BROWN V. BOARD OF EDUCATION NATIONAL HISTORIC PARK

1515 SE Monroe Street, Topeka, KS 66612

ENTRY COURTYARD ABA PAVING AND DRAINAGE IMPROVEMENTS

PMIS 251211

Drawing No: 80010

PROJECT SPECIFICATIONS

NATIONAL PARK SERVICE

2026-04-10

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PART 1 – GENERAL

ITEM 1 - DESCRIPTION OF WORK

1.1 Background: The Monroe Elementary School entry courtyard was enhanced back in 2002, with paving improvements made to the entry stairs, sloped sidewalk ramps, and storm water conveyance by rerouting the roof drains to connect to the City of Topeka's public storm sewer network. Over the past two decades, the paving has deteriorated throughout the courtyard and on the entry stairs. Freeze/thaw cycles, coupled with ground settling has led to existing paving areas not being ABA compliant for both longitudinal and cross slopes in various areas. There are two ABA curb ramps within city right-of-way connecting to Monroe Street that are too steep and noncompliant. Existing large shade tree roots within the turf grass lawn areas adjacent to Monroe Street have pushed up the existing ground, including the city sidewalk, causing storm water to not drain freely towards the street during rain events. Storm water then pools up at a low point located at the southeast corner of the entry courtyard abutting the city's sidewalk, causing the paving to be inundated with water on both NPS and City of Topeka property. This project will improve the paving and drainage components of the courtyard while maintaining the same historical configuration that currently exists onsite.

1.2 Work Covered by the Contract Documents:

A. Project Location: Brown v. Board of Education National Historic Park
Monroe Elementary School - Entry Courtyard
1515 SE Monroe Street, Topeka, KS 66612
39° 02' 17" N, 95° 40' 35" W.
See plan cover sheet within the construction drawings for project location map.

B. Work consists of improvements to be made within the City of Topeka Right-of-Way (ROW) as well as on NPS property.

New entry courtyard concrete paving and stairs in the same layout as the existing configuration, maintaining the historical jointing patterns that currently exist, but with reconfigured longitudinal and cross slopes that are ABA compliant. Existing signs will be relocated to concrete viewing areas on NPS property, rather than being within the city's ROW. The site will be graded so the existing low point where storm water currently pools will be relocated to the turf grass lawn area with drainage directed into an aggregate storage chamber. During higher intensity rain fall events, storm water that ponds in the turf grass lawn area will be graded to allow for overflow discharge onto the ROW sidewalk and be conveyed to Monroe St by means of a new concrete curb ramp that accesses the existing pedestrian loading zone, ultimately draining to the city's existing storm sewer network.

The project includes removal of approximately 7,362 SF of existing concrete courtyard and stair pavement, 8 LF of existing stair handrails, removing/salvaging/and relocating 7 existing signs, removing/salvaging/and relocating 1 existing ABA door-button pedestal,

removing/salvaging/and reinstalling 4 existing door stops, installing/removing approximately 276 LF of tree protection fencing, and installing/removing approximately 266 LF of straw wattles.

Improvements include approximately 1,845 SF of 5" depth, fiber mesh, reinforced pc concrete pavement adjacent to existing trees, 5,497 SF of 5” depth, fiber mesh, pc concrete pavement, 153 SF of 6” depth, fiber mesh, #6 6x6 wire mesh pc concrete ABA curb ramps, 16’ wide pc concrete stairs with (4) - 6 ¼” risers and (3) - 13 ½” treads, 816 SY of 5” depth AB-3 aggregate subbase under pavement, 11 LF of ornamental stair handrails, 23 LF of combined pc concrete curb and gutter (type 1), 39 SF of ABA detectable warning panels with truncated domes, 50 CY of 4” depth top soil stripped and respread, 60 CY of excavation and haul-off, 3 CY of No.57 aggregate with filter fabric for storm water storage chamber, 4,200 SF of turf grass lawn sod, and traffic control.

C. All work will be performed under a single contract.

D. Period of performance: Work shall be completed within 75 calendar days from the issuance of the Notice to Proceed.

a. Clarification: The Notice to Proceed will be issued with a period of performance that is all inclusive of supply lead times, material deliveries, decommissioning, installation, anticipated average weather days for location, final commissioning, and acceptance of completed work. The contractor will be expected to provide a project schedule with adequate critical path details to ensure all work is completed within the stated calendar days from issuance of the Notice to Proceed. If weather impacts project beyond typical average weather patterns, contractor shall provide documentation in request for additional days.

1.3 Existing Condition Protections:

A. Preservation of Historical and Archeological Fabric:

i. The Historic and Archeological Data Preservation Act of 1974 provides for the preservation of historical and archeological data that might otherwise be lost as the result of alterations to the terrain caused by a federal or federally licensed activity or program.

ii. IF, in connection with operations under this contract, the Contractor, subcontractors, or employees of any of them, discovers, encounters or becomes aware of any possible historical or archeological remains or data, objects or sites of cultural value on the project area, such as historical ruins, graves or grave markers, fossils, or artifacts not specifically noted within the contract. The Contractor shall immediately suspend all operations in the vicinity and continue work in other areas outside a 50-foot radius of discovery and notify the Contracting Officer immediately. When safe to do so, follow up in writing with photographs within 2 days, giving the location and nature of the findings. No objects of cultural resource value may be removed. Contracting Officer will contact other entities as required.

iii. Where appropriate by reason of discovery, the Contracting Officer may order delays in the time of performance and/or changes in the work. If such delays

and/or changes are ordered, the time of performance and contract price shall be adjusted in accordance with Changes clause.

iv. The Contractor will be responsible for protecting the cultural resources within and adjacent to the project area from damage. In addition, the Contractor will be liable for all damage to the cultural resources caused by their actions or the actions of their agents or representatives. The Contractor shall immediately notify the Contracting Officer or their representative if any damage occurs to any cultural resource and immediately suspend work in the area in which damage has occurred until authorized to proceed.

v. The Contractor agrees to include this language within all subcontracts.

B. The structure involved in the work of this Contract is a designated historic structure listed in the National Register of Historic Places. Every precaution shall be taken by the Contractor to prevent damage to existing historical materials, structural components of the building and to the surrounding area. Should any damage be incurred as a result of the Contractor's operations at the site, it shall be repaired, or the damaged materials replaced in kind by the Contractor to the satisfaction of the Contracting Officer at no additional expense to the Government.

C. Protection of Landscaping and Surrounding Structures: All Ground Disturbance at this project shall have oversite by an Owner provided Archeologist. Coordinate schedules as required. The Contractor shall take all necessary measures to provide protection for all trees, fencing, walks and other landscape features and surrounding structures near the work site as noted with the contract. Any such surrounding features damaged, scarred or broken as a result of the Contractor's operations at the site outside of agreed upon documented extents, shall be treated, repaired or replaced in kind to the satisfaction of the Contracting Officer at no additional expense to the Government.

ITEM 2 – PROTECTING EXISTING UTILITIES

2.1 Protecting Existing Utilities: Notify Contracting Officer (CO), Contracting Officer's Representative (COR) and utility companies as required to request location services prior to and to coordinate any excavation/digging operations, and/or for demolition if within Scope of Work.

2.2 Contractor shall be responsible for locating and preventing damage to known utilities on site or indoors. Contractor shall be aware that utility information provided in the plans is based on old as built drawings and limited locating services so contractor shall plan to locate utility lines for crossings to verify locations. If contractor damage occurs, alert CO and COR as soon as safely possible, and repair utility at no additional expense to the Government. If damage occurs to an unknown utility, contact CO and COR as soon as safely possible.

2.3 Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Government or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated below:

A. Notify CO and COR not less than two business days in advance of proposed utility interruptions.

B. Hours for Utility Shutdowns: Shutdowns shall not exceed 2 to 3 hours. Temporary

provisions will be needed by the Contractor for periods longer than stated allowance or if required for critical systems as determined by COR.

ITEM 3 - CONTRACTOR'S USE OF PREMISES

3.1 Conduct of Operations: At all times the contractor shall conduct his operations in conformance with the rules and regulations promulgated by the Secretary of the Interior for the National Park Service, and applicable park rules and regulations prescribed by the Park Superintendent.

Superintendents' Compendium:
Brown v. Board of Education National Historic Park (U.S. National Park Service)
https://www.nps.gov/brvb/learn/management/brvb-superintendent-compendium.htm

A. Communications: Contractor shall provide the Contracting Officer and COR with methods of communications including land and/or cell phone numbers (note some areas of work have limited service coverage), email and in case of emergency 24-hour contact options for duration of time operations.

B. No signs or advertisements (except those specified herein and as required for safety) shall be displayed on the construction site or within the park unless approved by the Contracting Officer.

C. Smoking is not permitted within any Federal building or within 25 feet of entrances, operable windows, or outdoor air intakes.

D. Public Use of Site: Contractor shall at all times conduct operations to ensure the least inconvenience to the public. Coordinate work within City of Topeka ROW areas with appropriate permits, city inspectors and staff. Contractor shall coordinate mobilization, construction equipment, laydown and storage areas, and construction phasing with COR to always keep park access to the public open.

3.2 On-site work hours: Work shall be generally performed during normal business working hours of 8am - 5pm., Monday through Friday, except when otherwise indicated. Work on Saturdays, Sundays, Federal holidays, early morning, or at night may not be performed without prior consent from the CO and COR. Submit requests for work outside of the stated normal business hours to the CO and COR for approval a minimum of 72 hours in advance of the work, 7 days' notice is preferred.

The following Federal holidays are observed by the National Park Service:
New Year's Day
Inauguration Day
Martin Luther King, Jr's Birthday
Washington's Birthday
Memorial Day
Juneteenth National Independence Day
Independence Day
Labor Day
Columbus Day
Veterans Day

Thanksgiving Day
Christmas Day

- Note: Any of the above holidays falling on a Saturday will be observed on the preceding Friday; holidays falling on Sunday will be observed on the following Monday. The specific day that each holiday is recognized for each year can be found at the following site: Federal Holidays (opm.gov).

3.3 Contractor Use of Site:

A. General: Contractor shall have limited use of the site for construction operations. Limit use of premises to construction area as shown on site plan. Do not disturb portions of Project site beyond areas in which the Work is indicated.

B. Driveways and Entrances: Keep driveways, access roads, and entrances serving premises clear and available to Government, Government's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize use of driveways and entrances.

C. Do Not disturb site outside of noted disturbance area, including earthwork, and clearing of vegetation, as noted on the construction drawings via the construction and grading limit lines. Contractor shall provide appropriate mats for equipment on turf areas to reduce soil compaction. Contractor shall remediate soil compaction as directed to do so by the CO/COR.

D. Utilities
   1. General: Cost or use charges for temporary facilities shall be included in the Contract Sum as required.

   2. Water Service: Water from existing water system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations without any additional permit costs. Use resources wisely and minimize waste of water.

   3. Electric Power Service: Electric power from existing system is available for use without metering and without payment of use charges. Provide connections and extensions of services as required for construction operations without any additional permit costs. Power may or may not meet your construction power tool requirements, provide generators if questionable. Use power in a resourceful manner and avoid excess power waste.

   4. Sanitary Operations:

   a. Toilets: Contractor must provide toilets for contractor personnel, sufficiently lighted and ventilated toilet facilities in weatherproof, sight proof, handicap accessible (if required), sturdy enclosures with privacy locks. Coordinate with COR for approved location during the preconstruction meeting.

E. Security and Protection facilities:

1. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with state and federal environmental regulations and that minimize possible air, waterway, and subsoil contamination or pollution or other undesirable effects.

2. Cleaning of Equipment: The Contractor shall ensure that prior to moving on to the Project Area, all equipment, is free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds. Ensure that all equipment has been pressure washed and is free of exotic species prior to start-up of operations and moving of equipment to Project Area. Equipment shall be considered free of soil, seeds, and other debris when a visual inspection does not disclose such material. Disassembly of equipment components or specialized inspection tools are not required.

3. Vegetation Protection: Coordinate with COR to construct protection fence at drip line of any vegetation impacted within construction and grading limits. Any damaged vegetation is to be restored to original conditions via replacement at no additional expense to the Government. Protection fence to be a temporary barrier, meeting the following requirements: High-density plastic, extruded and stretched polyethylene fabric with 2 inch (50mm) maximum opening pattern, highly visible orange color, 48 inches (1220mm) high, supported by tubular or T-shape galvanized steel posts spaced not more than 96 inches (2440mm) apart. Consult with the COR for any unplanned removals required for vegetation that interferes with construction. Carefully supervise excavating, grading, filling, and other construction operations near vegetation to prevent damage.

4. Pest Control: Follow best 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 project completion. Perform control operations lawfully, using environmentally safe materials.

5. Temporary Enclosures: Provide and maintain temporary enclosures such as snow fence as required for protection of construction in progress and from access by visitors or staff, other construction operations, and similar activities.

6. Hot Work Permit: Submit HW-1 Hot work permit form and receive approval from COR prior to Hot work activities commencing on site.

   https://www.nfpa.org/downloadable-resources/forms/hot-work-permit

3.4 Storage - Staging Areas:

A. Confine Storage of materials and equipment to the project staging area noted on the plans. Specific storage units shall be provided by the contractor and exact location within staging area shown in the plans may be discussed at the preconstruction briefing. All storage units provided by the contractor shall be in a clean and acceptable condition to the COR. Security of the materials and equipment on site is the Contractor's responsibility. See construction drawing plan sheet G1.1 for staging plan.

3.5 Preservation of Natural Features: The existing entry courtyard, Monroe Street, and the park grounds in proximity to Monroe Elementary are considered archaeologically sensitive assets of the park, thus the contractor shall strictly adhere to the construction and grading limit lines denoted on the plans. It is of highest priority that all construction personnel preserve and protect the existing site assets. Reference staging plan and notes on sheet G1.1 for more information.

3.6 Hauling Restrictions: Contractor shall verify and be responsible for the path accessing the site and obtaining / maintaining all local, state and federal permits/licenses associated with hauling/road requirements and dumping of materials associated with the project.

3.7 Waste Removal, Recycling, and General Housekeeping:

A. Keep project site in a neat, orderly, and safe condition at all times.

1. Contractor is responsible for providing dumpsters for waste and recycling and for removing all waste created by the project. Contractor shall recycle to the highest degree possible and empty dumpsters as necessary to avoid debris on site. Coordinate with COR for approved dumpster locations prior to commencing construction, and reference contractor staging plan on sheet G1.1.

2. Dispose of waste materials and recycling legally outside the park. The contractor shall not use park dumpsters.

3. Address Recycling: Government goal is to salvage and recycle as much nonhazardous construction waste as possible. Use sustainable methods to the extent possible during this project, recycling material as much as possible within local means. Maintain accurate documentary records for submittal of all recycled materials used including fly ash and slag cement.

4. For all waste and recycling removals offsite, contractors shall provide estimates and/or tickets to quantify material weights and report back to the park, submit to COR for review and record filing.

3.8 Occupancy Requirements for Buildings:

A. Existing Buildings:

1. Full Government Occupancy: Government will occupy buildings that will have construction activities occurring on the exterior immediately adjacent and abutting building during the entire contract period. Cooperate with Government during construction operations to minimize conflicts and facilitate Government usage. Perform the Work so as not to interfere with Government's day-to-day operations. Maintain existing exits, unless otherwise indicated. Contractor will 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 the CO or COR. Contractor will maintain existing building in a weather tight condition throughout construction period. Repair damage caused by construction operations. Protect building and its occupant during construction period.

B. New /Existing Buildings Unoccupied:

1. N/A

3.9 Photo Documentation:

A. Contractor must provide existing condition, progress, and completion photos. All photos shall be in focus, show maximum range of depth of field general photo and then close up detail photo as needed. Shall be in JPEG digital form and submitted preferably electronically by email or optional via CD-R Archival Gold or DVD-R Archival Gold media with printed labels and 8 mega pixels minimum within 7 days from time of taken or as approved by COR.

B. Existing Condition Images:

1. Before starting construction, take color, dated, digital images of project site and adjacent property/roads/etc. that may be impacted by construction activity/traffic. Include existing items to remain or be salvaged from different vantage points and with context for location identification.

C. Construction Progress Images:

1. Document all sub-surface work/ trenches etc. prior to backfill with photos covering enough overall field view to show location and then zoom in for details. (Locations and dimensions shall also be noted on as built drawing set.)
2. Maintain organized index for photos with date, description, etc.
3. Additional images as needed when questions or emergency situations occur. Submit within 24 hours.

D. Completion Images:

1. Document all completed work within scope of work.
2. Maintain organized index for photos with date, description, etc..
3. Additional images as needed when questions or emergency situations occur. Submit within 24 hours.

3.10 Fire and Life Safety:

A. As a minimum, conduct one 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. Topics need to coincide with work scheduled for the following week. Document and submit meeting minutes to the CO and COR within one day after the meeting and document the meetings on the daily reports.

B. Comply with the requirements of NFPA 241 (Standard for Safeguarding Construction, Alteration, and Demolition Operations). Take all necessary precautions to prevent fire during construction. Provide adequate ventilation during use of volatile or noxious substances.

C. Store and handle hazardous materials in accordance with manufacturers and OSHA 29CFR1926 Subpart D requirements 1926 | Occupational Safety and Health Administration (osha.gov). Maintain readily available, on site, MSDS/Safety Data Sheets (SDS) for each chemical.

1. Immediately report all spills of hazardous materials to the CO, COR, and park.

2. Maintain a spill emergency response kit.
3. Train employees how to respond to a spill and use the emergency response kit.

3.11 Noise and Acoustics Management

A. Contractor shall not have personal radios or other media sources and they shall not be broadcast within NPS property.

B. Noise Control: Perform operations to minimize noise. Perform noise-producing work in less sensitive hours of the day or week as directed by the Contracting Officer or COR.

C. Repetitive and/or intermittent, high-level noise: Permitted only during Daytime.

1. Do not exceed the following dB(A) limitations at 50 feet: 70 dB(A) More than 12 minutes in any hour, 80 dB(A) More than 3 minutes in any hour.

2. Maximum permissible construction equipment noise levels at 50 feet: Compressors 75 dB(A), Pneumatic Tools 80 dB(A), Pumps 75 dB(A), Saws 75 dB(A), Generators 75dB(A), Vibrators 75 dB(A)

3. Ambient Noise maximum noise levels (dB) for receiving noise area at property line shall be as follows. Residential receiving area: Daytime 65 dB Nighttime 45 dB. Commercial/Industrial receiving area: Daytime: 67 dB Nighttime: 65 dB

ITEM 4 - COMMENCEMENT, PROSECUTION, AND COMPLETION

4.1 The Contractor shall commence work in accordance with the terms and conditions of the contract. Contractor shall coordinate and incorporate long lead and delivery time items within the schedule.

ITEM 5 - EXAMINATION OF THE SITE

5.1 All bidders are urged to visit the job site and examine existing conditions before submitting bids. Contractors will be accountable for understanding existing conditions. No cost changes for items visible during site visit will be allowed.

ITEM 6 - ABBREVIATIONS

6.1 The list of abbreviations, standards and organizations which may be used in/referred within the Construction Specifications or Special Provisions, may be found linked from the listed page below. On the home page, follow the link under **"Contracting and Procurement"** labeled **"NPS Reference Standards."** https://www.nps.gov/orgs/1671/do-business-with-us.htm

ITEM 7 - ACCIDENT PREVENTION

7.1 Description: The work of this section consists of establishing and implementing an effective accident prevention program (APP) and providing a safe environment for all personnel and visitors.

7.2 Submittals:

A. Accident Prevention (Safety) Plan (APP): Submit a **site-specific** accident prevention (safety) plan. 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. First aid and rescue procedures.
3. Training, both initial and continuing.
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, with a Job Hazard Analysis (JHA)/Job Safety Analysis (JSA), etc. A sample JHA template may be provided upon request.
5. Planning for possible emergency situations, such as cave-ins, earthquake, explosions, fires, floods, power outages, slides, and windstorms. Such planning shall take into consideration the nature of construction, site conditions, and degree of exposure of persons and property.
6. Contractor to identify nearest location of medical facility for emergencies
7. Recognition that works will be performed in remote areas with limited communication or cell phone coverage if applicable.
8. Supplemental hazard specific plans may be required IAW 29 CFR 1926 or 1910.

B. Meeting and Inspection Reports: Safety Meetings: As a minimum, conduct 15 minute "toolbox" safety meetings. These meetings shall be conducted by a foreman and attended by all construction personnel at the worksite. Submit a report of safety meetings and inspections to CO and COR within one day after the meeting and document the meetings on the daily reports.

7.3 Qualification of Employees:

A. Ensure that employees are physically qualified to perform their assigned duties in a safe manner to include operators of vehicles and equipment. Provide operating instructions for all equipment.

B. Do not allow employees to work whose ability or alertness is impaired because of drugs, fatigue, illness, intoxication, or other conditions that may expose themselves or others to injury.

7.4 Accident Reporting: The Contractor shall report all accidents to the CO and COR as soon as safely possible and assist the CO and COR and other officials as required in the investigation of the accident.

7.5 First Aid Facilities: Provide access to facilities for the number of employees and appropriate to the hazards associated with the types of ongoing construction work at the site.

7.6 Emergency Instructions: Post telephone numbers and reporting instructions for ambulance, physician, hospital, fire department, and police in conspicuous locations at the work site.

7.7 Personal Protective Equipment (PPE): It is the Contractor's responsibility to require all those working on or visiting the site to wear necessary protective equipment at all times.

A. PPE must meet requirements of applicable ANSI standards. Selection shall conform to OSHA 29CFR 1926 Subpart E.

B. A hard hat use 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.

C. All PPE will be serviceable at all times. At a minimum, maintain 2 sets of PPE including hard hats and all other Accident Prevention Plan required equipment.

7.8 Hazardous Materials: It shall be the responsibility of all operators and contractors, functioning within the park to properly cleanup, mitigate and remediate if necessary, all unauthorized discharges of hazardous materials or non-hazardous chemical and biological products released from fleet and/or other support vehicles or stationary sources. Response shall be consistent with guidelines established by federal, state, and local regulations, and as outlined within the operator's Safety or Hazardous Materials Business Plan.

A. If a spill, leak, or other release occurs, the operator shall as soon as possible, without impeding cleanup, notify the local 911 Emergency Response, COR and or the National Park Service Emergency Dispatch.

ITEM 8 - PRECONSTRUCTION CONFERENCE

8.1 If the Contracting Officer decides to conduct a preconstruction conference, the successful offeror will be notified and will be required to attend. The Contracting Officer’s notification will include specific details regarding the date, time, and location of the conference, any need for attendance by subcontractors, and information regarding the items to be discussed. See Item 9.1C below.

ITEM 9 - SUBMITTALS

9.1 General Contracting Submittal Procedures:

A. General: Prepare and submit submittals required by individual Technical Specification Sections. Types of submittals are indicated in individual specific sections.

1. CM-16 Transmittal Form: All submittals shall be transmitted via electronic email using National Park Service form CM-16 form. The form will be provided by the Contracting Officer. No action will be taken on a submittal item unless accompanied by the CM-16 transmittal form. Submit completed CM-16 forms to the CO and the COR

B. Submittal List: administrative required submittals are listed below in 9.1.C and does not include technical section submittal requirements included in each technical section.

C. Preconstruction Conference Submittal: Satisfactory evidence of liability insurance coverage and workman’s compensation, and any applicable bonds, must be submitted within 10 calendar days of Notice of Award. The following items are to be submitted prior to the Preconstruction Conference or as specified at the CO’s discretion. The timeline for the

documents to be submitted will be addressed at the pre-construction conference for those items that were not received and approved prior. Notice to Proceed may not be issued, and the Contracting Officer will consider other contractual remedies if not resolved as directed. Work shall not commence until written Notice to Proceed has been issued. Contracting Officer will notify Contractor of tentative date for the Pre-Construction Conference:

1. Letter designating Project Superintendent.
2. Construction Schedule. (Must include shop drawings, procurement time including long lead time items, mobilization, trade work progression and completion at minimum.)
3. A comprehensive breakdown of the Schedule of Values.
4. Accident Prevention (Safety) Plan (see section 7 of this document).
5. A list of Subcontractors for this project.
6. Written statements from subcontractors certifying compliance with applicable labor standard clauses (SF1413).
7. Quality Control Plan.
8. Waste Management Plan.
9. Contractors Commissioning Plan.
10. Historic Preservation Treatment Plan Submitted to AHJ (Authority Having Jurisdiction).
11. List of Construction Permits. Include the following information for each permit:
    a. City of Topeka, ROW Excavation Permit.
    b. City of Topeka, Kansas, Public Works Engineering Department
    c. Contractor must be licensed to perform construction within City of Topeka, KS.

9.2 Project Submittal Process (Shop Drawings, Product Data, and Samples): Contracting Officer will provide sample cover sheet and a list of required submittals is included in each technical specification or attached at the end of this document.

A. Shop Drawings: Indicate all coordinating materials and work impacting the installation coordination, connection details, anchorage requirements, hardware locations, and installation details and locations.

    1. Submit Shop Drawings according to Part 9.1 of this section to include one digital file (.PDF or .TIF) and two full size hardcopy documents to COR.

B. Product Data: Provide component construction and specification data sheets, anchorage requirements and any other product specific data.

    1. Submit Product Data according to Part 9.1 of this section to include one digital file (.PDF or .TIF) to COR.

C. Samples: Submit 2 color samples 4” x 6” minimum in size for all product color selections. Paint samples shall be actual paint finish drawdown for all project colors.

    1. Submit Samples CM-16 Transmittal Form according to Part 9.1 of this section to include one digital file (.PDF or .TIF) and physical samples of actual material to COR.

D. For submittals specified above, forward submittals to Contracting Officer and COR at least 15 days before need for approval (depends on length of project).

E. After approving submittals, Contracting Officer and/or COR will return one copy to the Contractor. If submittals are not approved, Contracting Officer will return all copies to Contractor with reasons for rejection. Resubmit, identifying changes. Any work done before approval shall be at Contractor's own risk.

9.3 Approved Equals: All brand names noted are subject to 'or equal' products. If an item in this solicitation is identified as "brand name or equal" or lists more than 1 manufacturer, the description of the proposed item must reflect the characteristics and level of quality that will satisfy the Government's needs as demonstrated by the salient physical, functional, or performance characteristics that "equal" products must meet and/or exceed that as specified in the solicitation or relevant specification. Contractor shall incorporate and be responsible for all collateral costs due to the or equal proposed as required to provide a complete project.

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

1. Drawings and samples as appropriate.
2. Comparison of the characteristics of the proposed item with that specified and with the salient characteristics provided.
3. Changes required in other elements of the work because of the substitution.
4. Name, address, and telephone number of vendor.
5. 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.

B. A request for approval constitutes a representation that General Contractor:

1. Has investigated and shall provide documentation in request showing that the proposed item is equal or superior in all respects to the salient characteristics specified.
2. Will meet or exceed warranties for the proposed item specified.
3. Has determined that the proposed item is compatible with interfacing items.
4. Will coordinate the installation of an approved item and make all changes required in other elements of the work because of the substitution.
5. Waives all claims for additional expenses that may be incurred as a result of the substitution.

C. Approved Equals will be evaluated and approved/disapproved during the submittal process.

9.4 Schedule of Values: Submit the Schedule of Values a minimum of one week prior to the Preconstruction Conference for COR review. Schedule of Values shall include defined work line items with cost break downs including labor, material, and equipment for COR approval.

9.5 Progress Reporting: The initial Construction Schedule and Schedule of Values are required a minimum of one week prior to the Preconstruction Conference. After the Notice to Proceed is issued and after on-site work begins, progress will be documented via daily logs and by providing an updated Construction Schedule and Schedule of Values when requested, but minimally with each pay application. Submit digital copy electronically (PDF preferred) of all required documents. Construction Schedules are normally in bar chart form and indicate estimated starting and completion dates for each part of the work. For a pay application to be reviewed and processed in

a timely manner, the following information must either be submitted prior to or accompany submission of the pay application:

A. Daily/weekly progress reports during construction as part of the administration process.

B. Updated Schedule of Values: Breakdown each lump-sum item into component work activities used in the schedule, for which progress payments may be requested. The Schedule of Values will form the basis for payment. The work activities broken out within the schedule of values shall be integrated into and made a logical part of the construction baseline schedule submitted under this specification. The total costs for the component work activities shall equal the contract price for that lump-sum item. The Contracting Officer may request data to verify accuracy of dollar values. A sample Schedule of Values format may be provided upon request.

ITEM 10 – TEMPORARY SERVICES

10.1 It is the Contractor's responsibility to provide temporary services, equipment, tools, and skilled labor as required for the chosen means and methods to perform the work in accomplishing this Contract.

ITEM 11 - PROJECT CLOSEOUT

11.1 Description: The work of this section consists of final cleanup, closeout submittals, final inspection procedures working toward Final Acceptance.

11.2 Cleaning: Remove all tools, equipment, surplus materials, and rubbish. Move attic stock to location coordinated with COR. At time of final inspection, project shall be thoroughly clean and ready for intended use. Inspector holds the right to reschedule if project is not ready for inspection.

11.3 Completion and Final Inspection: Contractor shall submit written certification of project completion and request a final inspection to the Contracting Officer and COR. The Contracting Officer or designee will make an inspection within 10 days of receipt of request or at a mutually agreeable time.

A. If the work is determined to be complete following the final inspection with minor comments, the COR will prepare and provide the Contractor a Punch List noting outstanding items to be addressed.
B. If the work is not determined to be complete following the final inspection, the Contracting Officer will notify Contractor in writing, stating reasons. Contractor, after completing the work according to the Contract Documents, shall resubmit completion and request a new final inspection. Re-inspection costs may be charged against the Contractor in accordance with the Inspection of Construction contract clause.

C. Contractor shall complete the Punch List within 30 calendar days, or a time directed by the CO.

D. Once Contractor completes all items of work on the Punch List and all contractually required items are accepted, Contracting Officer will issue Letter of Final Acceptance of Work and request the final pay application.

E. If the Contractor fails to complete the work within the time frame, the Contracting Officer may correct the work with an appropriate reduction in contract price or charge for re-inspection costs in accordance with the Inspection of Construction contract clause.

F. Disposition of any permits and warranties required by the specifications in this section.

11.4 Final Acceptance of the Work: After all punch list deficiencies have been corrected, a Letter of Final Acceptance will be issued. A Release of Claims document must be executed and submitted to the Contracting Officer before final payment can occur.

11.5 Warranties

A. Construction Warranty shall be based on date of final acceptance of the work and remain in effect for one year.

B. Provide all manufacturer warranty information of products installed organized by Division. All contact information, extent of coverage and conditions shall be clearly noted as well as date of overall final acceptance.

C. Information shall include operation and maintenance manuals for each warranted product.

ITEM 12 - DEFINITION OF CONTRACT LINE ITEMS

12.1 Summary

A. The intent of this section 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.

12.2 List of Contract Line Items

A. Contract Line-Item No. 1

1. This item consists of removing approximately 7,362 SF of existing concrete courtyard and stair pavement, 8 LF of existing stair handrails, removing/salvaging/and relocating 7 existing signs, removing/salvaging/and relocating 1 existing ABA door-button pedestal, removing/salvaging/and reinstalling 4 existing door stops, installing/removing approximately 276 LF of tree protection fencing, and installing/removing approximately 266 LF of straw wattles. Construct approximately 1,845 SF of 5" depth, fiber mesh, reinforced pc concrete pavement adjacent to existing trees, 5,497 SF of 5” depth, fiber mesh, pc concrete pavement, 153 SF of 6” depth, fiber mesh, #6 6x6 wire mesh pc concrete ABA curb ramps, 16’ wide pc concrete stairs with (4) - 6 ¼” risers and (3) - 13 ½” treads, 816 SY of 5” depth AB-3 aggregate subbase under pavement, 11 LF of ornamental stair handrails, 23 LF of combined pc concrete curb and gutter (type 1), 39 SF of ABA detectable warning panels with truncated domes, 50 CY of 4” depth strip and respread top soil, 60 CY of excavation and haul-off, 3 CY of No.57 aggregate with filter

fabric for storm water storage chamber, 4,200 SF of turf grass lawn sod, and traffic control

2. Payment will be made per the contract and percentage of completion level.

END OF SECTION

SECTION 055213

RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Bronze decorative handrail mouldings.
   2. Stainless-steel frame and vertical post for stair hand railings, with factory-applied powder coating.
   3. Systems include mechanically fastened and welded assemblies with factory-applied powder coating.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:

   1. Manufacturer's product lines of mechanically connected railings.
   2. Powder coating system products.
   3. Ornamental mouldings and decorative scroll as noted on detail 2/C2.1.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

C. Samples: For each type of exposed finish required.

1.3 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For pipe and tube railings, for tests performed by a qualified testing agency, according to ASTM E894 and ASTM E935.

1.4 Quality Assurance

A. Coating Applicator Qualifications: Applicator shall be approved by coating manufacturer and experienced in AAMA 2604 super-durable polyester powder coating systems.

B. WARRANTY: Provide written warranty of not less than 10 years for factory-applied super-durable polyester powder coating system covering:
   1. Color Retention
   2. Chalk Resistance
   3. Adhesion Failure
   4. Peeling, cracking or blistering

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Railings, including attachment to building construction, shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails:

a. Uniform load of 50 lbf/ ft. (0.73 kN/m) applied in any direction.
b. Concentrated load of 200 lbf (0.89 kN) applied in any direction.
c. Uniform and concentrated loads need not be assumed to act concurrently.

2.2 METALS, GENERAL

A. Brackets, Flanges, and Anchors: Cast or formed metal of same type of material and finish as supported rails unless otherwise indicated.

2.3 STAINLESS STEEL

A. Tubing: ASTM A554, Grade MT 316L.

B. Pipe: ASTM A312/A312M, Grade TP 316L.

C. Bar or Channel: ASTM A 276, Grade 316

D. Plate and Sheet: ASTM A240/A240M or ASTM A666, Type 316L.

2.4 MOULDINGS

A. Bronze handrail moulding with volute fitting at handrail extension, JULIUS BLUM CO. #4534-V, or approved equal.
1. Install channels, frames, handrail extensions, fittings, and accessories per manufacturer's instructions to create a complete railing system matching the existing railing being replaced.
2. Ensure all interfacing materials are compatible. Prevent galvanic corrosion by isolating dissimilar metals. Provide non-conductive separation where required. Shop drawings shall indicate treatment of all dissimilar-metal conditions.

2.5 FASTENERS

A. General: Provide the following:
1. Stainless-Steel Railings: Type 316 stainless-steel fasteners. Concealed where possible.

B. Post-Installed Anchors: Chemical anchors capable of sustaining, without failure, a load equal to 4 times the load imposed when installed in concrete, as determined by testing according to ASTM E488/E488M, conducted by a qualified independent testing agency.

C. Material for Exterior Locations and Where Stainless Steel Is Indicated: Alloy Group 2 (A4) stainless-steel bolts, ASTM F593 (ASTM F738M), and nuts, ASTM F594 (ASTM F836M).

2.6 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.

B. Primer shall be integral to specified powder coating system. Field-applied primers are not permitted.

C. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D1187/D1187M.

D. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C1107/C1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.7 FABRICATION

A. Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch (1 mm) unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

B. Form work true to line and level with accurate angles and surfaces.

C. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove flux immediately.
4. At exposed connections, finish exposed surfaces smooth and blended so no roughness shows after finishing and welded surface matches contours of adjoining surfaces.

D. Nonwelded Connections: Connect members with concealed mechanical fasteners and fittings. Fabricate members and fittings to produce flush, smooth, rigid, hairline joints.

E. Form changes in direction by bending.

F. For changes in direction made by bending, use jigs to produce uniform curvature for each repetitive configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

G. Close exposed ends of railing members with prefabricated end fittings.

H. Brackets, Flanges, Fittings, and Anchors: Provide flanges, miscellaneous fittings, and anchors to interconnect railing members to other work unless otherwise indicated.

I. Stainless-steel welds shall be cleaned and passivated per ASTM A380/A967 prior to coating.

2.8 RAILING COMPONTENT FINISHES

A. Stainless Steel Railing Frame Finish: Provide factory-applied super-durable polyester powder coating system.

1. Coating system shall comply with AAMA 2604. No substitutions permitted without written approval.

2. Coating Type: Super-durable polyester powder coating formulated for exterior architectural applications.

3. Two-coat system.
   a. Primer: Factory-applied, compatible with topcoat
   b. Topcoat: Super-durable polyester powder coat

4. Film Thickness.
   a. Total Dry Film Thickness (DFT): 100–120 microns (4–5 mils) minimum
   b. Total dry film thickness includes both factory-applied primer and topcoat layers; thickness shall be verified per coating manufacturer's instructions.
5. Performance Requirements.
   a. Salt spray resistance: Minimum 3,000 hours per ASTM B117
   b. Adhesion: No loss per ASTM D3359
   c. Impact resistance: No cracking per ASTM D2794
   d. Weathering: Comply with AAMA 2604 requirements

6. Color and Finish
   a. Color to match blackened bronze finish
   b. Exterior grade, UV Stable
   c. Sheen to match blackened bronze finish

7. Surface Preparation
   a. A multi-stage pretreatment for the stainless steel is required. Follow coating manufacturer's written recommendations for cleaning, abrasion, chemical conversion, and drying. Do not substitute field-applied primers.
      1) Alkaline cleaning / degreasing
      2) Mechanical abrasion or blast profiling
      3) Chemical conversion coating (non-chrome or approved equal)
      4) Rinse and dry per coating manufacturer requirements

B. Bronze Handrail Finish:

1. Base Material: Mill-finish bronze handrail, by manufacturer

2. Finish System: Blackened bronze treatment with clear exterior-grade, abrasion-resistant protective coating suitable for continuous hand contact.

3. Color Treatment:
   a. Basis of Design: Sculpt Nouveau - Black Magic Patina, or approved equal
   b. Chemical patina or approved blackening process for bronze handrail.
   c. Color shall be consistent, fade-resistant, and visually match approved sample.

4. Protective Coating:
   a. Basis of Design: TNEMEC Endura-Shield Series 73 or equal.
   b. UV-resistant, abrasion-resistant polyurethane clearcoat formulated for high-touch exterior architectural applications.
   c. Coating shall fully encapsulate patinated surface for maximum durability.

5. Performance Requirements:
   a. Abrasion Resistance: Minimum 500 cycles, Taber abrasion test (ASTM D4060), no visible loss of coating.

b. Corrosion Resistance: Minimum 1,000 hours salt spray (ASTM B117), no blistering or corrosion.
c. Adhesion: No loss per ASTM D3359.
d. UV/Weathering Resistance: Comply with ASTM G154 or equivalent; coating must maintain color and sheen under prolonged sun exposure.
e. Impact Resistance: Withstand repeated human contact and occasional impact without cracking, chipping, or delamination, per ASTM D2794.

6. Appearance:
   a. Exterior-grade, blackened bronze finish with uniform sheen
   b. Minimize fingerprints, smudges, or polishing effects on high-touch surfaces.

7. Surface Preparation:
   a. Clean and degrease mill-finish bronze.
   b. Prepare surface for patina and protective coating as per coating manufacturer's recommendations.
   c. Ensure complete adhesion and uniform finish.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Set railings accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

1. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps for sloping members do not exceed 1/4 inch in 12 feet (6 mm in 3.5 m).

B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

3.2 ANCHORING POSTS

A. Anchor posts to mounting plate as shown in construction drawing detail 2/C2.1.

3.3 ADJUSTING AND CLEANING

A. Touchup Painting: Minor damage may be repaired using manufacturer-approved materials. Components with significant coating damage shall be replaced. Field-applied coatings shall not be used as a substitute for factory-applied finishes.

END OF SECTION 055213

SECTION 31 10 00

SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Protecting existing vegetation to remain.
2. Stripping and stockpiling topsoil.
3. Removing above and below grade site improvements.
4. Temporary erosion and sedimentation control.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site**.**

1.3 MATERIAL OWNERSHIP

A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.4 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, parking areas, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction, City of Topeka Public Works and Traffic Engineering Departments.
2. Provide alternate routes around closed or obstructed pedestrian walkways and vehicular trafficways if required by Owner or authorities having jurisdiction, City of Topeka Public Works and Traffic Engineering Departments.

B. Salvageable Improvements: Carefully remove items indicated to be salvaged and store onsite, coordinate with COR for alternative locations.

C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing and excavation.

D. Do not commence site clearing and grading operations until temporary erosion control measures are in place, including sediment track out mats, straw wattles, silt fence, tree protection fence, and erosion control blankets. Coordinate with C.O.R. for review and approval to ensure all protective measures are in place prior to commencing construction.

E. Vegetation Protection Zones: Protect according to requirements in Section 011000, Item 3.3.E.3."

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."

1. Borrow material is not anticipated to be required for this project. If necessary, obtain approved borrow soil material off-site only after using existing site material for fill and/or topsoil. Any imported material must be archaeologically certified clean and free from invasive species.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect and maintain benchmarks and survey control points from disturbance during construction.

B. Verify that trees, shrubs, and other vegetation to remain or to be relocated have been flagged and that protection zones have been identified and enclosed according to requirements in Section 011000, Item 3.3.E.3.

C. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion and sedimentation control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties, walkways, city street and storm sewer, according to erosion and sedimentation control information contained within the construction drawings and as required of authorities having jurisdiction, City of Topeka.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion and sedimentation control measures during construction until permanent vegetation, turf grass lawn sod, has been established.

D. Remove erosion and sedimentation control measures, restore and stabilize areas disturbed during removal.

3.3 VEGETATION PROTECTION

A. Protect vegetation remaining on-site according to requirements in Section 011000, Item 3.3.E.3

B. Repair or replace trees, shrubs, and other vegetation indicated to remain or be relocated that are damaged by construction operations according to requirements in Section 011000, Item 3.3.E.3

3.4 EXISTING UTILITIES

A. Interrupting Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others, unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify C.O.R. not less than five days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without C.O.R. written permission.

3.5 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth indicated on Drawings in a manner to prevent intermingling with underlying subsoil or other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

3.6 SITE IMPROVEMENTS

A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Park's property.

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION 311000

SECTION 31 20 00

EARTH MOVING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for pavement and turf grass lawn sod.
3. Excavating and backfilling for pavement and turf grass lawn sod.
4. Subbase course for concrete pavements.

1.2 DEFINITIONS

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

B. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

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

1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Park and/or COR. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Park and/or COR. Unauthorized excavation, as well as remedial work directed by COR, shall be without additional compensation.

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

E. Subbase Course: Aggregate layer placed between the subgrade and a portland cement concrete pavement.

F. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase or topsoil materials.

G. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct pre-excavation conference at Project site.

1.4 INFORMATIONAL SUBMITTALS

A. Material test reports.

1.5 FIELD CONDITIONS

A. Utility Locator Service: Notify utility locator service for area where Project is located before beginning earth-moving operations.

B. Do not commence earth-moving operations until vegetation protection measures specified in Section 011000, Item 3.3.E.3, are in place.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Borrow soil is not anticipated to be required for this project. If necessary, provide borrow soil materials only when sufficient satisfactory soil materials are no longer available from onsite excavations as noted on the plans. Imported soil materials must be archaeologically certified clean and be free from invasive species.

B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D2487, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

1. Liquid Limit: per City of Topeka, KS specifications.
2. Plasticity Index: per City of Topeka, KS specifications.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D2487 or a combination of these groups.

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

D. Subbase Aggregate Material: AB-3 Aggregate Base complying with City of Topeka Standard Specifications, Section 3.12, and as specified in Section 1104 of the KDOT Standard Specifications.

E. Storm Water Aggregate Storage Chamber: Narrowly graded mixture of washed stone, ASTM D448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2” sieve and 0 – 5 percent passing a No. 8 sieve, washed stone with no fines.

2.2 ACCESSORIES

A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility; colored to comply with local practice or requirements of authorities having jurisdiction.

B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150

mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep; colored to comply with local practice or requirements of authorities having jurisdiction.

PART 3 - EXECUTION

3.1 PREPARATION

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

B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 EXCAVATION, GENERAL

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

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.3 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

3.4 SUBGRADE INSPECTION

A. Proof-roll subgrade with a pneumatic-tired dump truck or other heavy pneumatic-tired compaction equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

B. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by COR, without additional compensation.

3.5 STORAGE OF SOIL MATERIALS

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

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

3.6 SOIL FILL

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

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

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.

3.7 SOIL MOISTURE CONTROL

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

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

3.8 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D698 and ASTM D1557:

1. Under staircase footings, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent (ASTM D1557).
2. Under concrete sidewalk scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 95 percent (ASTM D1557).
3. Under turf or unpaved areas, scarify and recompact top 12 inches below subgrade and compact each layer of backfill or fill soil material at 92 percent (ASTM D698).

3.9 GRADING

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

B. Site Rough Grading: Slope grades to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch.
2. Sidewalks: Plus or minus 1/4 inch
3. PC Concrete Stairs: Plus or minus 1/4 inch.

3.10 SUBBASE UNDER PAVEMENTS AND STAIRS

A. Place Subbase Aggregate (as defined above in 2.1.D) course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place Subbase Aggregate course under pavements, stairs as follows:

1. Shape Subbase Aggregate course to required crown elevations and cross-slope grades.
2. Place Subbase Aggregate course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
3. Compact Subbase Aggregate course at optimum moisture content to required grades, lines, cross sections, and thickness per City of Topeka specifications.

3.11 FIELD QUALITY CONTROL

A. Special Inspections: Contractor will engage a qualified special inspector to perform inspections.

B. Testing Agency: Contractor will engage a qualified geotechnical engineering testing agency to perform tests and inspections.

C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

D. Stairs Subgrade: At stair subgrade, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by COR.

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

3.12 PROTECTION

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

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

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

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

3.13 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 312000

SECTION 32 13 13

CONCRETE PAVING

PART 1 - GENERAL

1.1 SUMMARY

A. Work Includes Concrete Paving, Including the Following:

1. Construct 5” depth PC Concrete sidewalk on top of aggregate subbase.
2. Construct a 16’ wide PC Concrete staircase as shown on plan detail 2/C2.1.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1. Review methods and procedures related to concrete paving, including but not limited to, the following:

   a. Concrete mixture design.
   b. Quality control of concrete materials and concrete paving construction practices.

2. Require representatives of each entity directly concerned with concrete paving to attend, including the following:

   a. Contractor's superintendent.
   b. Concrete paving Subcontractor.

1.3 ACTION SUBMITTALS

A. Product Data: Include technical data and tested physical and performance properties. Include MPI Approved Products List for each product category specified, with the proposed product highlighted. For each of the following:

1. Portland cement
2. Aggregates
3. Joint filler
4. Joint sealant
5. Concrete admixtures
6. Concrete curing materials
7. Colored Concrete: Beige/Grey per detail 4/C2.1

B. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color selection.

C. Assurance/Control:

1. Certificates: Manufacturer certificates that Products meet or exceed specified requirements.

D. Samples for Verification: For each type of product or exposed finish, prepared as Samples of size indicated below:

1. Exposed Aggregate: 10-lb Sample of each mix.

E. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments. Consult and verify alternate design mix with COR.

F. Shop Drawings.

1. Provide shop drawings to construct the concrete stair shown on plan detail 2/C2.1. Shop drawings shall:
   a. Show actual field conditions and true elevation and location supplied after field verification.
   b. Clearly detail reinforcement in footings, beams, and treads, including clear dimension from concrete edge, size and amount of rebar.
   c. Clearly state concrete compressive strength, steel type and strength, and a listing of all component weights including lifting locations.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified ready-mix concrete manufacturer.

B. Material Test Reports: For each of the following:

1. Portland cement
2. Aggregates
3. Admixtures

1.5 SUBMITTAL COORDINATION

A. Submittal List: A submittal list has been attached to the end of this Specification Section. The intent is to provide an overall summary of the 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.

1.6 QUALITY ASSURANCE

A. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94 requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of Federal, State, and local restrictions for pavement-marking work.

C. Comply with the Federal Highway Administration Manual on Uniform Traffic Control Devices (MUTCD) where applicable.

1.7 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on each concrete mixture.

1. Include the following information in each test report:

a. Admixture dosage rates.
b. Slump.
c. Air content.
d. 7-day compressive strength.
e. 28-day compressive strength.

1.8 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities. Coordinate with COR for any temporary closures and communicate timely notifications, minimum 48 hours, as public access to Monroe Elementary is to remain open at all times.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
2. Do not use frozen materials or materials containing ice or snow.
3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
3. Fog-spray forms and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 unless otherwise indicated.

2.2 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less. Do not use notched and bent forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.3 STEEL REINFORCEMENT

A. Plain-Steel Welded-Wire Reinforcement: ASTM A1064, fabricated from as-drawn steel wire into flat sheets.

B. Deformed-Steel Welded-Wire Reinforcement: ASTM A1064, flat sheet.

C. Epoxy-Coated Reinforcing Bars: ASTM A 775 or ASTM A 934; with ASTM A 615, Grade 60 deformed bars.

D. Epoxy-Coated, Joint Dowel Bars: ASTM A 775; with ASTM A 615, Grade 60 plain-steel bars.

E. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:

1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

2.4 CONCRETE MATERIALS

A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C 150, Type I/II, Gray.
2. Portland Cement: ASTM C 150, Type I/II, Beige/Grey, match existing courtyard pavement per plan detail 4/C2.1.

B. Normal-Weight Aggregates: ASTM C 33, uniformly graded. Provide aggregates from a single source with documented service-record data of at least 10 years' satisfactory service in similar paving applications and service conditions using similar aggregates and cementitious materials.

1. Maximum Coarse Aggregate Size: 1 inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Air-Entraining Admixture: ASTM C 260, conforming to the City of Topeka Approved Product List or contractor to provide certified report of test or analysis showing air-entrainer conforms to AASHTO M154 for 7-day and 28-day compressive and flexural strengths and resistance to freezing and thawing.

D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Reference City of Topeka Standard Specifications for Admixture information

a. Water-Reducing Admixture
b. Retarding Admixture
c. High Range Water-Reducing Admixture
d. Non-Chloride Accelerating Admixture
e. Hydration Controlling Admixtures

E. Water: Potable and complying with ASTM C 94, reference City of Topeka Standard Specifications for additional information.

2.5 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 3 or 4, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry. Contractor may use 2 layers of class 1 or class 2 instead of one layer of class 3 or class 4.

B. Moisture-Retaining Cover Sheeting: ASTM C 171, white opaque polyethylene film, white burlap-polyethylene sheet. Contractor may use clear or black polyethylene for cold weather protection.

C. Liquid Curing Compound conforming to ASTM C 309, Type 2, Class A, from the City of Topeka Approved Product List.

2.6 JOINT SEALANTS

A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturers, based on testing and field experience.

B. Hot-Applied Joint Sealants

1. Hot-Applied, Single-Component, Elastic Joint sealant: ASTM D6690, type II.

2.7 RELATED MATERIALS

A. Expansion Joint Fillers: ASTM D8139, semi-rigid, closed-cell polypropylene foam.

2.8 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.
2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that comply with or exceed requirements.

B. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 6 percent plus or minus 1-1/2 percent for 3/4-inch nominal maximum aggregate size.

C. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

D. Concrete Mixtures: Normal-weight concrete.

1. Compressive Strength (28 Days): 4000 PSI.
2. Maximum W/C Ratio at Point of Placement: 0.45.
3. Slump Limit: 4 inches, plus or minus 1 inch.

2.9 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

2.10 PERFORMANCE REQUIREMENTS

A. Accessibility Standard: Comply with applicable provisions in the most current version of the ABA Standards. ABA Standards (enhanced single file version) (access-board.gov)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch according to requirements below.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

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

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

B. Remove loose material from compacted subbase surface immediately before placing concrete.

C. Protect subgrades from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

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

3.3 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.4 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M.

3.5 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.

1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
2. Provide tie bars at sides of paving strips where indicated.
3. Keyed Joints: Provide preformed keyway-section forms or bulkhead forms with keys unless otherwise indicated. Embed keys at least 1-1/2 inches into concrete.
4. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Extend joint fillers full width and depth of joint.
2. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
3. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
4. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
5. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Control Joints: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of the concrete thickness, as follows, to match jointing of existing adjacent concrete paving:

1. Tooled Joints: Form control joints after initial floating by tooling and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of control joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation and items to be embedded or cast-in-place.

B. Remove snow, ice, or frost from subbase surface before placing concrete. Do not place concrete on frozen surfaces.

C. Notify COR and testing and inspection agencies 24 hours prior to commencement of concrete placement.

D. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

E. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.

F. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.

G. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating joint devices.

I. Screed paving surface with a straightedge and strike off.

J. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

3.7 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.

3.8 FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.

a. Patch voids larger than 1-1/2 inches wide or 1/2 inch deep.
b. Remove projections larger than 1 inch.
c. Tie holes do not require patching.
d. Surface Tolerance: ACI 117 Class D.
e. Apply to concrete staircase.

3.9 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301 and ACI 306.1 for cold-weather protection.
2. Comply with ACI 301 and ACI 305.1 for hot-weather protection.

B. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

C. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

D. Curing Methods: Cure concrete by moisture-retaining-cover curing, curing compound or a combination of these as follows:

1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.

2. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3. Curing Formed Surfaces: Comply with ACI 308.1 as follows:
    a. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
    b. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.
    c. If forms remain during curing period, moist cure after loosening forms.
    d. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:
        i. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
        ii. Continuous Sprinkling: Maintain concrete surface continuously wet.
        iii. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
        iv. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
        v. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
            a. Recoat areas subject to heavy rainfall within three hours after initial application.
            b. Maintain continuity of coating and repair damage during curing period.

3.10 PAVING TOLERANCES

A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 1/2 inch.
2. Thickness: Plus 3/8-inch, minus 1/4 inch.
3. Surface: Gap below 10-feet-long; unleveled straightedge not to exceed 1/2 inch.
4. Joint Spacing: 3 inches.
5. Contraction Joint Depth: Plus 1/4 inch, no minus.
6. Joint Width: Plus 1/8 inch, no minus.

3.11 INSTALLATION OF JOINT SEALANTS

A. Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.

B. Cleaning of Joints: Clean out joints immediately to comply with joint-sealant manufacturer's written instructions.

C. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer.

D. Joint-Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions.

E. Install joint-sealant backings to support joint sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of joint-sealant backings.
2. Do not stretch, twist, puncture, or tear joint-sealant backings.
3. Remove absorbent joint-sealant backings that have become wet before sealant application and replace them with dry materials.

F. Install joint sealants immediately following backing installation, using proven techniques that comply with the following:

1. Place joint sealants so they fully contact joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

G. Tooling of Non-sag Joint Sealants: Immediately after joint-sealant application and before skinning or curing begins, tool sealants according to the following requirements to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint:

1. Remove excess joint sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.

H. Provide joint configuration to comply with joint-sealant manufacturer's written instructions unless otherwise indicated.

I. Clean off excess joint sealant as the Work progresses, by methods and with cleaning materials approved in writing by joint-sealant manufacturers.

3.12 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by COR.

B. Drill test cores where directed by COR, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

3.13 FIELD QUALITY CONTROL

A. Testing Agency: Contractor will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

1. Testing agency shall immediately report to COR, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.

2. Testing agency shall report results of tests and inspections, in writing, to COR, Contractor, and concrete manufacturer within 48 hours of inspections and tests.

a. Test reports shall include reporting requirements of ASTM C31/C31M and ASTM C39/C39M, including the following as applicable to each test and inspection:

1) Project name.
2) Name of testing agency.
3) Names and certification numbers of field and laboratory technicians performing inspections and testing.
4) Name of concrete manufacturer.
5) Date and time of inspection, sampling, and field testing.
6) Date and time of concrete placement.
7) Location in Work of concrete represented by samples.
8) Date and time sample was obtained.
9) Truck and batch ticket numbers.
10) Design compressive strength at 28 days.
11) Concrete mixture designation, proportions, and materials.
12) Field test results.
13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.
14) Type of fracture and compressive break strengths at seven days and 28 days.

B. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.

C. Inspections:

1. Verification of use of required design mixture.
2. Concrete placement, including conveying and depositing.
3. Curing procedures and maintenance of curing temperature.
4. Verification of concrete strength before removal of shores and forms from footings and slabs.
5. Batch Plant Inspections: On a random basis, as determined by COR.

D. Concrete Tests: Testing of composite samples of fresh concrete obtained in accordance with ASTM C 172 shall be performed in accordance with the following requirements:

1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.

    a. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

2. Slump: ASTM C143:

    a. One test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture.
    b. Perform additional tests when concrete consistency appears to change.

3. Air Content: ASTM C231 pressure method, for normal-weight concrete; ASTM C173 volumetric method, for structural lightweight concrete.

    a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

4. Concrete Temperature: ASTM C1064:

    a. One test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.

5. Unit Weight: ASTM C567 fresh unit weight of structural lightweight concrete.

    a. One test for each composite sample, but not less than one test for each day's pour of each concrete mixture.

6. Compression Test Specimens: ASTM C31:

    a. Cast and laboratory cure two sets of 4-inch by 12-inch cylinder specimens for each composite sample.
    b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

7. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.

8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength, and no compressive-strength test value falls below specified compressive strength by more than 500 psi if specified compressive strength is 5000 psi, or no compressive strength test value is less than 1 percent of specified compressive strength if specified compressive strength is greater than 5000 psi.

9. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by COR but will not be used as sole basis for approval or rejection of concrete.

10. Additional Tests:

    a. Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by COR.
    b. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42 or by other methods as directed by COR.

        1) Acceptance criteria for concrete strength shall be in accordance with ACI 301, section 1.6.6.3.

11. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

12. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

END OF SECTION

APPENDIX A - PHOTOS

IMAGE 1 - Enlarged view of existing end cap scroll with diameter measurements shown, match existing, see spec section 05 52 13

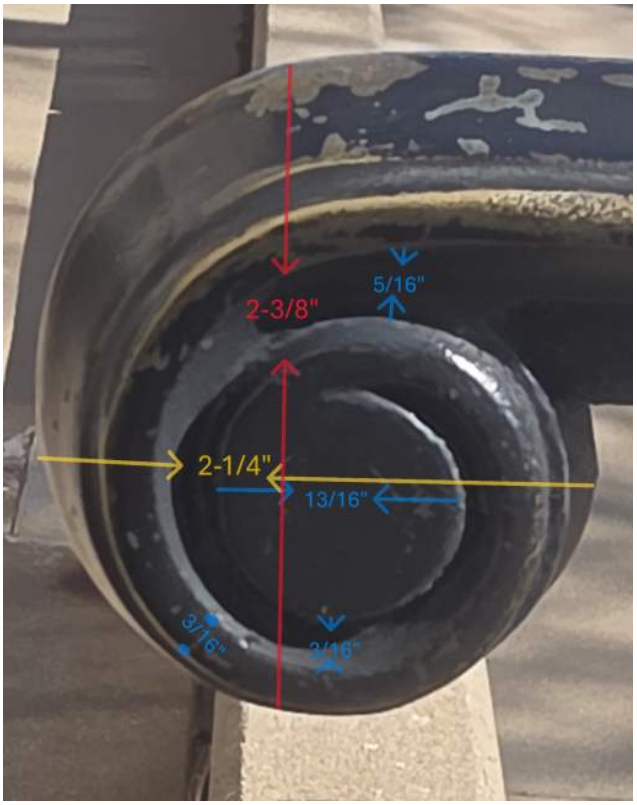

IMAGE 2 - Enlarged view of existing end cap scroll with moulding width measurement shown, match existing, see spec section 05 52 13

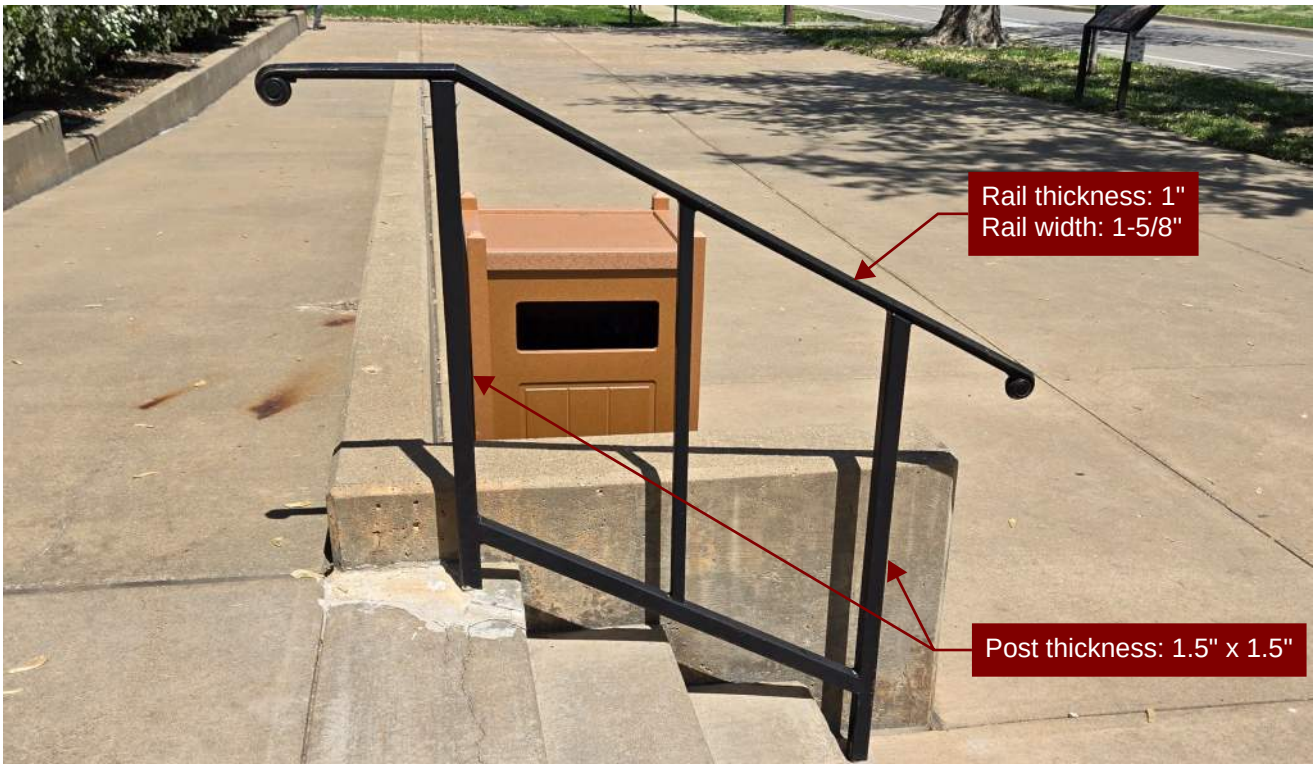

IMAGE 3 - Existing handrail with measurements shown, match existing finish and color, see spec section 05 52 13