRED TESTING

- A. Unforeseen Deferred Tests: If test cannot be completed due to building structure, required occupancy condition, or other deficiency, functional testing may be delayed upon recommendation of CCxR and approval of Contracting Officer. These tests are conducted in same manner as the seasonal tests, as soon as possible.
- B. Seasonal Testing
1. Schedule, coordinate, execute, and document additional testing for seasonal variation in operations and control strategies during appropriate season to verify performance of HVAC

2. Update O&M manuals and Project Record Drawings as necessary due to testing.

A. Commissioned Equipment and Systems List: Following is a list of systems and equipment to be commissioned organized by system. It includes the percentage of each category that will undergo testing. The intent is to provide an overall summary of commissioned equipment and systems, and not a comprehensive list. Refer to applicable specification sections for more information.

[illegible]


END OF SECTION 01 91 14