Montana Fish, Wildlife & Parks

SPECIFICATIONS FOR WORK
SPECIAL PROVISIONS

Contents:

1. PROJECT DESCRIPTION

The Project involves construction work associated with:

Lewis and Clark Caverns Re-roof
Fish, Wildlife & Parks (FWP) project #
Located in Jefferson County, MT

The Elkhorn State Park Historic Structures Re-Roof Project entails removal and replacement of the cedar shingle roofs on two historic buildings in Elkhorn, MT. Work will generally include removal of old shingles, replacement of cedar shakes, cornice flashing and minor trim.

2. PROJECT RELATED CONTACTS

Project contacts are designated as follows:

Owner:
Montana FWP
1420 E. Sixth Ave.
PO Box 200701
Helena, MT 59620-0701

FWP Project Representative:
Kevin Harrington, Project Manager
FWP Project Manager
1522 9th Avenue
Helena, MT 59620
406-841-4002 (wk)
406-439-2876 (cell)
406-841-4004 (fax)

3. SITE INSPECTION

All Bidders should satisfy themselves as to the construction conditions by personal examination of the site described in this document. Bidders are encouraged to make any - investigations necessary to assess the nature of the construction and the difficulties to be encountered, see General Conditions, Article 3.

4. SOILS INFORMATION

Geotechnical investigation work has not been done for this Project. It is the responsibility of the Bidders to conduct all investigations and determine the soil type and digging conditions that may be encountered with this Project prior to bid preparation, see General Conditions, Article 3.

5. PROJECT REPRESENTATIVE, INSPECTIONS, AND TESTING

The Contractor's work will be periodically tested and observed to ensure compliance with the Contract Documents. Complete payment will not be made until the Contractor has

demonstrated that the work is complete and has been performed as required. If the Project Representative detects a discrepancy between the work and the requirements of the Contract Documents at any time, up to and including final inspection, such work will not be completely paid for until the Contractor has corrected the deficiency, see General Conditions, Article 9.

The Project Representative will periodically monitor the construction of work to determine if the work is being performed in accordance with the contract requirements. The Project Representative does not have the authority or means to control the Contractor's methods of construction. It is, therefore, the Contractor's responsibility to utilize all methods, equipment, personnel, and other means necessary to assure that the work is installed in compliance with the Drawings and Specifications, and laws and regulations applicable to the work. Any discrepancies noted shall be brought to the Contractor's attention, who shall immediately correct the discrepancy. Failure of the Project Representative to detect a discrepancy will not relieve the Contractor of his ultimate responsibility to perform the work as required, see General Conditions, Article 3.

The Contractor shall inspect the work as it is being performed. Any deviation from the Contract requirements shall be immediately corrected. Prior to any scheduled observation by the Project Representative, the Contractor shall again inspect the work and certify to the Project Representative that he has inspected the work and it meets the requirements of the Contract Documents. The Project Representative may require uncovering of work to verify the work was installed according to the contract documents, see General Conditions, Article 12.

The work will be subject to review by the Project Representative. The results of all such observations, and all contract administration, shall be directed to the Contractor only through the Project Representative.

5.1 Services Required by the Contractor. The Contractor shall provide the following services:

a. Any field surveys to establish locations, elevations, and alignments as stipulated on the Contract Documents. FWP reserves the right to set preliminary construction staking for the project. The Contractor is responsible to notify FWP for any construction staking discrepancies.

b. Preparation and certification of all required shop drawings and submittals as described in the General Conditions, Article 3.

c. All testing requiring the services of a laboratory to determine compliance with the Contract Documents shall be performed by an independent commercial testing laboratory acceptable to the Project Representative. The laboratory shall be staffed with experienced technicians properly equipped, and fully qualified to perform the tests in accordance with the specified standards.

d. Preparation and submittal of a construction schedule, including submittals, see

General Conditions, Article 3. The schedule shall be updated as required, as defined in the Contract Documents.

e. All Quality Control testing as required by the Contractor's internal policies.

f. All Quality Assurance testing and/or re-testing as stated in the Contract Documents, see General Conditions, Article 13.

5.2 Services Provided by the Owner. The Owner shall provide the following services at no cost to the Contractor except as required for retests as defined in the Contract Documents.

a. The Project Representative may check compaction of backfill and surfacing courses using laboratory testing submittal information supplied by the Contractor. These tests are to determine if compaction requirements are being fulfilled in accordance with the Contract Documents. It is ultimately the responsibility of the Contractor to ensure that this level of compaction is constant and met in all locations.

b. Any additional Quality Assurance testing deemed appropriate by the Owner, at the Owner's expense.

6. ENGINEERING INTERPRETATIONS

Timely Engineering decisions on construction activities or results have an important bearing on the Contractor's schedule. When engineering interpretation affects a plan design or specifications change, it should be realized that more than 24 hours may be required to gain the necessary Owner participation in the decision process including time for formal work directive or change order preparation as required.

7. REJECTED WORK

Any defective work or nonconforming materials or equipment that may be discovered at any time prior to the expiration of the warranty period, shall be removed and replaced with work or materials conforming to the provisions of the Contract Documents, see General Conditions, Article 12. Failure on the part of the Project Representative to condemn or reject bad or inferior work, or to note nonconforming materials or equipment on the Contractors submittals, shall not be construed to imply acceptance of such work. The Owner shall reserve and retain all its rights and remedies at law against the Contractor and its Surety for correction of any and all latent defects discovered after the guarantee period (MCA 27-2-208).

Only the Project Representative will have the authority to reject work which does not conform to the Contract Documents.

8. UTILITIES

The exact locations of existing utilities that may conflict with the work are not precisely

known. It shall be the Contractor's responsibility to contact the owners of the respective utilities and arrange for field location services. **One Call Locators, 1-800-424-5555**

The Contract Documents may show utility locations based on limited field observation and information provided to the Project Representative by others. **The Project Representative cannot guarantee their accuracy.** The Contractor shall immediately notify the Project Representative of any discrepancies with utility locations as shown on the Contract Drawings and/or their bury depths that may in any way affect the intent of construction as scoped in these specifications.

There will be no separate payment for exploratory excavation required to locate underground utilities.

8.1 Notification. The Contractor shall contact, in writing, all public and private utility companies that may have utilities encountered during excavation. The notification includes the following information:

a. The nature of the work that the Contractor will be performing.
b. The time, date and location that the Contractor will be performing work that may conflict with the utility.
c. The nature of work that the utility will be required to perform such as moving a power pole, supporting a pole or underground cable, etc.
d. Requests for field location and identification of utilities.

A copy of the letter of notification shall be provided to the Project Representative. During the course of construction, the Contractor shall keep the utility companies notified of any change in schedule, or nature of work that differs from the original notification.

8.2 Identification. All utilities that may conflict with the work shall be the Contractor's responsibility to locate before any excavation is performed. Field markings provided by the utility companies shall be preserved by the Contractor until actual excavation commences. All utility locations on the Drawings should be considered approximate and should be verified in the field by the Contractor. The Contractor shall also be responsible for locating all utilities that are not located on the Drawings.

Utilities are depicted on the Contract Documents in accordance with their achieved “Quality Levels,” as defined in the American Society of Civil Engineer’s Document, ASCE 38, “Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data.” Reliance upon these data for risk management purposes during bidding does not relieve the Contractor, or Utility Owner from following all applicable utility damage prevention statutes, policies, and/or procedures during construction. It is important that the Contractor investigates and understands the scope of work between the project Owner and Engineer regarding scope of limits of the utility investigations leading to these utility depictions. Definitions of Quality Levels

are described as follows:

a. "QUALITY LEVEL A" – (QLA): LOCATING THROUGH EXCAVATION. QLA data are highly accurate and are obtained by surveying an exposed utility. As such, both horizontal and vertical data are recorded. Survey accuracies are typically set at 15mm (1/2-inch) vertically, and to project survey standards horizontally (typically the same as for topography features), although these survey accuracies and precisions are generally left to the owner to specify in a scope of work. In addition to the applicable standard of care and any other additional standards imposed by commercial indemnity clauses, the accuracy of these location data is also typically guaranteed. Other data typically characterized include material type, surface elevation, utility size/capacity, outside dimensions, and configurations, soil type, and utility condition.

b. "QUALITY LEVEL B" – (QLB): DESIGNATING. QLB information is obtained through the application of appropriate surface geophysical methods to identify the existence and approximate horizontal location of utilities (a utility's "designation") within the project limits, followed by survey, mapping, and professional review of that designation. Underground utilities are identified by interpretation of received signals generated either actively or passively, and through correlating these received signals with visible objects (QLC) and record data (QLD) to determine function. Designated utilities that can't be identified are labeled as "unknowns." Although approximate has no accuracy associated with it, generally the locations are within inches rather than feet. The more utility congested the area or the deeper the utilities, the less likely it is that the designations will achieve that accuracy. These designations are then surveyed to project accuracies and precisions, typically third-order accuracy similar to other topography features. Note that surveying existing one-call marks does not lead to QLB data, since the genesis of the marks was not under the direct responsible charge of the professional certifying the QLB depictions, and one-call generally does not address unknown utilities, privately owned utilities, utilities without records, abandoned utilities, and so on. Nor does the professional have knowledge of the field technician's qualifications, training, and level of effort.

c. "QUALITY LEVEL C" – (QLC): SURFACE VISIBLE FEATURE SURVEY. QLC builds upon the QLD information by adding an independent detailed topography site survey for surface-visible appurtenances of subsurface utilities including but not limited to fire hydrants, valves, risers, and manholes. Professional judgment is used to correlate the QLD data to the surveyed features, thus increasing the reliability of both utility location and existence. It is a function of the professional to determine when records and features

do not agree and resolve discrepancies. This may be accomplished by depiction of a utility line at quality level D, effectively bypassing or disregarding (but still depicting) a surveyed structure of unknown origin. Additional resolution may result from consultation with utility owners.

d. “QUALITY LEVEL D" – (QLD): EXISTING RECORDS RESEARCH. QLD is the most basic level of information. Information is obtained from the review and documentation of existing utility records, verbal accounts, and/or one-call markings (to determine the existence of major active utilities and their approximate locations).

8.3 Removal or Relocation of Utilities. All electric power, street lighting, gas, telephone, and television utilities that require relocation will be the responsibility of the utility owner. A request for extending the specified contract time will be considered if utility owners cause delays.

8.4 Public Utilities. Water, sewer, storm drainage, and other utilities owned and operated by the public entities shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All such work shall be in accordance with these Contract Documents, or the Owner's Standard Specifications or written instructions when the work involved is not covered by these Specifications.

8.5 Other Utilities. Utilities owned and operated by private individuals, railroads, school districts, associations, or other entities not covered in these Special Provisions shall, unless otherwise specifically requested by the utility owner, be removed, relocated, supported or adjusted as required by the Contractor at the Contractor's expense. All work shall be in accordance with the utility owner's directions, or by methods recognized as being the standard of the industry when directions are not given by the owner of the utility.

8.6 Damage to Utilities and Private Property. The Contractor shall protect all utilities and private property and shall be solely responsible for any damage resulting from his construction activities. The Contractor shall hold the Owner and Project Representative harmless from all actions resulting from his failure to properly protect utilities and private property. All damage to utilities shall be repaired at the Contractor's expense to the full satisfaction of the owner of the damaged utility or property. The Contractor shall provide the Owner with a letter from the owner of the damaged utility or property stating that it has been repaired to the utility owner's full satisfaction.

8.7 Structures. The Contractor shall exercise every precaution to prevent damage to existing buildings or structures in the vicinity of his work. In the event of such damages, he shall repair them to the satisfaction of the owner

of the damaged structure at no cost to the Owner.

8.8 Overhead Utilities. The Contractor shall use extreme caution to avoid a conflict, contact, or damage to overhead utilities, such as power lines, streetlights, telephone lines, television lines, poles, or other appurtenances during the course of construction of this project.

8.9 Buried Gas Lines. The Contractor shall provide some means of overhead support for buried gas lines exposed during trenching to prevent rupture in case of trench caving.

8.10 Pavement Removal. Where trench excavation or structure excavation requires the removal of curb and gutter, concrete sidewalks, or asphalt or concrete pavement, the pavement or concrete shall be cut in a straight line parallel to the edge of the excavation by use of a spade-bitted air hammer, concrete saw, colter wheel, or similar approved equipment to obtain a straight, square clean break. Pavement cuts shall be 2 feet wider than the actual trench opening.

8.11 Survey Markers and Monuments. The Contractor shall use every care and precaution to protect and not disturb any survey marker or monuments, such as those that might be located at lot or block corners, property pins, intersection of street monuments or addition line demarcation. Such protection includes markings with flagged high lath and close supervision. No monuments shall be disturbed without prior approval of the Project Representative. Any survey marker or monument disturbed by the Contractor during the construction of the project shall be replaced at no cost to the Owner by a licensed land surveyor.

8.12 Temporary Utilities. The Contractor shall provide all temporary electrical, lighting, telephone, heating, cooling, ventilating, water, sanitary, fire protection, and other utilities and services necessary for the performance of the work. All fees, charges, and other costs associated therewith shall be paid for by the Contractor.

9. CONSTRUCTION SAFETY

The Contractor shall be solely and completely responsible for conditions of the jobsite, including safety of all persons (including employees and subcontractors) and property during performance of the work. This requirement shall apply continuously and not be limited to normal working hours. Safety provisions shall conform to U.S. Department of Labor (OSHA), and all other applicable federal, state, county, and local laws, ordinances, codes, and regulations. Where any of these are in conflict, the more stringent requirement shall be followed. The Contractor's failure to thoroughly familiarize himself with the

aforementioned safety provisions shall not relieve them from compliance with the obligations and penalties set forth therein, see General Conditions, Article 10.

10. CONSTRUCTION LIMITS AND AREAS OF DISTURBANCE

10.1 Construction Limits. Where defined limits of disturbance, construction easements or property lines, are not specifically called out on the Contract Documents, limit the construction disturbance to ten (10) feet, when measured from the edge of the slope stake grading, or to the adjacent property line, whichever is less. Disturbance and equipment access beyond this limit is not allowed without the written approval of both the Project Representative and the Owner of the affected property. If so approved, disturbance beyond construction limits shall meet all requirements imposed by the landowner; this includes existing roads used and/or improved as well as the construction of new access roads. Special construction, reclamation, or post-construction reclamation or other closure provisions required by the landowner on access roads beyond the construction limits shall be performed by the Contractor at no additional cost to the Owner.

10.2 Areas of Disturbances. Approved areas of disturbance are those areas disturbed by construction activities within the construction limits and along designated or approved access routes. Such areas may require reclamation and revegetation operations, including grading to the original contours, top soiling with salvaged or imported topsoil, seeding, fertilizing, and mulching as specified herein. Other areas that are disturbed by the Contractor's activities outside of the limits noted above will be considered as site damage or unapproved areas of disturbance, see General Conditions, Articles 3 and 10. This includes areas selected by the Contractor outside the defined construction limits for mobilization, offices, equipment, or material storage.

11. DECONTAMINATE CONSTRUCTION EQUIPMENT

Power wash all construction equipment entering the project site to prevent the spread of noxious weeds and aquatic invasive species. This applies to all FWP projects, whether individual construction permits specifically address cleaning of equipment.

12. TREE PROTECTION AND PRESERVATION

The Contractor and the Owner shall individually inspect all trees within the project construction limits prior to construction. The Owner shall determine which trees are to be removed and which trees are to be preserved. Construction of the grading, utilities and various roadway facilities must not significantly damage the trees root system or hinder it’s chances for survival. Reasonable variations from the Contract Documents, as directed by the Project Representative, may be employed to ensure the survival of trees.

13. MATERIAL SOURCES AND CONSTRUCTION WATER

The Contractor shall be responsible for locating all necessary material sources, including aggregates, earthen borrow and water necessary to complete the work. The Contractor shall be responsible for meeting all transportation and environmental regulations as well as paying any royalties. The Contractor shall provide the Project Representative with written approvals of landowners from whom materials are to be obtained, prior to approval.

The Contractor may use materials from any source, providing the materials have been tested through representative samples and will meet the Specifications.

14. MATERIALS SALVAGE AND DISPOSAL

Notify the Owner for any material salvaged from the project site not identified in the Contract Documents. The Owner reserves the right to maintain salvaged material at the project site, compensate the Contractor for relocation of salvaged material, or agreed compensation to Owner for material salvaged by the Contractor. The old bridge shall be removed and disposed of entirely by the contractor.

Haul and waste all waste material to a legal site and obey all state, county, and local disposal restrictions and regulations.

15. STORED MATERIALS

Contractor shall use an approved storage area for materials. Materials and/or equipment purchased by the Contractor may be compensated on a monthly basis. For compensation, provide the Project Representative invoices for said materials, shop drawings and/or submittals for approval, and applicable insurance coverage, see General Conditions, Article 9.

16. STAGING AND STOCKPILING AREA

Contractor shall use staging and stockpiling sites for to facilitate the project as approved by the Owner. Contract Documents may show approved staging and stockpiling locations. Notify Owner within 24 hours for approval of staging and stockpiling sites not shown on the Contract Drawings.

17. SECURITY

The Contractor shall provide all security measures necessary to assure the protection of equipment, materials in storage, completed work, and the project in general.

18. CLEANUP

Cleanup for each item of work shall be fully completed and accepted before the item is considered final. If the Contractor fails to perform cleanup within a timely manner the Owner reserves the right to withhold final payment.

Review these Contract Documents for additional Final Cleanup specifications for specific measures, associated with Contractor responsibilities and final payment.

19. ACCESS DURING CONSTRUCTION

Provide access to all public and private roadways and approaches within the project throughout the construction period. Coordinate with Park's Manager for any access issues.

20. CONSTRUCTION TRAFFIC CONTROL

The Contractor is responsible for providing safe construction and work zones within the project limits by implementing the rules, regulations, and practices of the Manual on Uniform Traffic Control Devices, current edition.

21. SANITARY FACILITIES

Provide on-site toilet facilities for employees of Contractor and Sub-Contractors and maintain in a sanitary condition.

22. CONTRACT CLOSEOUT

The Contractor's Superintendent shall maintain at the project site, a "Record Set of Drawings" showing field changes, as-built elevations, unusual conditions encountered during construction, and such other data as required to provide the Owner with an accurate "as constructed" set of record drawings. The Contractor shall furnish the "Record Set" to the Project Representative following the Final Inspection of the Project.

The Contractor's final payment will not be processed until the "Record Set" of drawings are received and approved by the Project Representative.

23. MEASUREMENT AND PAYMENT

Review these Contract Documents for additional Measurement and Payment specifications for definitions. Quantities are listed on the Bid Proposal for Payment Items. Additional material quantities, volumes, and measurements may be shown on the Contract Document drawings and/or specifications.
Lump sum bid item quantities will not be measured. Payment for the lump sum bid proposal items will be paid in full amount listed on the Bid Proposal when accepted by the Project Representative, unless specified otherwise.

Participating bidders shall confirm dimensions for quantifying materials, slope factor, waste, and overlap which are all incidental to the project.

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Access to site.
4. Coordination with occupants.
5. Work restrictions.
6. Specification and drawing conventions.
7. Miscellaneous provisions.

B. Related Requirements:

1. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

2. Division 01 Section "Historical Site Work" for procedures governing work on historic facilities.

1.2 PROJECT INFORMATION

A. Project Identification: Lewis and Clark Caverns Concessions and Visitor Center Re-roof
1. Project Location:

25 Lewis and Clark Caverns Road
Whitehall, MT 59759
Latitude/Longitude: (45.82289, -111.85082)

B. Owner: State of Montana Fish Wildlife & Parks.

1. Owner's Representative:

Kevin Harrington, Project Manager
State of Montana Fish, Wildlife and Parks
Design & Construction Bureau.
1522 Ninth Avenue
Helena, Montana
Phone: (406) 841-4002
Cell: 406-431-3755

WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

1. The work consists of removing and replacing cedar shakes and related materials from the Gift Corral Café and Gift Shop Building, Visitors Center Building and Ticket Booth.

2. All work associated with the re-roofing project and included in these specifications shall be considered incidental, including but not limited to: fasteners, seals, cornice top flashing and trim, ridge cap, existing roofing removal & disposal, roofing preparation and installation, site protection, and associated work.

3. It is the contractor's responsibility to confirm dimensions and layout for quantifying materials. Slope factor, waste, and overlap is considered incidental to the project and will not be paid as extra.

B. Type of Contract.

1. Project will be constructed under a single prime contract.

1.4 ACCESS TO SITE

A. General: Contractor shall have limited use of project site for construction operations as indicated by requirements of this Section.

B. Staging Area: Designated area for Contractor parking is located on the east side of the main parking lot, or as otherwise approved by Park Management.

C. Use of Site: Limit use of Project site to work in areas of re-roofing. Do not disturb portions of Project site beyond areas in which the Work is indicated.

1. Keep the building entrances clear and available to Owner, Owner's employees, the public, and emergency vehicles at all times. Material staging areas will be verified with Park Manger prior to the start of construction. Work will take place after October 1st when the Park is closed to the Public for the season.

a. Schedule deliveries to minimize use of this site by construction operations.
b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
c. Do not drive vehicles or equipment on the grounds around the buildings or off established roads unless approved by the Park Manager. It is understood that pneumatic- wheeled equipment such as a manlift may be necessary to drive onto the site to perform the work. Any damage to the ground area around the buildings shall be repaired by the Contractor at no cost to the Owner.

D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

1.5 COORDINATION WITH OCCUPANTS

A. Owner Occupancy: Owner will occupy site on a part time basis during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate safe Owner and Public usage. Perform the Work so as not to interfere with Owner's day-to-day operations.

1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
2. Notify Owner not less than 72 hours in advance of activities that will affect Owner's operations.

1.6 WORK RESTRICTIONS

A. Work Restrictions, General: Comply with restrictions on construction operations.

B. On-Site Work Hours: Project work will be limited to the hours of 7:00 a.m. to 6:00 p.m., Monday through Friday. Additional hours or working days are subject to Owner approval with prior notice. Contractor must give Owner a minimum of two (2) days' notice for working hours outside of those indicated above.

C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.

1. Notify Owner not less than two days in advance of proposed disruptive operations.

2. Undesirable language and other such devices such as excessively loud radios and conversation are hereby specifically prohibited on the project site.

D. Smoking is not permitted on the site due to extreme wildfire conditions in and around the site. Workers may smoke in their vehicles.

1.7 MISCELLANEOUS PROVISIONS

A. See Special Conditions.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 014121 – HISTORICAL SITE WORK

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Historical Site Preservation.

1.2 MATERIALS OWNERSHIP

A. Unless otherwise indicated, demolition waste becomes property of Contractor.

B. Historic items, relics, antiques, and other items of interest or value to Owner that may be uncovered during operations remain the property of Owner.

PART 2 - SITE AREAS

2.1 SITE AREA REQUIREMENTS

A. Refer to Division 01 – "Summary" for a description of the work and other site requirements.

PART 3 - EXECUTION

3.2 HISTORICAL SITE PRESERVATION

A. Original Condition: The Contractor shall keep historical sites in original conditions or return to original conditions when applicable at Owners approval. This includes but is not limited to the following:

1. Historical building(s) shall be kept in as-is condition. Necessary construction in those buildings shall be done in a neat and workman like manner. Accumulated debris shall be cleaned each day to the condition the building was found in and to the satisfaction of the Park Management.
2. It is expected that work in these buildings will be done with the utmost care. Any damage encountered shall be reported immediately to the Park Management to determine the method and means of repairs.
3. Contractor is responsible for any damages to historical buildings, sidewalks, fences or any other items of archeological significance. All costs of Contractor caused damage shall be borne by the Contractor. Careless construction will not be tolerated and will be subject to a Stop Work order and evaluation of personnel and methods involved.
4. Any disturbed ground shall be returned to original surface condition. Contractor is responsible for any seeding. Seeding mix will be specified by Owner.
5. Contractor is responsible for bracing building rafters/walls to enable access and movement in buildings where building integrity is of concern. Contractor is responsible to bring any integrity issues of buildings to the Owner and Engineer.

6. Contractor is responsible for taking before and after pictures of all areas and buildings where work is done. The Contractor must provide the Owner with a digital copy of both before and after pictures when the job is completed.

B. Uncovered Artifacts: For historical sites, there is a likely probability that artifacts will be uncovered during Work.

1. If an artifact is uncovered, the Contractor is responsible to immediately notify the Park Management or onsite archaeologist.
2. In the case of an uncovered artifact, the Contractor is expected to move ahead to another work area after notifying the proper personnel. Onsite archaeologist will need adequate time to carefully examine the artifact.
3. It is at the archaeologist or Owner's discretion on when work can resume in the area of where the artifact was uncovered.

C. Temporary Protection: Provide temporary barricades, signs and other protection required to prevent injury to people and damage to adjacent buildings and facilities.

1. The Park will remain open to the public during construction. Park management must be notified and updated on a routine basis as to scheduled closing and reopening of work areas. To the extent practical, Work shall be scheduled to minimize impact to the public.
2. Provide protection to ensure safe passage of people around selective work area and to and from occupied portions of building.
3. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective operations.

D. Temporary Shoring: Design, provide, and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of the building that is being worked on.

1. The design for work in the buildings is, for the most practical degree, for an installation that would be possible with the least amount of hazard to the worker and the least likelihood of damage to the building. Historic buildings are fragile and contractors care is imperative.

E. Remove temporary barricades and protections where hazards no longer exist.

F. Remedy property damage: The Contractor shall promptly remedy damage and loss to property caused in whole or in part by the Contractor, a Subcontractor of any tier or level, or anyone employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible.

END OF SECTION 014121

SECTION 070150 - PREPARATION FOR RE-ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Roof tear-off.

1.2 SUBMITTALS

A. Contractor shall submit to the Owner the following information at least 5 business days prior to starting work:
   1. Procedures for protecting site features which may be impacted by the reroofing project.
   2. Procedures to allow a safe working environment for FWP employees and continued service to the public.
   3. Fastener removal management, clean-up procedures, and disposal container locations.

1.3 PERMITS

A. Contractor will be responsible to obtain and pay for all necessary permits to complete the work.

B. Copies of the permit(s) shall be provided to the Owner before the start of any work.

1.4 PROJECT CONDITIONS

A. Conduct reroofing so Owner's operations will not be disrupted. Provide Owner with not less than 72 hours' notice of activities that may affect Owner's operations. Construction shall not begin prior to October 1st.

B. Protect building to be reroofed, adjacent buildings, walkways, site improvements, exterior plantings, and landscaping from damage or soiling from reroofing operations.

C. Weather Limitations: Proceed with reroofing preparation only when existing and forecasted weather conditions permit work to proceed without water entering existing roofing system or building.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 ROOF TEAR-OFF

A. General: Notify Owner each day of extent of roof tear-off proposed for that day.

B. Contractor to only remove existing roofing materials as specified on the Drawings.

3.2 DECK PREPARATION

A. Inspect decking after tear-off of roofing system.

B. If broken or loose fasteners that secure decking are observed or if deck appears or feels inadequately attached, immediately notify Owner's representative. Do not proceed with installation until directed by Owner's representative. Minor work to re-secure decking in areas where fasteners are needed is allowed without prior approval.

C. If deck surface is not suitable for receiving new roofing or if structural integrity of deck is suspect, immediately notify Owner's representative. Do not proceed with installation until directed by Owner's representative.

3.3 EXISTING BASE FLASHINGS

A. Notify Owner if fascia and gable trim is deteriorated. Removal and replacement of fascia and gable trim around perimeter may be ordered as additional work if deemed necessary.

3.4 FASTENER REMOVAL AND COLLECTION

A. Contractor will be required to control the collection of removed fasteners and minimize the amount that may land onto sidewalks, landscaped areas, and gravel/paved parking areas. Control procedures may consist of using tarps or other means to collect the fasteners as the existing roofing materials are removed.

B. Contractor will be required to inspect the grounds at the end of each workday and at the end of the project completion for stray fasteners. Magnets or other collection devices should be used to properly collect fasteners. Owner will inspect and approve the clean-up areas at the end of the project before final payment will be approved.

3.5 DISPOSAL

A. All materials removed become the property of the Contractor and therefore is responsible for disposal and removal from the site. Demolition and construction waste must be removed from the site each day or placed in covered waste receptacles furnished by the Contractor. The Owner's waste receptacles shall not be used by the Contractor.

B. The function of the buildings, continued use by employees, and service to the public will require the Contractor to clean the grounds on a daily basis, and not allow removed materials to accumulate on the landscaped grounds, sidewalks, or parking areas.

C. Transport and legally dispose of demolished materials off Owner's property.

D. Contractor shall remove all temporary protection and all debris attributed to the execution of the Contract subject to Owner’s final acceptance.

END OF SECTION

SECTION 073115 – CEDAR SHINGLES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cedar shake shingles, underlayment, flashings, fasteners, and accessories.

1.2 REFERENCES

A. Cedar Shake & Shingle Bureau (CSSB) *New Roof Construction Manual,* 2020 edition, shall be referenced for construction methods, details, and specifications.

1.3 PERFORMANCE REQUIREMENTS

A. Cedar roof system to consist of tapersawn #1 Blue Label red cedar shingles, Certi-Guard Class B Fire-Retardant, attached to structural substrate to form weather tight roof envelope with no measurable water penetration.

B. Method of attachments shall be designed to adequately resist wind uplift for roof configuration and project location.

1.4 SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Shingles, underlayment, flashings, fasteners, and accessories indicating composition, properties, and dimensions. Provide data showing compliance with specified requirements.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.
   4. Installation methods.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturer of cedar shingles.

B. Installer Qualifications: Company competent in installing shingle roof systems with 3-years minimum experience.

1.6 PROJECT CONDITIONS

A. Anticipate and observe environmental conditions (temperature, humidity, and moisture) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.7 WARRANTY

A. Warranty Requirements:
   1. Manufacturer's warranty for shingles against breakage and deterioration that causes leaks under normal weather and use conditions.

2. Installer's 2 years total roof system warranty including underlayment, flashings, trim, and other roof components against water penetration.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Cedar Shake & Shingle Bureau ("CSSB") member manufacturer's, such as CertiGrade® Shingles.

B. Requests for substitutions will be considered 10 days prior to bid day and in accordance with Paragraph 2.2.

2.2 CEDAR SHINGLES

A. Cedar shingles with the appearance, color, texture, and thickness of natural wood shakes.
   1. Product: Certi-Guard #1 Blue Label Red Cedar Shingles, or other manufacturer's that are member of the CSSB.
   2. Attributes:
      a. Fire resistance: Certi-Guard® Class B Fire Retardant; pressure impregnated with fire-retardant polymers.
      b. Water absorption: 0.18 percent by weight tested in accordance with ASTM D 471.
      c. Impact resistance: Class 4 to withstand two drops of 2 inches (52 mm) diameter, 1.2 pounds (0.54 kg) steel ball dropped from 20 feet (6 m) tested in accordance with UL 2218.
      d. Nail pull through resistance: 138 foot-pounds at 72 degree F (187 joules at 22 degrees C) and 166 foot-pounds at 32 degrees F (225 joules at 0 degrees C) tested in accordance with ASTM D 3462.
      e. Freeze-thaw resistance: No crazing, cracking, delamination of coating, or other deleterious surface changes after one month exposure with temperature cycled from -40 to +180 degrees F (0 degrees to 82 degrees C) in 22 hours tested in accordance with International Code Council (ICC) - ES Acceptance Criteria AC07 Section 4.9.
      f. Accelerated weathering: Little change after 2,500 hours exposure to ultraviolet (UV) radiation, elevated temperature, moisture, and thermal shock.
      g. Fungus resistance: No algae growth when inoculated with blue green algae in warm, damp environment for 4 to 6 weeks tested in accordance with ASTM G 21.
   3. Profile: Rectangular shape with exposed to view upper surface and edges textured to resemble natural wood shake. Underside formed with reinforcing ribs for added strength and stability.
   4. Size: Shingle
      a. Thickness: Varies from 1/4 inch (6 mm) at top to 5/8 inch (16 mm) at bottom.
      b. Length: 16 inches.
      c. Variable widths: 4, 6, 7, 8, and 9 inches (102, 152, 178, 203 and 229 mm) to create appearance of random sized natural wood shake.
   5. Starter Shingle: Provide 12 inches (305 mm) long by 12 inches (305 mm) wide.

6. Markings: Form shingles with markings on upper surface to indicate nailing locations and provide alignment guide lines for different exposure lengths.
7. Color: Provide impregnated fire retardant as specified.

2.3 ACCESSORIES

A. Underlayment: ASTM D 226 No. 30 un-perforated asphalt saturated felt.

B. Waterproof Sheet Membrane: Cold applied, self-adhering waterproof membrane composed of polyethylene film coated one side with rubberized asphalt adhesive.
1. Thickness: 40 mils (1 mm).
2. Low temperature flexibility: Unaffected at minus 32 degrees F (-36 degrees C).
3. Minimum tensile strength: 250 psi (1724 kPa).
4. Minimum elongation: 250 percent.
5. Permeance: 0.05 perms maximum.

C. Flashing: Fabricate from sheet to profiles to match existing.
1. Cornice Flashing Material: 26 gage (0.455 mm) galvanized steel.
2. Ridge Cap Flashing Material: 30 ML Butyl Flashing. 9" Henry Fortiflash® or approved equal.
3. Linear components: Form in longest possible lengths with 8 feet (2.5 m) as minimum.
4. Counter Flashings: Extend 4 inches (102 mm) minimum up vertical surfaces and 4 inches (102 mm) minimum under shingles.

D. Fasteners: 3/8 inch (9.5 mm) flat head nails 1-1/2 inches (38 mm) long.
1. Material: Copper.
2. Material: Stainless steel.
3. Material: Hot-dipped galvanized.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

3.2 PREPARATION

A. Coordinate cedar shingle installation with provision of gutters and downspouts, if any.

B. Inspect roof framing and plywood, wood, or OSB substrate. Verify roof is complete, rigid, braced, and deck members are securely fastened. Ensure proper ventilation has been provided for roof space. Do not proceed with roofing until deficiencies are addressed.

C. Verify roof deck is clean, dry, and ready to receive cedar shingles.

D. Remove dirt, loose fasteners, and other protrusions from roof surface.

3.3 UNDERLAYMENT INSTALLATION

A. Underlayment: Underlayment is not called for on the buildings due to their historic nature and the lack of building heat or cooling.

3.4 FLASHING INSTALLATION

A. Install overhanging drip edge on eaves and gable ends and metal flashings at valleys, ridges, hips, roof curbs, penetrations, and intersections with vertical surfaces in accordance with applicable specifications and as detailed on Drawings and approved shop drawings.

B. Weather lap joints 2 inches (52 mm) minimum and seal with sealant as specified.

C. Secure in place with clips, nails, or other fasteners.

3.5 INSTALLATION - GENERAL

A. Install cedar in accordance with manufacturer's instructions.

B. Accurately layout shingles. Ensure that edges are parallel and perpendicular to roof eaves.

C. Cutting: Layout work to avoid cutting shingles.
1. At gables and vertical intersections, vary combination of shingle widths and spacing of shingles to avoid cutting.
2. If cutting is required, place shingle such that cut edge is not exposed.
3. Use circular saw or straight edge and utility knife if cuts are necessary.

3.6 CEDAR SHINGLE INSTALLATION

A. The CSSB New Roof Construction Manual, dated 2020 edition, shall be referenced for construction methods, details, and specifications.

B. Install shingles in a rack or pyramid style from factory assembled bundles.

C. Exposure: Install shingles in straight pattern with exposure and bottom shingle edges evenly aligned.

D. Exposure: Install shingles in staggered pattern with exposure and bottom edges of adjacent shingles staggered.

E. Spacing: Provide 1/8”inch gap between shingles to allow for expansion and contraction.

F. Stagger shingle joints in one course 1-1/2 inches minimum from joints in course below.

G. Eaves: Install row of starter shingles at eaves as base layer. Project eave shingles approximately 1-1/2 inch, over fascia edge or 1/8” past overhanging drip edge, or as required to allow water to drain into gutter or off eave as indicated or required.

H. Gables: Project shingles approximately 3/4 inch beyond gable rakes or 1/8 inch past overhanging drip edge.

I. Ridges and Hips: After field shingle installation is complete, install double row of

shingles over 6 inches (152 mm) wide metal flashing.

1. Ridges: Use pre-manufactured ridge shingles with exposure. Start ridge shingles at leeward end. Face shingle laps away from prevailing wind.
2. Hips: Use pre-manufactured shingles with exposure. Start hip course at eave.

J. Fastening: Attach each shingle to wood deck with 2 nails using hammer or pneumatic nail gun.

1. Place nails at locations on shingles.
2. Ensure good penetration but do not overdrive nail. Do not nail at angle. Ensure head is flush with shingle surface to avoid creating depressions.

3.7 FIELD QUALITY CONTROL

A. Inspect units as they are installed. Do not install cracked, broken, twisted, curled, or otherwise damaged units.

B. As work progresses, exercise care not to scratch or mar installed units. Units damaged during installation shall be immediately removed and discarded.

C. After approximately 200 units have been installed, inspect roof from ground. Verify proper layout and appearance. Repeat inspection every 200 shingles.

D. Visually inspect complete installation to ensure that it is weather tight.

3.8 CLEANING AND PROTECTION

A. Remove excess materials and debris from finished surfaces and adjacent roof areas.

B. Do not allow work force on completed roof.

C. Protect installed products until completion of project.

D. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 075416 – ETHYLENE INTERPOLYMER (KEE) ROOFING

PART 1 - GENERAL

1.0 SCOPE OF WORK

A. Contractor shall submit proposal to provide all labor, material, equipment, and tools as required work in this section and related sections.

B. Contractor shall remove and dispose of all existing roofing systems and sheet metal flashings down to the concrete and wood decks.

C. Contractor shall provide new Fully Adhered roof membrane system and flashings in accordance with manufacturer requirements and as per specified in the section. Note; it is the contractor's responsibility to verify all the job site conditions, including but not limited to roof measurements, roof access, core cuts, etc. The owner will not pay for any extra work if the contractor failed to ascertain or verify the job condition prior to submitting a bid. It will be the contractor's responsibility to comply with all manufacturer requirements. (i.e. minimum flashing heights)
The contractor shall include in their bid any modification required by the manufacturer of the membrane in order to provide the owner with the 20-year Labor/ Material warranty as per this specification.

D. Contractor shall provide new galvanized or painted sheet metal copings, counter flashings, and drip edge as indicated in the drawings. All sheet metal flashing shall be a minimum of 24 gauge and have a 20-year finish warranty.

E. At all drain locations, the contractor shall test drains and associated piping prior to starting roofing operations. If the drains and piping are not functioning properly, the contractor is to notify the owners' representative. The owner cannot assume any financial responsibility for drain and associated pipe repairs if this procedure is not followed prior to starting roofing operations. At the completion of the roofing, all drains and associated piping are to be functioning properly.

F. Contractor shall obtain and pay for the necessary building permit as required by state and local building agencies.

1.01SUMMARY

A. Fully adhered thermoplastic roofing membrane system on <u>all</u> roof areas.
B. Flashings.
C. Stack boots, roofing expansion joints, counter flashings and walkway pads.

1.02 PERFORMANCE REQUIREMENTS

A. General: Provide installed roofing membrane and base flashings that remain watertight; do not permit the passage of water; and resist specified uplift pressures, thermally induced movement, and exposure to weather without failure.

B. Material Compatibility: Provide roofing materials that are compatible with one another under conditions of service and application required, as demonstrated by membrane roofing manufacturer based on testing and field experience.
C. Roofing System Design: Provide membrane-roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency to resist uplift pressure calculated according to ASCE/SEI 7.

1.03 SUBMITTALS

A. Product Data: Provide data indicating membrane materials, flashing materials, insulation, surfacing, adhesives and fasteners.
B. Specimen Warranty: For approval.
C. Shop Drawings: Indicate joint or termination detail conditions, conditions of interface with other materials.
D. Installer Certificates: Signed by roofing system manufacturer certifying that Installer is approved, authorized, or licensed by manufacturer to install roofing systems.
E. Manufacturer's Installation Instructions; Indicate membrane seaming precautions and perimeter conditions requiring special attention.
F. Manufacture's Certificate: Certify that products meet or exceed specified requirements. Signed by roofing manufacturer certifying that roofing systems complies with requirements specified and meets requirements for roof system warranty.
G. Manufacturer's Field Reports: Indicate procedures followed, ambient temperatures, humidity, wind velocity during application, and supplementary instructions given.
H. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum (10) years of documented experience. The roofing membrane and system shall be identical to that used for this project and which can show evidence of these materials being satisfactorily used on at least ten (10) projects of similar size, scope an type within such a period. Obtain components for membrane roofing system from or approved by roofing membrane manufacturer.
B. Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience installing membrane systems that is approved. Company must be an approved installer of the membrane system and eligible to receive manufacturer's warranty.
C. Fire-Test-Response Characteristics: Provide membrane roofing materials with the fire-test-response characteristic indicated as determined by testing identical products per test method below by UL, FMG, or another testing and inspecting agency acceptable to authorities having jurisdiction. Materials shall be identified with appropriate markings of applicable testing and inspecting agency.
    1. Exterior Fire-Test Exposure: Class A; for application and roof slopes indicated.

1.05 PRE-INSTALLATION MEETING

A. Convene one week before starting work of this section.
B. Review preparation and installation procedures and coordinating and scheduling required with related work.

1.06 DELIVERY, STORAGE, AND PROTECTION

A. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact.
B. Store products in weather protected environment, clear of ground and moisture.
C. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by the manufacturer. Protect stored liquid materials from direct sunlight.
    1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.
D. Protect foam insulation from direct exposure to sunlight.
E. Handle and store roofing materials and place equipment in a manner to avoid permanent deflection of deck.

1.07 PROJECT CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit roofing system to be installed according to manufacturer's written instructions and warranty requirements.

1.08 WARRANTY

A. System Warranty: Provide manufacturer's system warranty agreeing to repair or replace components of membrane roofing system that fail in materials or workmanship within the specified warranty period. Failure includes roof leaks.
    1. Warranty Term: 20 years from date of substantial completion.
    2. Special Warranty includes roofing membrane, base flashings, roofing membrane accessories, fasteners, walkway products and other components of membrane roofing system.
    3. For repair and replacement include costs of both material and labor in warranty.
    4. Warranty shall include 1 ½" hail warranty and shall not include exclusions for ponding water.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. In other Part 2 articles where titles below introduce lists, the following requirements apply for product selection:
    1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
    2. Products: Subject to compliance with requirements, provide one of the products specified.
    3. Available Manufactures: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the work include, but are not limited to, the manufacturers specified.

2.02 ROOFING MEMBRANE AND ASSOCIATED MATERIALS

A. Manufacturers and Products

    1. EPDM Roofing: Firestone, or equal.

a) Thickness: 60 mils (1.1 mm), nominal.
b) Color: Black.

2. Material: ASTM 6754-002 “Keytone Ethylene Ester (KEE) Sheet Roofing Substitution request must comply with the following Minimum Physical Properties

PROPERTY	TEST METHOD	RESULT	
Thickness	ASTM D-751	50 mil	XT Tensile Strength
	ASTM D-882		9500psi
	ASTM D-751		
Puncture Resistance	Fed Std 101B Method 2031	23 joules	

3. Polymer base to consist of 50% Elvaloy to maintain a pliable sheet over warranty period.
4. Seaming Materials: As recommended by membrane manufacturer.
5. Flexible Flashing Material: Same material as membrane.

2.03 ACCESSORIES

A. Stack Boots: Prefabricated flexible boot and collar for pipe stacks through membrane; same material as membrane.
B. Cover board Joint Tape: Glass fiber reinforced type as recommended by manufacturer, compatible with roofing materials; 6 inches wide; self-adhering.
C. Insulation Adhesive: As recommended by insulation manufacturer.
D. Metal Termination Bars: Manufacturer’s standard predrilled aluminum bars, approximately 1 by 1/8-inch-thick; with anchors.
E. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FMG 4470, designed for fastening cover board to wood substrate, and acceptable to membrane roofing system manufacturer.
F. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, surface mounted counter flashing, cover strips, and other accessories.
G. Gypsum Roof Barrier Board: ASTM C 1177, glass-mat, water resistant gypsum substrate, ½” thick primed dens deck. Note: In all areas where using insulation adhesive, the contractor must use 4’ x 4’ maximum sized board. All seams must be taped prior to fully adhering the roofing membrane.
H. Walkway pads: Type as recommended by membrane manufacturer; size as indicated.

2.04 INSULATION

A. Molded Polystyrene Board Insulation: Expanded polystyrene board, ASTM C 578; with drainage channels one face, with the following characteristics:
   1. Board Size: 48 x 48 inch.
   2. Tapered Board: Slope as indicated per drawings. Fabricate of fewest layers possible.
   3. Average R-value of any tapered roof area shall not be less than R-30. Minimum R-value of any sloped roof area shall not be less than R-30. Notify architect immediately if conflicts arise.

   4. Provide preformed saddles, crickets, tapered edge strips, and other insulation shapes where indicated for sloping to drain. Fabricate to slopes indicated.

2.05 COVERBOARD

A. Cover board: ASTM C 1177/C 1177M, glass-mat, water-resistant gypsum

substrate.

1. Products: Subject to compliance with requirements, provide the following:
    a. Georgia-Pacific Corporation, " ½" 4'x4' Dens Deck Primed"
        i. Concrete deck areas
    b. Georgia-Pacific Corporation, " ½" 4'x8' Dens Deck primed"
        i. Wood deck areas mechanically attached

B. Cover board Accessories

1. Bead-Applied Insulation Adhesive: Insulation manufacturer's recommended bead applied; low-rise, two-component urethane adhesive formulated to attach cover board to underlying roof insulation layer.
2. Glass fiber reinforced type as recommended by manufacturer, compatible with roofing materials; 6 inches wide; self-adhering.

2.06 WALKWAYS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway rolls, approximately 3/16-inch-thick, and acceptable to membrane roofing system manufacturer. Walkways shall be included in the manufacturer's warranty of the entire period of the warranty.

    a. X-TRED Walk Pads as indicated in drawing.

PART 3 EXECUTION

3.01 INSTALLATION-GENERAL

A. Perform work in accordance with NRCA Roofing and Waterproofing Manual and manufacturer's instructions.
B. Do not apply roofing membrane during unsuitable weather.
C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
E. Do not expose materials vulnerable to water or sun damage in quantities greater that can be weatherproofed the same day.

3.02 EXAMINATION

A. Verify that surfaces and site conditions are ready to receive work.
B. Verify deck is supported and secure.
C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
D. Verify deck surfaces are dry and free of snow or ice.
E. Verify that roof openings, curbs, and penetrations through roof are solidly set.

3.03 WOOD DECK PREPARATION

A. Verify flatness and tightness of joints of wood decking: Fill knot holes with latex filler.

3.04 CONCRETE DECK PREPARATION

A. Fill surface honeycomb and variations with latex filler.

3.05 INSULATION – UNDER MEMBRANE

A. Attachment of Insulation: Embed insulation in adhesive in full contact, in accordance with roofing and insulation manufacturers' instructions
B. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
C. Do not apply more insulation than can be covered with membrane in same day.

3.06 MEMBRANE APPLICATION

A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
    1. Install sheet according to ASTM D 5082.
    2. Accurately align roofing membranes and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.
    3. Adhesively attach roofing membrane to primed roof board and secure at terminations, penetrations, and perimeter of roofing.
    4. Apply roofing membrane with side laps shingled with slope of roof deck where possible.
    5. Seams: Clean seam areas, overlap roofing membrane and hot-air-weld side and end laps of roofing membrane according to manufacturer's written instructions to ensure a watertight seam installation.
        a. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of roofing membrane.
        b. Verify field strength of seams a minimum of twice daily and repair seam sample areas.
        c. Repair tears, voids, and lapped seams in roofing membrane that does not meet requirements.
    6. At intersections with vertical surfaces:
        a. Extend membrane a minimum of 4 inches onto vertical surfaces.
        b. Fully adhere flexible flashing over membrane and up to nailing strips.
        c. Around roof penetrations, seal flanges and flashings with flexible flashing.
        d. Coordinate installation of retrofit roof drains and sumps and related flashings.
        e. Overflow scuppers must be fabricated as indicated on drawings per manufacturers details.

3.07 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to membrane roofing system manufacturer's written instructions.
B. Apply solvent-based bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply bonding adhesive to seam area of flashing.
C. Flash penetrations and field-formed inside and outside corners with sheet flashing.
D. Clean seam areas and overlap, firmly roll sheet into the adhesive. Weld side and end laps to ensure a watertight seam installation.
E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars.

3.08 FIELD QUALITY CONTROL

A. In-Progress Inspection: Contractor shall include in their bid, the cost for roofing system manufacturer's Representative to inspect roofing installation prior to the contractor's completion of 50% of the project. Notify Owner's representative 48 hours in advance of date and time of inspection.
B. Final Roof Inspection: Contractor shall include in their bid, the cost for the roofing system manufacturer's technical personnel to inspect roofing installation on completion and submit final inspection report to the owner's representative
C. Notify Owner's representative 48 hours in advance of date and time of inspection.
D. Repair or remove and replace components of membrane roofing system where test results or inspections indicate that they do not comply with the specified requirements.

3.09 PROTECTING AND CLEANING

A. Correct deficiencies in or remove membrane-roofing system that does not comply with requirements, repair substrates, and repair or reinstall membrane- roofing system to a condition free of damage and deterioration at time of Substantial Completion and according to warranty requirements.
B. Clean over spray and spillage from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

END OF SECTION 0754168