

PROJECT BID DOCUMENTS

Scope of Work & Specifications

Service Bay 44 Building 1 Concrete Upgrade

KCATA PROJECT NUMBER: F26-5008-39C



ISSUE DATE: 8/26/2026

BID CLOSE DATE: 9/22/2026 2:00 PM Local Time

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REFERENCED DRAWINGS AND SPECIFICATIONS

The following list of drawings for the project is provided as a reference for the bidder and is part of the bid set:

TITLE SHEET

1-REFERENCE LOCATION PLAN

2-PLAN VIEW SERVICE BAY 44

3-TYPICAL SECTION PITS IN BAY 44

01 GENERAL REQUIREMENTS

THE FOLLOWING SCOPE OR BID ITEMS MAY NOT BE INCLUDED IN THE PROPOSAL OR BID FORM. THE ONLY BID ITEMS FOR THIS PROJECT ARE AS INDICATED IN THE BID FORM. THE COST OF ALL WORK NECESSARY TO COMPLETE THE PROJECT AS INDICATED IN THE PLANS AND SPECIFICATIONS SHALL BE INCLUDED IN THE ITEMS LISTED IN THE BID FORM.

01.01 PROJECT

Project Owner: **KANSAS CITY AREA TRANSPORTATION AUTHORITY**

Project Title: **Service Bay 44 Building 1 Concrete Upgrade**

01.02 PROJECT DESCRIPTION:

KCATA Fleet services seeks to better utilize Bay 44 in Building 1, which will involve the removal of existing lift equipment in existing pits and filling the pits with crushed rock and removal and replacement of the existing concrete floor around the existing pits. Work will generally involve site preparation, demolition and removal of existing hydraulic and mechanical equipment, excavation, reinforced concrete floor placement and clean up.

All work shall conform to these specifications and the specifications issued by the Kansas City Metropolitan Chapter of the American Public Works Association and such modifications as may be required by the KCATA. In case of discrepancy, these specifications shall govern.

This project will be known as: **Service Bay 44 Building 1 Concrete Upgrade**

The successful bidder shall furnish all necessary labor, materials, equipment, supplies, tools and supervision to accomplish the work called for in the contract in accordance with the plans and documents herein.

The project shall be accomplished under a Unit Price Contract. Required work is not necessarily limited to the unit price items listed in the bid form. It is the intent of the drawings and specifications that the resulting improvements be fully completed, functional and ready for operation.

The cost of work not specifically identified by a bid form unit price shall be included in the provided unit price items.

KCATA does not anticipate adding or reducing the scope of work indicated in these bid packages.

01.03 STANDARD SPECIFICATIONS & DRAWINGS

01.03.01 The following standard specifications and drawings are hereby made part of these technical specifications and drawings by reference. All referenced specifications and drawings can be viewed, downloaded and/or ordered through the Kansas City Chapter of the American Public Works Association web site located at kcmetro.apwa.org. Copies of the referenced specifications and drawings can also be made available to any prospective bidder upon request through the KCATA.

01.03.02 Unless otherwise indicated on the plans, the Standard Technical Specifications and Standard Drawings for this Project shall be referenced in the following order. Should a conflict between the Standard Specifications and Standard Drawings arise, the controlling references shall be (in order):

- (1) Kansas City Area Transportation Authority Standard Technical Specifications and Standard Plans and Details shall be the controlling references for all Kansas City Area Transportation Authority owned installations.
- (2) Local Jurisdiction's standard construction specifications and standard construction details shall be the controlling references for non-Kansas City Area Transportation Authority owned installations.
- (3) The Kansas City Metropolitan Chapter of the American Public Works Association's latest DIVISION III STANDARD DRAWINGS and STANDARD SPECIFICATIONS AND DESIGN CRITERIA unless otherwise indicated on the plans.
- (4) The State Department of Transportation's Standard Specifications and Standard Drawings unless otherwise indicated on the plans.

02 PROJECT SPECIAL PROVISIONS

02.01 PROJECT SUMMARY

This Section is included to detail general and special work or programs which may be required. Some of the specifications or statements in this section may also be addressed elsewhere in the Project Manual. Any interpretation of conflicting statements will be adjudicated by the Project Manager.

Bids shall be submitted on the Proposal or Bid Form provided. Each line item shall be bid using the listed units and quantities. It is intended that the cost of all the work required to complete the entire project be included in the Proposal form. All required work that is not provided with a specific bid item shall be included in other bid items.

The Project shall be completed in accordance with the Federal Davis-Bacon Act. All fieldwork shall meet the current prevailing wage requirement.

02.02 ROLES AND RESPONSIBILITIES

CONSTRUCTION SCHEDULE REQUIREMENTS

02.03.01 Schedule limitations and considerations (if applicable) are identified below.

Schedule Considerations:

02.03.02 Contract completion date shall be adjusted when adverse weather delays exceed the anticipated adverse weather delay days as outlined below:

January10	May7	September.....5
February..... 8	June7	October4
March.....7	July.....5	November.....5
April.....6	August.....5	December.....9

02.03.03 Contractor shall provide monthly schedule and workforce documentation.

Key delivery dates: Not Applicable for this contract other than contract duration and end date as established by KCATA Project Management and Procurement.

02.04 TECHNICAL SPECIAL PROVISIONS

GENERAL PROVISIONS

03.01 GENERAL REQUIREMENTS

03.01.01 TRAFFIC CONTROL

(1) GENERAL REQUIREMENTS:

- (a) The Contractor must obtain a traffic control permit a minimum of fourteen (14) calendar days in advance of the proposed beginning date of the construction to allow sufficient time for public notification. Traffic control plans, including impacts to bus routes and transit stops, must be approved by the KCATA prior to obtaining the traffic control permit.
- (b) The Contractor shall take any and all proper precautions to guard against injury to persons or damage to property until the final acceptance of the work by the KCATA. These precautions should include, but not be limited to, protection of vehicular and pedestrian traffic from injury or damage due to open excavations by the proper placement of appropriate safety devices. The Contractor shall maintain safety devices and their proper placement throughout the needed period. Construction practices should be followed that will eliminate all safety hazards as quickly as possible or practicable. The Contractor shall provide all barricades, cones, drums, construction warning signs, flagmen and incidental devices to protect, warn, and guide vehicular and pedestrian traffic, and to protect their personnel and equipment on the job site. During all phases of construction, the Contractor shall display the required signs. Any traffic control devices not in use shall be covered, removed or turned away from the view of oncoming traffic. Whenever the work area changes, all construction warning signs and traffic channelization devices shall be made current in both legend and function.
- (c) All traffic control devices shall conform to the "Manual of Uniform Traffic Control Devices for Streets and Highways" the latest edition, and the most current revisions. No substitutions for the devices required by the above referenced manual or changes in the methods of traffic control as outlined herein will be allowed without the written approval of the jurisdictional agency or KCATA. The Contractor's representative on the project shall make daily inspections of the traffic control devices installed as part of this contract and maintain records of any maintenance required and the date on which it was completed. These records will be maintained for the duration of the project and be incorporated as part of the final records. It shall be the Contractor's responsibility to maintain all traffic control devices in proper working condition and placement at all times. The Contractor shall promptly correct any deficiencies in traffic control.
- (d) The Contractor will be required at the time of the preconstruction conference to designate a specific employee to be responsible for the maintenance of the traffic control devices and establish a method of contacting this person during both working and nonworking hours. This information will be provided to the KCATA Representative, and to the jurisdictional agency or controlling Municipality. The Contractor may, at their option, establish a maintenance agreement with a qualified

firm, approved by the jurisdictional agency or controlling Municipality, to supply, install, and maintain the required traffic control devices throughout the duration of the project. The KCATA reserves the right to make adjustments or revisions in traffic handling requirements that may become necessary after construction on the project has started. These changes will be determined on the basis of periodic inspections throughout the duration of the project. Notice of such change will be transmitted to the Contractor and it will be their responsibility to make the necessary changes as soon as practicable after receipt of the notification.

- (e) If the Contractor encounters conditions that would require a change in method of traffic control, the Contractor shall immediately notify the KCATA Representative. At least 48 hours before the start of the proposed change, the KCATA Representative will request approval of the change in method of maintaining traffic from the jurisdictional agency or controlling Municipality. Upon approval, the Contractor shall obtain a revised street closure permit from the jurisdictional agency or controlling Municipality. The Contractor shall not proceed with the change without the approval of the jurisdictional agency or controlling Municipality. The Contractor shall be required to maintain access to all properties served by streets affected by the construction work, unless noted otherwise in the plans.
- (f) Construction work that requires sidewalk closures or temporary restriction of on-street parking will be permitted along one side of alternating blocks, on one side of the street at a time, or in any other combination, provided that in any one block both sidewalks or curb parking are not closed or restricted at the same time. The contractor shall refer to local jurisdiction guidelines for the maximum amount of time and maximum number of concurrent blocks that may be under construction at any one time. Contractor will be responsible for coordination with businesses and property owners during construction. Driveways to parking lots shall not be blocked at any time unless fully coordinated and agreed to by the owner or business. Contractor must maintain access to business entrances at all times unless fully coordinated and agreed to by the owner.
- (g) Contractor shall coordinate with the KCATA regarding proposed work within 10 feet of streetcar track centerline. Contractor shall coordinate with the KCATA and KC Streetcar Authority to ensure that operation of the streetcar is not impacted. If the streetcar operation must be impacted in performance of the proposed work, no work shall commence without written authorization from the KCATA. Refer to the latest edit on of the Streetcar Regulation Manual for guidance regarding working around the KC Streetcar. Contractor shall coordinate with the railroads any time work is required to be performed within 50' of the centerline of existing track or when work shall be performed on railroad property, whichever is greater. Contractor is responsible for obtaining all flagging/watchman lookout services and all contractor personnel shall have appropriate certifications as required by the railroad.

(2) EMERGENCY NO PARKING SIGNS

- (a) When it is necessary to eliminate parking on a part of a street to facilitate construction work, the Contractor shall, subject to the approval of the KCATA and jurisdictional agency or controlling Municipality, post "EMERGENCY NO PARKING, 7 a.m. TO 6 p.m." or "EMERGENCY NO PARKING, DAY OR NIGHT" signs on the

side of the street where parking is to be eliminated. The signs must read as shown in this section and must be on aluminum or plywood panels. Paper or cardboard signs will not be allowed. These signs must be installed a minimum of 18 hours and a maximum of 48 hours in advance of the time the Contractor plans to begin work. The Contractor must contact the KCATA Representative as soon as the signs are installed. If required, the representative will contact the jurisdictional agency or controlling Municipality as soon as the signs are installed so that a temporary regulation can be written by the jurisdictional agency or controlling Municipality and the Police Department can be notified. The signs cannot be enforced without this notification to the jurisdictional agency or controlling Municipality. The notification to the jurisdictional agency or controlling Municipality must be made before 2 p.m. for enforcement to be effective the following day. When Emergency No Parking signs are to be installed for Saturday or Sunday work, notification must be given before 2 p.m. on the preceding Friday.

- (b) The signs are to be installed on either steel drive posts or existing utility poles at a height of seven (7) feet to the bottom of the sign. The signs are to be installed at the beginning and end of each block and at 150 feet maximum intervals in between. If there are existing parking restriction signs of a lesser degree of restriction, the Contractor shall install the EMERGENCY NO PARKING signs as outlined above and shall cover the existing signs with the EMERGENCY NO PARKING sign or some type of permanent cover (paper and tape will not be accepted). The Emergency No Parking signs cannot be enforced where signs or parking meters are left uncovered. The Contractor shall notify the KCATA and jurisdictional agency or controlling Municipality the day the parking meters are covered. The Contractor shall immediately remove all signs and covers as soon as work in a block has been completed. If it becomes apparent, for any reason, that work cease for more than 72 hours, the same signs and covers shall be removed and must be reinstalled subject to the minimum 18 hours advance notice before work can proceed. If work does not begin within 48 hours after the signs are posted. The same procedure must be followed. Failure by the Contractor to abide by all the provisions concerning "EMERGENCY NO PARKING" signs will result in the cancellation of the permit.

(3) SPECIFIC REQUIREMENTS

- (a) On all arterial and collector streets where cold milling is required, advance warning signs shall be installed to alert drivers of uneven pavement and construction ahead. If the cold milling exceeds three consecutive blocks, additional warning signs shall be installed. All signs must be maintained until the operation has been completed.
- (b) Traffic for full and partial closures shall be as indicated in Local Jurisdiction's traffic control requirements and Part VI of the MUTCD. The recommended placement distances, "A", "B" and "C" for advance warning signs, and the recommended length "L" indicated on the above reference MUTCD Part VI Figures are dependent on the posted speed limit of each street. These distances, except taper length, should be adjusted to suit field conditions, with the approval of the KCATA or the KCATA designated representative.
- (c) The advance warning signs should be placed on the right side of the street at locations of good visibility to traffic. On one-way streets the signs should be placed

on both sides of the street. If in the opinion of the KCATA Representative, the Director of Public Works or their authorized representative, or an officer of the Police Department, the Contractor is creating a hazardous condition, notwithstanding the provisions of this contract, then the work shall stop; and the street involved be returned to normal traffic operations. Work shall not resume until the KCATA or the designated KCATA representative gives permission to proceed.

- (d) The Contractor shall advise the KCATA Representative at least 72 hours in advance of any closure so that proper notice can be given to Police, Fire and other emergency service agencies. Overnight closures will not be permitted on any streets unless otherwise included in the approved traffic control plan.
- (e) Minor streets which intersect an arterial street being resurfaced may be closed. The Contractor shall post a "ROAD CLOSED" sign at the major street intersection, a "ROAD CLOSED TO THRU TRAFFIC" sign at the nearest intersection in advance of the major street, and "ROAD CLOSED AHEAD" advance warning signs in advance of each of these closure road signs. Control of traffic at private driveways along the streets shall be handled on an individual basis and as directed by the KCATA Representative.
- (f) During non-work hours the street shall be reopened to traffic in a safe condition without obstruction or hazard to traffic. The road shall be cleared of construction equipment and debris. Barrels or barricades shall be placed adjacent to the work area and all construction signs except the "ROAD CONSTRUCTION AHEAD" signs shall be covered or turned from traffic during hours when the street is reopened to traffic. The Contractor shall give advance notice of start and duration of resurfacing operation to adjacent property owners and residents no less than 18 hours and no more than 24 hours before the operations start by hanging door tags, as shown in this section, on the doors of all residents and businesses along the street to be resurfaced.
- (g) The Contractor shall schedule their work during hours that do not conflict with any restricted period. Generally, when rush hour restrictions are indicated for a street, the Contractor may, at their option, work on the subject street on Saturday and Sunday with no time restrictions, subject to approval by the KCATA. Consideration shall be given when scheduling work in the vicinity of major public and private facilities including Auditoriums, Convention Centers, Event Centers, and Commercial Centers.

(4) PEDESTRIANS

- (a) Contractor shall coordinate closure of sidewalks with the Jurisdictional agency or controlling Municipality Public Works Department. Contractor is responsible for erecting sidewalk signs warning pedestrians and directing them to alternate routes. These signs shall be located on the sidewalk at the nearest intersection and shall be professionally prepared (i.e. not spray painted or hastily hand painted) and may be framed painted plywood or other Jurisdictional agency or controlling Municipality acceptable means. Contractor shall contact the KCATA upon completion of the first sign for review and approval. Contractor shall erect and maintain sidewalk barricades around the construction site sufficient to protect the public from injury. Barricades

shall be substantial, sturdy and positively held in place by anchors or other means.

- (b) At locations where stations or stops are located across the street from each other and in the same block, the contractor shall not close both sidewalks simultaneously unless previously approved by KCATA and the local jurisdiction.

(5) SUBMITTALS

- (a) Contractor shall submit one copy, in accordance with Section 02.06.03 SUBMITTAL PROCEDURES, of the traffic control plans and related traffic control phasing and schedule to the KCATA or the KCATA designated representative within ten (10) working days from the Notice to Proceed date.

03.01.02 MOBILIZATION

- (1) Mobilization shall include costs of all work and items necessary to begin the project. These items include but may not be limited to: obtaining KCATA and Jurisdictional agency or controlling Municipality required bonds, paying for permits, additional insurance (if required), setting up a construction office, etc. If requested, the Contractor shall submit a breakdown of items included in Mobilization. Permitting with Municipality(ies) will be a no cost permit.

03.01.03 ADMINISTRATION & MANAGEMENT

- (1) Administration & Management shall include costs of all work and items necessary to maintain the project. These items include but may not be limited to: Preparing and updating project schedule, preparation of shop drawing submittals, submittal of weekly payroll records, preparation of monthly payment applications and lien waivers, coordination with other contractors, coordination with utility companies, coordination with the KCATA's Project Management Office, attending progress meetings, etc. If requested, the Contractor shall submit a breakdown of items included in Administration & Management.

03.01.04 USE OF THE SITE AND/OR RIGHT-OF-WAY

- (1) The majority of the Contractor's work will be off site. However, for those areas of work that require site access (e.g., initial inspection, delivery of material, etc.) The Contractor shall adhere to the following items.
- (2) The Contractor shall clean public roadways of all construction debris as a result of construction activities at the end of each day.
- (3) The Contractor shall save and protect all existing trees during all phases of construction, unless otherwise noted in the plans.
- (4) The Contractor shall be responsible to directly coordinate their work with adjacent property owners and all other contractors working on or adjacent to site. Refer to the Special Provisions (if applicable) as outlined in the Project Manual for details regarding coordination with other contractors and KCATA.
- (5) Prior to construction, coordinate all streetlighting conflicts with local jurisdiction or utility company.

- (6) The Contractor is limited to areas for staging of materials and equipment, parking, temporary office facilities or other purposes as approved by the KCATA or its designated representative.
- (7) The Contractor shall:
 - (a) Coordinate acceptable locations of temporary facilities with the KCATA and local Jurisdiction.
 - (b) Minimize disturbance of any adjacent businesses and property owners. All adjacent property owners and/or business owners shall be notified at least seven (7) calendar days in advance of necessary disruptions of use of driveways, sidewalks or entrances.
- (8) Contractor shall restore all temporarily disturbed property, to at least its original condition, following completion of the work.

03.01.05 CONSTRUCTION STAGING

- (1) The Contractor shall coordinate all its construction operations with the KCATA. Once initial staging locations have been approved, the Contractor shall not move or otherwise operate outside these limits without first obtaining approval from the KCATA.
- (2) Staging areas for loading and unloading of materials also requires pre-approval. Locations of trash dumpsters and pick-up and drop-off schedules must be coordinated with the KCATA and the Jurisdictional agency or controlling Municipality's Traffic Division.
- (3) All contractor stockpiling, staging, and employee parking shall be confined to the locations shown on the plans or in the right-of-way. If the Contractor believes that it requires more working room than is provided in the permanent or temporary easement or right-of-way, the Contractor, at their expense, may obtain agreements with property owners for additional temporary access. The Contractor shall be responsible for gaining any temporary access required to complete the work. The Contractor shall provide the property owner and the KCATA with copies of any agreements reached for project access.

END OF SECTION

03.02 CONTRACT CONSIDERATIONS

03.02.01 SCHEDULE OF VALUES

- (1) Submit a printed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet. Contractor's standard form or electronic media printout will be considered.
- (2) Submit Schedule of Values within fifteen (15) calendar days after date of KCATA-Contractor Agreement.
- (3) Format: Utilize the Bid Form of this Project Manual. Identify each line item with number and title of the major specification Section. Identify site mobilization including bonds and insurance.
- (4) Include in each line item, the amount of Allowances specified in this Section. For unit cost Allowances, identify quantities taken from Contract Documents multiplied by the unit cost to achieve the total for the item.
- (5) Include separately from within each line item, a direct proportional amount of Contractor's overhead and profit.
- (6) Revise schedule to list approved Change Orders, with each Application for Payment.
- (7) Include Engineering, material acquisition, and fabrication costs as separate line items if progress payment for these items will be requested.

03.02.02 APPLICATIONS FOR PAYMENT

- (1) Submit three copies of each application on AIA Form G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet.
- (2) Content and Format: Utilize Schedule of Values for listing items in Application for Payment.
- (3) Payment Period: One Month.
- (4) When KCATA Project Management Office requires substantiating information, submit data justifying dollar amounts in question within three (3) working days of the request.
- (5) Provide one copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.
- (6) Include the following with the application:
 - (a) Partial Conditional release of liens including all major Subcontractors and vendors. (KCATA Form)
 - (b) Payroll records for all contractors for previous month. (Contractor standard)
 - (c) Contractor Utilization Form (KCATA Form)

- (d) Affidavits attesting to off-site stored products. (KCATA Form)
 - (i) Requests for payment for material stored off site shall require verification of material be stored in a secure location separate from other projects and other material.
 - (ii) Owner verification of the above (at Contractor's expense)
- (e) Updated fabrication progress schedules, revised and current.

03.02.03 CHANGE PROCEDURES

- (1) The Contractor may submit a Request for Information (RFI) form to request substitutions, clarifications, or changes. The RFI will be reviewed by the KCATA and/or any applicable sub-consultants, and a response will be issued within ten (10) working days.
- (2) The KCATA, based upon its needs and preferences, may have established Add or Deduct Alternates for the project. The KCATA reserves the right to add or remove any alternate into or from the original base bid as the case may be.
- (3) The KCATA reserves the right to add or delete work from the contract if, in their sole opinion, it is in its best interest. The Contractor agrees to negotiate the desired work in good faith with the KCATA. Upon agreement, Contractor shall complete the work as agreed upon and in accordance with the project specifications.
- (4) If the KCATA chooses to remove proposed work items identified by line item in the bid form, the contract shall be deducted by the bid form amount. If field work on that item had begun or materials purchased and delivered, the KCATA and Contractor shall negotiate an appropriate adjustment to the line item cost.
- (5) The KCATA or their representative may issue Supplemental Design Instructions (SDI) to request minor changes or provide clarification in the Work not involving an adjustment to Contract Sum/Price or Contract Time
- (6) The KCATA may issue a Proposal Request which includes a detailed description of a proposed change with supplementary or revised Drawings and specifications, a change in Contract Time for executing the change with a stipulation of any overtime work required and the period of time during which the requested price will be considered valid. Contractor will prepare and submit a proposal within ten (10) working days.
- (7) Construction adjustments requiring time or cost changes to the contract must be processed as follows:
 - (a) The Contractor may propose changes by submitting a Change Order Request (COR) form to the KCATA, describing the proposed change and its full effect on the Work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other Contractors
 - (b) The KCATA or their representative shall approve the Change Order Request Form (COR) and execute a Construction Change Directive (CCD) form. A complete

description of the changes along with backup documentation (if appropriate) shall be provided. Once the CCD form is signed by authorized KCATA personnel, Contractor may commence with the work. The CCD does not allow for payment of the work.

- (c) The CCD's shall be formally incorporated into the contract by preparation and execution of a formal Change Order completed by the KCATA. Once the Change Order is executed, payment will be allowed to the Contractor for the work listed in the CCD.
 - (i) Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Sum/Price.
 - (ii) Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
 - (iii) Promptly enter changes in Project Record Documents.
 - (iv) Execution of Change Orders: KCATA will issue Change Orders for signatures of parties as provided in the Conditions of the Contract.

03.02.04 DEFECT ASSESSMENT

- (1) KCATA or their representative may inspect and evaluate all Work for defect assessment at any time.
- (2) Any Work, or portions of the Work, not conforming to specified requirements shall be either repaired or replaced at the discretion of the KCATA or their representative.
- (3) If, in the opinion of the KCATA, it is not practical to remove and replace the Work, the KCATA will direct one of the following remedies:
 - (a) The defective Work may remain, but the unit sum/price will be adjusted to a new sum/price reduced up to 50 percent at the discretion of the KCATA.
 - (a) The defective Work will be partially repaired according to the instructions of the KCATA, and the unit sum/price will be adjusted to a new sum/price reduced up to 50 percent at the discretion of the KCATA.
- (4) The individual specification sections may modify these options or may identify a specific formula or percentage sum/price reduction.
- (5) The authority of the KCATA to assess the defect and identify payment adjustment, is final.

03.02.05 ALTERNATES

- (1) Submit alternatives identifying the effect on adjacent or related components.
- (2) Alternatives quoted on Bid Forms will be reviewed and accepted or rejected at the KCATA or the KCATA designated representative's option. Accepted alternates will be identified in the KCATA-Contractor Agreement.

- (3) Coordinate related work and modify surrounding work to integrate the Work of each alternative.

END OF SECTION

03.03 COORDINATION AND MEETINGS

03.03.01 CONTRACTOR'S RESPONSIBILITY

- (1) Contractor shall be responsible for coordinating all work with KCATA's representative who will be identified prior to commencement of work.

03.03.02 TIMELY COMPLETION

- (1) Contractors shall coordinate the Work with other contractors so that all work once started in a given area will be completed in that area as soon as possible with good workmanship.

03.03.03 COORDINATION AND PROJECT CONDITIONS

- (1) Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
- (2) If applicable, coordinate space requirements, supports, and installation of mechanical and electrical Work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- (3) If applicable, in finished areas, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
- (4) Coordinate completion and clean-up of Work for Substantial Completion.
- (5) Coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of KCATA's activities and public.

03.03.04 PRECONSTRUCTION MEETING

- (1) If requested by the KCATA, KCATA designated representative, or Contractor, a pre-construction conference will be held within fifteen (15) calendar days following receipt of the Notice to Proceed.
- (2) Attendance Required: Attendees shall include Contractor, key Subcontractors, KCATA project manager, or their designated representative, and Architect/Engineer.
- (3) Agenda will be provided by KCATA Project Management Office (PMO) prior to pre-construction conference. The agenda will include the following items at a minimum:
 - (a) Designation of personnel representing the parties in Contract, and the KCATA.
 - (b) Submission of list of Subcontractor's, list of Products, schedule of values, and progress schedule.
 - (c) Procedures and processing of field decisions, submittals, substitutions, applications

for payments, proposal request, Change Orders, and Contract close-out procedures.

- (d) Coordination of Construction Scheduling.
- (e) Project special provisions.
- (4) The construction layout, construction scheduling as described hereinafter, and other pertinent aspects of the project will be discussed.
- (5) Contractor shall record minutes and distribute copies within two (2) working days after meeting to all participants, KCATA PMO, and those affected by decisions made.

03.03.05 SITE MOBILIZATION MEETING

- (1) If requested, the KCATA will schedule a meeting at the Project site prior to Contractor occupancy.
- (2) Attendance Required: KCATA project manager, Architect/Engineer, Contractor, Contractor's Superintendent, and major Subcontractors.
- (3) Agenda:
 - (a) Use of premises by KCATA and Contractor.
 - (b) KCATA's requirements.
 - (c) Construction facilities and controls provided by KCATA.
 - (d) Temporary utilities provided by KCATA.
 - (e) Survey and layout.
 - (f) Safety, security and housekeeping procedures.
 - (g) Schedules.
 - (h) Application for payment procedures.
 - (i) Procedures for testing.
 - (j) Procedures for maintaining record documents.
 - (k) Requirements for start-up of equipment.
 - (l) Inspection and acceptance of equipment put into service during construction period.
- (4) Record minutes and distribute copies within two (2) working days after meeting to all participants, KCATA PMO, and those affected by decisions made.

03.03.06 PROGRESS MEETINGS

- (1) If the project warrants, and the KCATA or Contractor requests, the Contractor shall

Schedule and administer meetings throughout progress of the Work at intervals acceptable to the KCATA.

- (2) Contractor shall make arrangements for meetings, prepare agenda with copies for participants and preside at meetings.
- (3) Attendance Required: Job superintendent, major Subcontractors and suppliers, KCATA, Architect/Engineer, as appropriate to agenda topics for each meeting.
- (4) Agenda:
 - (a) Review minutes of previous meetings.
 - (a) Review of Work progress.
 - (b) Field observations, problems, and decisions.
 - (c) Identification of problems which impede planned progress.
 - (d) Review of submittals schedule and status of submittals.
 - (e) Review of off-site fabrication and delivery schedules.
 - (f) Maintenance of progress schedule.
 - (g) Corrective measures to regain projected schedules.
 - (h) Planned progress during succeeding work period.
 - (i) Coordination of projected progress.
 - (j) Maintenance of quality and work standards.
 - (k) Effect of proposed changes on progress schedule and coordination.
 - (l) Other business relating to Work.
- (5) Record minutes and distribute copies within two (2) working days after meeting to all participants, KCATA PMO, and those affected by decisions made.

03.03.07 PRE-INSTALLATION MEETING

- (1) When required in individual specification sections, convene a pre-installation meeting at the site prior to commencing work of the section.
- (2) Require attendance of parties directly affecting, or affected by, work of the specific section.
- (3) Notify the KCATA four (4) working days in advance of meeting date.
- (4) Prepare agenda and preside at meeting:
 - (a) Review conditions of installation, preparation and installation procedures.

- (b) Review coordination with related work.
- (5) Record minutes and distribute copies within two (2) working days after meeting to all participants, KCATA PMO, and those affected by decisions made.

END OF SECTION

03.04 REGULATORY REQUIREMENTS

03.04.01 CODES

- (1) In addition to these specifications, the laws, ordinances, and latest amendments thereto at the place of construction shall govern this project and shall include and conform to applicable laws, ordinances, and industry standards including:

ADAAG	Americans With Disabilities Act Accessibility Guidelines
UFAS	Uniform Federal Accessibility Standards
OSHA	Occupational Safety and Health Administration
SMACNA	Sheet Metal and Air-Conditioning Contractors' National Assn.
ASHRAE	American Society of Heating, Refrigeration and Air-Conditioning Engineers
UL	Underwriters' Laboratories
KCMMB	Kansas City Metro Materials Board
CRSI	Concrete Reinforcing Steel Institute
AISC	American Institute of Steel Construction
NRCA	National Roofing Contractors' Association.
ASTM	American Society of Testing Materials
AWI	Architectural Woodwork Institute Quality Standards
DWI	Door and Window Institute
ANSI	ANSI/AAMA Industry Standards
FGMA	FGMA Glazing Manual
NFPA	National Fire Protection Association
---	Class "A" Rating for Roofing (unless otherwise noted)
---	Missouri State Health Department
---	Missouri Inspection Bureau
---	National codes adopted by the local jurisdiction with respective local amendments.
1.	IBC International Building Code, Latest Edition.
2.	IMC International Mechanical Code, Latest Edition.
3.	IPC International Plumbing Code, Latest Edition.
4.	IEC International Electrical Code, Latest Edition.
5.	IFC International Fire Code, Latest Edition.
6.	NEC NFPA 70 National Electric Code Latest Edition

- (2) Also, any other ordinances, laws, rules, or regulations of the local jurisdiction, or federal, state, or local organizations having jurisdiction over any or all parts of this improvement.
- (3) In case of conflict, the KCATA Project Management Office will decide which authority is applicable, and its decision shall be final.

03.04.02 SPECIFICATIONS AND DRAWINGS

- (1) These specifications are intended to supplement the contract drawings, and it will not necessarily be the province of these specifications to describe all portions of the project which the drawings are competent to explain. All items and/or work necessary for the completion of the project must be supplied in place even if of such nature that they could have been indicated on the drawing or described in the specification. The decision of the KCATA Project Management Office as to the proper interpretation of the drawings and specifications shall be final.

END OF SECTION

03.05 PROJECT PROCEDURES

03.05.01 SITE VISITATION

- (1) Contractor shall visit the site to ensure familiarity with all work to be performed.
- (2) Failure of Contractor or their Subcontractors to visit the site shall in no way relieve them of their responsibilities.

03.05.02 AWARD OF CONTRACT AND BEGINNING WORK

- (1) Prior to execution of Contract, KCATA and Contractor shall review the following:
 - (a) Major Subcontractors and materials suppliers
 - (b) Construction schedule
 - (c) Unit prices, if any
 - (d) Clarification of work scope and/or alternates

03.05.03 LAYOUT WORK

- (1) Contractor shall verify all grades, lines, levels, and dimensions and establish benchmarks and survey control required for construction.

03.05.04 PROTECTION OF ADJACENT PROPERTY

- (1) Contractor shall protect all adjacent property, streets, curbs, fences, and plantings during construction that are not intended to be part of the project.
- (2) Any damaged material on adjacent property as mentioned in 02.05.06 shall be replaced or repaired to the KCATA's satisfaction at the Contractor's expense.

03.05.05 PROTECTION OF WORK IN PROGRESS

- (1) Work in progress shall be properly protected from damage.
- (2) Any work in progress that is damaged by other operations shall be repaired or replaced to the KCATA's satisfaction at the Contractor's expense.

03.05.06 CONSTRUCTION LIMITS

- (1) All construction activities must be limited within the designated construction limits as shown on the plans. If construction limits are not designated in the plans, the Contractor shall limit construction activities to within public right of way.

03.05.07 ALTERATION PROJECT PROCEDURES

- (1) Materials: As specified in Product sections; match existing Products and work for patching

and extending work.

- (2) Employ skilled and experienced installer to perform alteration work.

END OF SECTION

03.06 SUBMITTALS

03.06.01 REFERENCES

- (1) AGC (Associated General Contractors of America) publication "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry".

03.06.02 SUBMITTAL PROCEDURES

- (1) Transmit each submittal from Contractor to the KCATA or the KCATA designated representative. The Contractor shall submit the documents electronically in Portable Document format (PDF) via the Project's ProjectWise account. Coordinate submission of related items.
- (2) Hard copy submittals may also be required as directed by the KCATA.
- (3) Submittals received from other sources other than Contractor will be returned without action.
- (4) Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- (5) Identify Project, Contractor, Subcontractor or supplier, pertinent drawing and detail number, and specification section number, as appropriate.
- (6) Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- (7) Schedule submittals to expedite the Project and deliver to the KCATA or the KCATA designated representative at business address identified herein. Coordinate submission of related items.
- (8) For each submittal for review, allow fifteen (15) working days excluding delivery time to and from the Contractor.
- (9) Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- (10) Provide space for Contractor and Architect/Engineer review stamps.
- (11) Revise and resubmit submittals as required; identify all changes made since previous submittal.
- (12) When revised for resubmission, identify all changes made since previous submission.
- (13) Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- (14) Submittals not required or requested may not be reviewed or processed.

03.06.03 CONSTRUCTION PROGRESS SCHEDULES

- (1) Contractor shall prepare construction progress schedule for presentation at preconstruction conference.
- (2) Schedule shall be in bar chart format plotting all items of work and material/equipment fabrication/delivery on calendar covering estimated project construction period. Actual progress shall be plotted against estimated progress by solid and dashed lines. Chart shall also indicate estimated and actual per cent of completion at monthly intervals.
- (3) Schedule shall account for necessary coordination of the KCATA activities, if applicable.
- (4) Submit initial schedule within ten (10) working days after date of KCATA-Contractor Agreement established in Notice to Proceed.
- (5) Revise and resubmit the initial schedule as requested by the KCATA within five (5) working days of the request being made.
- (6) Submit revised schedules with each Application for Payment, identifying changes since previous version.
 - (a) Submit a computer-generated horizontal bar chart with separate line for each major portion of Work or operation identifying first workday of each week.
 - (b) Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
 - (c) Indicate estimated percentage of completion for each item of Work at each submission.
 - (d) Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by KCATA and required by Allowances.

03.06.04 PROPOSED PRODUCTS LIST

- (1) Within ten (10) working days after date of KCATA-Contractor Agreement, submit list of major products proposed for shop drawing or catalog cut review, with name of manufacturer, trade name, and model number of each product.
- (2) For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

03.06.05 PRODUCT DATA

- (1) Product Data for Review:
 - (a) Submitted to the KCATA or the KCATA designated representative for review for the limited purpose of checking for conformance with information given and the design

concept expressed in the contract documents.

- (b) After review, provide copies and distribute in accordance with Section 03.06.02 SUBMITTAL PROCEDURES for record documents purposes.

(2) Product Data for Information:

- (a) Submitted for the KCATA's and/or Architect/Engineer's knowledge.

(3) Product Data for Project Close-out:

- (a) Submitted for the KCATA's benefit during and after project completion.

(4) Submit in accordance with Section 03.06.02 SUBMITTAL PROCEDURES.

- (5) Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

- (6) Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

- (7) After review distribute in accordance with Section 03.06.02 SUBMITTAL PROCEDURES and provide copies for record documents purposes.

03.06.06 SHOP DRAWINGS

(1) Shop Drawings for Review:

- (a) Submitted to the KCATA or the KCATA designated representative for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- (b) After review, produce copies and distribute in accordance with Section 03.06.02 SUBMITTAL PROCEDURES article above and for record documents purposes.

(2) Shop Drawings for Information:

- (a) Submitted for the KCATA's and/or Architect/Engineer's knowledge.

(3) Shop Drawings for Project Close-out:

- (a) Submitted for the KCATA's benefit during and after project completion.

- (4) Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

- (5) After review, reproduce and distribute in accordance with Article on Procedures above and for Record Documents.

- (6) Submit in accordance with Section 03.06.02 SUBMITTAL PROCEDURES.

03.06.07 SAMPLES

- (1) Samples for Review:
 - (a) Submitted to the KCATA or the KCATA designated representative for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 - (b) After review, produce duplicates and distribute in accordance with Section 03.06.02 SUBMITTAL PROCEDURES and for record documents purposes.
- (2) Samples for Information:
 - (a) Submitted for the KCATA's and/or Architect/Engineer's knowledge.
- (3) Samples for Selection:
 - (a) Submitted to the KCATA or the KCATA designated representative for aesthetic, color, or finish selection.
 - (b) Submit samples of finishes from the full range of manufacturers' standard colors, or in custom colors selected if required per specific product specifications, textures, and patterns for KCATA selection.
 - (c) After review, produce duplicates and distribute in accordance with Section 03.06.02 SUBMITTAL PROCEDURES and for record documents purposes.
- (4) Submit samples where noted in individual Specification Sections to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- (5) Include identification on each sample, with full Project information.
- (6) Submit the number of samples specified in individual specification sections; one of which will be retained by the KCATA or the KCATA designated representative.
- (7) Reviewed samples which may be used in the Work are indicated in individual specification sections.
- (8) Samples will not be used for testing purposes unless specifically stated in the specification section.

03.06.08 DESIGN DATA

- (1) Submitted for the KCATA's and/or Architect/Engineer's knowledge.
- (2) Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

03.06.09 TEST REPORTS

- (1) Submitted for the KCATA's and/or Architect/Engineer's knowledge.
- (2) Submit test reports for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

03.06.10 CERTIFICATES

- (1) When specified in individual specification sections, submit certification by the manufacturer, installation/application Subcontractor, or the Contractor to the KCATA or the KCATA designated representative, in quantities specified for Product Data.
- (2) Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- (3) Certificates may be recent or previous test results on material or Product but must be acceptable to the KCATA or the KCATA designated representative.

03.06.11 MANUFACTURER'S INSTRUCTIONS

- (1) When specified in individual specification sections, submit instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to KCATA in quantities specified for Product Data.
- (2) Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- (3) Identify conflicts between manufacturers' instructions and Contract Documents.

END OF SECTION

03.07 SAFETY PLAN**03.07.01 GENERAL REQUIREMENTS**

- (1) The Contractor shall prepare a construction safety plan which shall be present on site at all times. This plan shall identify hazards and what measures will be taken to protect workers and the public. In addition, a safety officer will be designated by the Contractor. This safety officer will be responsible for enforcing the safety plan. The safety officer shall notify the KCATA Project Manager when modifications to the safety plan are made.

END OF SECTION

03.08 QUALITY CONTROL

03.08.01 QUALITY ASSURANCE – CONTROL OF INSTALLATION

- (1) Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- (2) Comply with manufacturers' instructions, including each step, in sequence.
- (3) Should manufacturers' instructions conflict with Contract Documents, request clarification from the KCATA or the KCATA designated representative before proceeding.
- (4) Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- (5) Perform Work by persons qualified to produce required and specified quality.
- (6) Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- (7) Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

03.08.02 TOLERANCES

- (1) Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.
- (2) Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from the KCATA or the KCATA designated representative before proceeding.
- (3) Adjust Products to appropriate dimensions; position before securing Products in place.

03.08.03 REFERENCES AND STANDARDS

- (1) For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- (2) Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.
- (3) Obtain copies of standards where required by product specification sections.
- (4) Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the KCATA or the KCATA designated representative shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

03.08.04 MOCK-UPS AND FIELD SAMPLES

- (1) Tests will be performed under provisions identified in this section and identified in the respective product specification sections.
- (2) Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes.
- (3) Acceptable samples represent a quality level for the Work.
- (4) Install field samples at the site as required by individual specifications Sections for review.
- (5) Where mock-up has been accepted by the KCATA or the KCATA designated representative and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

03.08.05 TESTING SERVICES

- (1) Testing and source quality control may occur on or off the project site. Perform off-site testing as required by any applicable building codes and/or manufacturer's recommendations.

03.08.06 INSPECTION SERVICES

- (1) Inspections may occur on or off the project site. Perform off-site inspecting as required by any applicable codes and/or manufacturer's recommendations.

03.08.07 MANUFACTURER'S FIELD SERVICES

- (1) When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and as otherwise applicable, and to initiate instructions when necessary.
- (2) Submit qualifications of observer to the KCATA or the KCATA designated representative seven (7) calendar days in advance of required observations. Observer subject to approval of the KCATA or the KCATA designated representative.
- (3) Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- (4) Submit report in accordance with Section 03.06.02 SUBMITTAL PROCEDURES within five (5) calendar days of observation to the KCATA or the KCATA designated representative for review.

03.08.08 EXAMINATION

- (1) Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

- (2) Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- (3) Examine and verify specific conditions described in individual specification sections.
- (4) Verify that utility services are available, of the correct characteristics, and in the correct locations.

03.08.09 PREPARATION

- (1) Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

03.09 MATERIAL AND EQUIPMENT

03.09.01 PRODUCTS

- (1) Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- (2) Provide interchangeable components of the same manufacture for components being replaced.

03.09.02 TRANSPORTATION AND HANDLING

- (1) Transport and handle Products in accordance with manufacturer's instructions.
- (2) Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.
- (3) Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.
- (4) Protect finished surfaces including jambs and soffits of openings used as passageways through which equipment and materials are handled.
- (5) Maintain finished surfaces clean, unmarred, and suitably protected until accepted by KCATA.
- (6) Provide protection for finished floor surfaces in traffic areas prior to allowing equipment or materials to be moved over such surfaces.

03.09.03 STORAGE AND PROTECTION

- (1) Store and protect Products in accordance with manufacturers' instructions.
- (2) Store with seals and labels intact and legible.
- (3) Store sensitive Products in weather tight, climate controlled, enclosures in an environment favorable to Product.
- (4) Deliver products to job site in manufacturers' original container with labels intact and legible.
- (5) Promptly remove damaged material and unsuitable items from job site and promptly replace with material meeting the specified requirements at no additional cost to KCATA.
- (6) Maintain packaged materials with seals unbroken and labels intact until time of use.
- (7) The KCATA or the KCATA designated representative may reject as non-complying such material and products that do not bear identification satisfactory to the KCATA or the KCATA designated representative as to manufacturer, grade, quality, and other pertinent information.

- (8) For exterior storage of fabricated Products, place on sloped supports above ground.
- (9) Provide bonded off-site storage and protection when site does not permit on-site storage or protection.
- (10) Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
- (11) Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- (12) Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- (13) Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.
- (14) In event of damage, promptly make replacements and repairs to the KCATA or the KCATA designated representative's approval at no additional cost to KCATA.
- (15) Additional time required to secure replacements and to make repairs will not be considered by KCATA to justify an extension on the Contract Time and Completion.

03.09.04 PRODUCT OPTIONS

- (1) Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- (2) Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- (3) Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

03.09.05 SUBSTITUTIONS

- (1) Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period to requirements specified in this section.
- (2) Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- (3) A request constitutes a representation that the Bidder:
 - (a) Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - (b) Will provide the same warranty for the Substitution as for the specified Product.
 - (c) Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to KCATA.
 - (d) Waives claims for additional costs or time extension which may subsequently become apparent.
 - (e) Will reimburse the KCATA or the KCATA designated representative for review or redesign services associated with re-approval by authorities.
- (4) Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- (5) Substitution Submittal Procedure:
 - (a) Submit in accordance with Section 03.06.02 SUBMITTAL PROCEDURES a copy of request for Substitution for consideration. Limit each request to one proposed Substitution.
 - (b) Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on Contractor.
 - (c) The KCATA or the KCATA designated representative will notify Contractor in writing of decision to accept or reject request.

END OF SECTION

03.10 PROJECT CLOSEOUT

03.10.01 SUBSTANTIAL COMPLETION AND FINAL PAYMENT

- (1) Additional provisions related to Substantial Completion and Final Payment are included in AIA Document A207 Article 9 Payments and Completion, Paragraphs 9.8, 9.9, and 9.10.
- (2) All manufacturer's warranties required by the Contract Documents shall commence on the Date of Substantial Completion of Work or designated portions thereof. For work first completed after Substantial Completion, such manufacturing warranties shall commence on the date the Work is accepted unless some other warranty commencement date is specifically referenced elsewhere in the Contract Documents for a specific warranty.
- (3) The Contractor and each Subcontractor shall carefully and regularly check their work for conformance as the work is being done. Unsatisfactory work shall be corrected as the work progresses and not be permitted to remain and become a part of the punch list.
- (4) Notify the KCATA or the KCATA designated representative in writing when each work element at the site is ready for the punch list inspection. Prepare and submit with the notification a list of items to be corrected or completed.
 - (a) The KCATA or the KCATA designated representative will make arrangements for their punch list inspection at the earliest possible date.
- (5) Transmittal of the punch list to the Contractor shall set the date for reinspection prior to issuance of a Certificate of Substantial Completion. Upon receipt of the punch list, the Contractor shall within seven (7) days advise the KCATA or the KCATA designated representative of any questions that the Contractor or any of their Subcontractors may have concerning the requirements of the punch list.
- (6) When advised by the Contractor that the punch list items have been completed, the KCATA or the KCATA designated representative shall conduct a reinspection with the Contractor and any needed Subcontractors where applicable, to determine whether the Certificate of Substantial Completion can be issued.
 - (a) If, upon the first reinspection, it is found that punch list items are not sufficiently complete that a Certificate of Substantial Completion cannot be issued, the Contractor shall be responsible for the KCATA's costs for additional Professional Services for preparation of a new punch list and any subsequent reinspections and administrative services prior to issuance of the Certificate of Substantial Completion. The KCATA's costs for such additional Professional Services will be charged to the Contractor at the rate of \$150.00 per hour, plus applicable reimbursable expenses. Professional Services and expenses will be deducted from project retainage. . If the project does not have retainage, expenses shall be deducted from final payment. Documentation of these expenses will be provided to the Contractor by the KCATA.
- (7) When issued, the Certificate of Substantial Completion shall name the date, triggering the beginning of the warranty period, with any items to have a later starting date specifically noted. The Certificate shall also have attached to it the uncompleted punch list items and

shall name the date for their completion.

- (8) Acknowledgement of the Date of Substantial Completion by the signature of all parties on the Certificate implies possession of the premises by the KCATA, and completion of incomplete punch list items by the Contractor and the Subcontractors at the KCATA's convenience. The KCATA shall cooperate in permitting the Contractors access to the work for the completion of punch list items.
- (9) Upon issue of the Certificate of Substantial Completion, the Contractor may submit the following applications:
 - (a) Submittal of Final Payment Application. Final Certificate of Payment shall be issued by the KCATA or the KCATA designated representative bringing the total of payments up to the full payment less retainage or less an amount which the KCATA or the KCATA designated representative reasonably estimates would be required to cover more than the cost of any incomplete items of work.
 - (b) Submittal of Retainage Release Application
- (10) Upon written notice by the Contractor that the remaining punch list items are completed, the KCATA or the KCATA designated representative shall verify this by inspection and shall issue to the KCATA a final Certificate of Payment stating that, to the best of their knowledge, information, and belief, the Work has been completed in accordance with the terms and conditions of the Contract Documents, and that the entire balance found to be due the Contractor, and noted in said Final Certificate of Payment, is due and payable. The KCATA shall make payments as stated in the Owner Contractor Agreement.
- (11) If, after Substantial Completion, final completion is delayed for more than thirty (45) calendar days through no fault of the KCATA or the KCATA designated representative, the Contractor shall be responsible for the KCATA's costs for additional professional services. During this period, the KCATA or the KCATA designated representative will make only one inspection to verify completion of punch list items. Any additional inspections required, and related administrative services will be considered additional professional services. The KCATA's costs for additional professional services will be charged to the Contractor at the rate of \$150.00 per hour, plus applicable reimbursable expenses. Professional Services and expenses will be deducted from project retainage. If the project does not have retainage, expenses shall be deducted from final payment. Documentation of these expenses will be provided to the Contractor by the KCATA.

03.10.02 PROJECT RECORD DOCUMENTS

- (1) At least fourteen (14) calendar days prior to the punch list inspection, prepare and submit to the KCATA or the KCATA designated representative one complete set of PDF project drawings, and one PDF complete set of specifications. Documents shall be neatly marked in red to show an accurate "as built" record of construction.
- (2) Carefully mark drawings during construction to accurately locate items of construction that will be concealed when the project is completed. Carefully measure and show dimensions of all concealed work including, but not limited to, buried piping, buried or concealed electrical services, utility entrances, cables, conduit and piping.

- (a) Accurately show the location of utilities, including capped pipes, by two dimensions, depth below grade, additional valves, drains, cleanouts, changes in conduit routing, changes in wiring, changes in pull or junction boxes, etc., and the changes covered by any Change Orders issued during construction.
- (3) Neatly mark specifications to reflect names of manufacturers and products incorporated in the Work.
- (4) Final payment will not be made until project record documents are submitted to and approved by the KCATA or the KCATA designated representative.

03.10.03 OPERATIONS AND MAINTENANCE MANUALS

- (1) At least fourteen (14) calendar days before the punch list inspection, prepare and submit to the KCATA or the KCATA designated representative two complete sets of information describing the operation and maintenance of all systems, equipment, and finishes provided in this project. Information shall be presented in three ring, loose leaf binders with the words "Operation and Maintenance Manual" and the names and addresses of the Project, Contractor, the KCATA and the KCATA designated representative neatly and permanently marked on the cover.
- (2) Information shall be logically organized and subdivided in sections on the basis of operation without regard to construction trades, Subcontractors or specification sections. Each section shall be neatly tabbed and identified for easy reference.
- (3) Information required includes, but is not limited to:
 - (a) Complete list of Subcontractors, noting applicable specification section, item of work, Subcontractor's name, address, telephone number and the name of the person to contact.
 - (b) Schedule of Values of ongoing maintenance, if required.
 - (c) Manufacturer's recommendations for operation and maintenance of all equipment and systems including charts, diagrams, performance curves, catalog data and maintenance manuals.
 - (d) Manufacturer's recommendations for use and maintenance of all finish materials.
 - (e) Duplicate copies of all warranties, guarantees and bonds.

03.10.04 FINAL CLEANING

- (1) General cleaning during construction is required by the General Conditions.
- (2) Clean the site of rubbish, litter and other foreign substances caused by construction.
- (3) Finished Surfaces: Remove marks, fingerprints and other soil and dirt from painted, glazed, decorated, stained or otherwise finished surfaces, including ceilings. Remove construction dust from horizontal and vertical surfaces. Repaint or refinish as required to restore

surfaces to "as new" quality.

- (4) Fixtures and Equipment: Remove stains, paint droppings, spots, dirt, etc., from electrical fixtures, plumbing fixtures, mechanical and electrical equipment, etc.
- (5) Concrete and Masonry: Remove paint, stains, dirt and other foreign materials from all exposed surfaces.
- (6) Removal of Protection: Remove temporary protection and facilities installed for protection of the work during construction.
- (7) At completion of the work, remove all temporary facilities, trash and debris from the site. Leave the site and building clean, neat, and ready for occupancy.
- (8) Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

03.10.05 CONTRACTOR'S AFFIDAVIT AND INDEMNITY

- (1) Submit three completed and notarized copies of AIA Form G706 "Contractor's Affidavit of Payment of Debts and Claims" and AIA Form G707 "Consent of Surety Company to Final Payment" with request for Final Payment.

END OF SECTION

03.11 TESTING, INSPECTIONS, PERMITS, & MAINTENANCE BONDS

03.11.01 TESTING

- (1) On-site testing shall be provided by the KCATA. KCATA provided testing shall include subgrade & aggregate density tests, concrete sampling and testing, and asphalt compaction testing. Contractor shall be responsible to notify the KCATA, its representative and the designated testing lab when materials are ready for testing, prior to placement of concrete or subsequent materials.
- (2) Fabrication-related testing shall be performed by the Contractor. A certified inspector shall perform these tests and shall document the inspection finding daily.
- (3) Contractor shall be responsible for all testing necessary to assure concrete and/or asphalt plants, products and materials are in compliance with the specifications, unless specifically identified otherwise.
- (4) Contractor shall provide adequate notice when requesting testing. A minimum of 24-hour notice shall be provided. Contractor may request testing services less than 24 hours after notice, however, if the KCATA testing lab is not available, the Contractor shall not proceed with work unless one of the following occurs:
 - (a) The KCATA project manager determines it is acceptable to proceed without the required testing. In this instance, the KCATA reserves the right to conduct post placement testing and charge the Contractor for any costs in excess of the normal testing charges.
 - (b) The Contractor obtains another testing lab, acceptable to the KCATA, to conduct testing. In this instance, the Contractor shall be responsible for all costs associated with the testing.
 - (c) The KCATA shall provide special inspection testing if required.
- (5) Subgrade and aggregate base for asphalt and concrete pavement must be proof rolled with a loaded dump truck in addition to density testing as specified. Proof roll truck shall have a minimum rear axle load of 20,000 lbs. for single axel or 40,000 lbs. for tandem axle. Proof rolling must be witnessed by the KCATA, its representative or the designated testing lab. Identified soft spots (areas rutting to a depth of greater than 1" shall be removed, re-compacted and retested prior to Contractor proceeding with pavement placement.

03.11.02 INSPECTIONS

- (1) Inspections shall be performed by the KCATA or their representative.

03.11.03 PERMITS

- (1) Permitting with Municipality(ies) will be at no cost permit. Should there be other permitting required other than those with a Municipality, the Contractor shall be required to pay for all required permits. All costs (e.g. electrical, excavation, traffic control, etc.) shall be paid for in accordance with Section 05 – Measurement and Payment.

03.11.04 MAINTENANCE BOND

- (1) Two-year Maintenance Bond required.

03.11.05 SYSTEM INTEGRATION TESTING

- (1) The Contractor shall furnish one (1) unit of any specialized test equipment needed to test and/or set up their equipment as required to test the functionality of the installed system and its integration with the KCATA equipment and systems. This equipment shall include all software installed into the equipment and accessories to be delivered complete and ready for operation.
- (2) A detailed testing and integration plan is included in Section 03 – “Project Special Provisions”. Contractor shall provide all necessary equipment and shall perform the designated tests in accordance with the System Integration Plan.
- (3) The Contractor shall notify the KCATA seven (7) calendar days prior to performing the test. The test shall not commence without approval by the KCATA. Contractor shall submit test results to the KCATA. The results submittal shall demonstrate that the functionality of the proposed equipment is directly applicable to the KCATA System.

END OF SECTION

04 STANDARD TECHNICAL SPECIFICATIONS

04.01 MOBILIZATION

(1) See Section 03.01.01 TRAFFIC CONTROL

(2) GENERAL REQUIREMENTS:

- (a) The Contractor must obtain a traffic control permit a minimum of fourteen (14) calendar days in advance of the proposed beginning date of the construction to allow sufficient time for public notification. Traffic control plans, including impacts to bus routes and transit stops, must be approved by the KCATA prior to obtaining the traffic control permit.
- (b) The Contractor shall take any and all proper precautions to guard against injury to persons or damage to property until the final acceptance of the work by the KCATA. These precautions should include, but not be limited to, protection of vehicular and pedestrian traffic from injury or damage due to open excavations by the proper placement of appropriate safety devices. The Contractor shall maintain safety devices and their proper placement throughout the needed period. Construction practices should be followed that will eliminate all safety hazards as quickly as possible or practicable. The Contractor shall provide all barricades, cones, drums, construction warning signs, flagmen and incidental devices to protect, warn, and guide vehicular and pedestrian traffic, and to protect their personnel and equipment on the job site. During all phases of construction, the Contractor shall display the required signs. Any traffic control devices not in use shall be covered, removed or turned away from the view of oncoming traffic. Whenever the work area changes, all construction warning signs and traffic channelization devices shall be made current in both legend and function.
- (c) All traffic control devices shall conform to the "Manual of Uniform Traffic Control Devices for Streets and Highways" the latest edition, and the most current revisions. No substitutions for the devices required by the above referenced manual or changes in the methods of traffic control as outlined herein will be allowed without the written approval of the jurisdictional agency or KCATA. The Contractor's representative on the project shall make daily inspections of the traffic control devices installed as part of this contract and maintain records of any maintenance required and the date on which it was completed. These records will be maintained for the duration of the project and be incorporated as part of the final records. It shall be the Contractor's responsibility to maintain all traffic control devices in proper working condition and placement at all times. The Contractor shall promptly correct any deficiencies in traffic control.
- (d) The Contractor will be required at the time of the preconstruction conference to designate a specific employee to be responsible for the maintenance of the traffic control devices and establish a method of contacting this person during both working and nonworking hours. This information will be provided to the

KCATA Representative, and to the jurisdictional agency or controlling Municipality. The Contractor may, at their option, establish a maintenance agreement with a qualified firm, approved by the jurisdictional agency or controlling Municipality, to supply, install, and maintain the required traffic control devices throughout the duration of the project. The KCATA reserves the right to make adjustments or revisions in traffic handling requirements that may become necessary after construction on the project has started. These changes will be determined on the basis of periodic inspections throughout the duration of the project. Notice of such change will be transmitted to the Contractor and it will be their responsibility to make the necessary changes as soon as practicable after receipt of the notification.

- (e) If the Contractor encounters conditions that would require a change in method of traffic control, the Contractor shall immediately notify the KCATA Representative. At least 48 hours before the start of the proposed change, the KCATA Representative will request approval of the change in method of maintaining traffic from the jurisdictional agency or controlling Municipality. Upon approval, the Contractor shall obtain a revised street closure permit from the jurisdictional agency or controlling Municipality. The Contractor shall not proceed with the change without the approval of the jurisdictional agency or controlling Municipality. The Contractor shall be required to maintain access to all properties served by streets affected by the construction work, unless noted otherwise in the plans.
- (f) Construction work that requires sidewalk closures or temporary restriction of on-street parking will be permitted along one side of alternating blocks, on one side of the street at a time, or in any other combination, provided that in any one block both sidewalks or curb parking are not closed or restricted at the same time. The contractor shall refer to local jurisdiction guidelines for the maximum amount of time and maximum number of concurrent blocks that may be under construction at any one time. Contractor will be responsible for coordination with businesses and property owners during construction. Driveways to parking lots shall not be blocked at any time unless fully coordinated and agreed to by the owner or business. Contractor must maintain access to business entrances at all times unless fully coordinated and agreed to by the owner.
- (g) Contractor shall coordinate with the KCATA regarding proposed work within 10 feet of streetcar track centerline. Contractor shall coordinate with the KCATA and KC Streetcar Authority to ensure that operation of the streetcar is not impacted. If the streetcar operation must be impacted in performance of the proposed work, no work shall commence without written authorization from the KCATA. Refer to the latest edit on of the Streetcar Regulation Manual for guidance regarding working around the KC Streetcar. Contractor shall coordinate with the railroads any time work is required to be performed within 50' of the centerline of existing track or when work shall be performed on railroad property, whichever is greater. Contractor is responsible for obtaining all flagging/watchman lookout services and all contractor personnel shall have appropriate certifications as required by the railroad.

- (h) EMERGENCY NO PARKING SIGNS
 - (i) When it is necessary to eliminate parking on a part of a street to facilitate construction work, the Contractor shall, subject to the approval of the KCATA and jurisdictional agency or controlling Municipality, post "EMERGENCY NO PARKING, 7 a.m. TO 6 p.m." or "EMERGENCY NO PARKING, DAY OR NIGHT" signs on the side of the street where parking is to be eliminated. The signs must read as shown in this section and must be on aluminum or plywood panels. Paper or cardboard signs will not be allowed. These signs must be installed a minimum of 18 hours and a maximum of 48 hours in advance of the time the Contractor plans to begin work. The Contractor must contact the KCATA Representative as soon as the signs are installed. If required, the representative will contact the jurisdictional agency or controlling Municipality as soon as the signs are installed so that a temporary regulation can be written by the jurisdictional agency or controlling Municipality and the Police Department can be notified. The signs cannot be enforced without this notification to the jurisdictional agency or controlling Municipality. The notification to the jurisdictional agency or controlling Municipality must be made before 2 p.m. for enforcement to be effective the following day. When Emergency No Parking signs are to be installed for Saturday or Sunday work, notification must be given before 2 p.m. on the preceding Friday.
 - (j) The signs are to be installed on either steel drive posts or existing utility poles at a height of seven (7) feet to the bottom of the sign. The signs are to be installed at the beginning and end of each block and at 150 feet maximum intervals in between. If there are existing parking restriction signs of a lesser degree of restriction, the Contractor shall install the EMERGENCY NO PARKING signs as outlined above and shall cover the existing signs with the EMERGENCY NO PARKING sign or some type of permanent cover (paper and tape will not be accepted). The Emergency No Parking signs cannot be enforced where signs or parking meters are left uncovered. The Contractor shall notify the KCATA and jurisdictional agency or controlling Municipality the day the parking meters are covered. The Contractor shall immediately remove all signs and covers as soon as work in a block has been completed. If it becomes apparent, for any reason, that work cease for more than 72 hours, the same signs and covers shall be removed and must be reinstalled subject to the minimum 18 hours advance notice before work can proceed. If work does not begin within 48 hours after the signs are posted. The same procedure must be followed. Failure by the Contractor to abide by all the provisions concerning "EMERGENCY NO PARKING" signs will result in the cancellation of the permit.
- (2) SPECIFIC REQUIREMENTS
 - (3) On all arterial and collector streets where cold milling is required, advance warning signs shall be installed to alert drivers of uneven pavement and construction ahead. If the cold milling exceeds three consecutive blocks, additional warning signs shall be installed. All signs must be maintained until the operation has been completed.
 - (a) Traffic for full and partial closures shall be as indicated in Local Jurisdiction's

traffic control requirements and Part VI of the MUTCD. The recommended placement distances, "A", "B" and "C" for **advance** warning signs, and the recommended length "L" indicated on the above reference MUTCD Part VI Figures are dependent on the posted speed limit of each street. These distances, except taper length, should be adjusted to suit field conditions, with the approval of the KCATA or the KCATA designated representative.

- (b) The advance warning signs should be placed on the right side of the street at locations of good visibility to traffic. On one-way streets the signs should be placed on both sides of the street. If in the opinion of the KCATA Representative, the Director of Public Works or their authorized representative, or an officer of the Police Department, the Contractor is creating a hazardous condition, notwithstanding the provisions of this contract, then the work shall stop; and the street involved be returned to normal traffic operations. Work shall not resume until the KCATA or the designated KCATA representative gives permission to proceed.
- (c) The Contractor shall advise the KCATA Representative at least 72 hours in advance of any closure so that proper notice can be given to Police, Fire and other emergency service agencies. Overnight closures will not be permitted on any streets unless otherwise included in the approved traffic control plan.
- (d) Minor streets which intersect an arterial street being resurfaced may be closed. The Contractor shall post a "ROAD CLOSED" sign at the major street intersection, a "ROAD CLOSED TO THRU TRAFFIC" sign at the nearest intersection in advance of the major street, and "ROAD CLOSED AHEAD" advance warning signs in advance of each of these closure road signs. Control of traffic at private driveways along the streets shall be handled on an individual basis and as directed by the KCATA Representative.
- (e) During non-work hours the street shall be reopened to traffic in a safe condition without obstruction or hazard to traffic. The road shall be cleared of construction equipment and debris. Barrels or barricades shall be placed adjacent to the work area and all construction signs except the "ROAD CONSTRUCTION AHEAD" signs shall be covered or turned from traffic during hours when the street is reopened to traffic. The Contractor shall give advance notice of start and duration of resurfacing operation to adjacent property owners and residents no less than 18 hours and no more than 24 hours before the operations start by hanging door tags, as shown in this section, on the doors of all residents and businesses along the street to be resurfaced.
- (f) The Contractor shall schedule their work during hours that do not conflict with any restricted period. Generally, when rush hour restrictions are indicated for a street, the Contractor may, at their option, work on the subject street on Saturday and Sunday with no time restrictions, subject to approval by the KCATA. Consideration shall be given when scheduling work in the vicinity of major public and private facilities including Auditoriums, Convention Centers, Event Centers, and Commercial Centers.

(4) PEDESTRIANS

- (5) Contractor shall coordinate closure of sidewalks with the Jurisdictional agency or controlling Municipality Public Works Department. Contractor is responsible for erecting sidewalk signs warning pedestrians and directing them to alternate routes. These signs shall be located on the sidewalk at the nearest intersection and shall be professionally prepared (i.e. not spray painted or hastily hand painted) and may be framed painted plywood or other Jurisdictional agency or controlling Municipality acceptable means. Contractor shall contact the KCATA upon completion of the first sign for review and approval. Contractor shall erect and maintain sidewalk barricades around the construction site sufficient to protect the public from injury. Barricades shall be substantial, sturdy and positively held in place by anchors or other means.

- (a) At locations where stations or stops are located across the street from each other and in the same block, the contractor shall not close both sidewalks simultaneously unless previously approved by KCATA and the local jurisdiction.

(b) SUBMITTALS

- (c) Contractor shall submit one copy, in accordance with Section 02.06.03 SUBMITTAL PROCEDURES, of the traffic control plans and related traffic control phasing and schedule to the KCATA or the KCATA designated representative within ten (10) working days from the Notice to Proceed date.

(2) MOBILIZATION.

04.02 ADMINISTRATION & MANAGEMENT

- (3) See Section 03.01.03 ADMINISTRATION & MANAGEMENT.

04.03 ASPHALT PAVING

04.03.01 GENERAL REQUIREMENTS

- (1) All work in this section shall conform to the APWA Section 2200 Paving.
- (2) The asphalt surface pavement mix shall be Type 5-01 and shall conform to the requirements of Section titled "Asphalt Materials", of these documents.
- (3) The asphalt base pavement mix shall be Type 1-01 and shall conform to the requirements of Section titled "Asphalt Materials", of these documents.

04.03.02 GENERAL REQUIREMENTS

- (1) Asphalt materials used in this project may be either Hot Mixed Asphalt Material (HMA), or Warm mixed Asphalt Material (WMA) with the approval of the KCATA or KCATA designated representative.
- (2) The Surface Asphalt Mix shall be APWA Type 5-01 with the following changes.

- (a) The asphalt mix design shall be modified to include not less than 40% of the plus 4 material to be chat, crushed sandstone, crushed gravel, crushed steel slag or crushed porphyry (rhyolite, basalt, granite and iron mountain traprock are examples of crushed porphyry).
 - (b) The asphalt material may include not more than 25% recycled asphalt material (RAP) or reclaimed asphalt material. (RAM)
- (3) The Base Asphalt Mix shall be APWA Type 1-01 with the following changes.
 - (a) The asphalt mix design shall be modified to include not less than 30% of the plus 4 material to be chat, crushed sandstone, crushed gravel, crushed steel slag or crushed porphyry (rhyolite, basalt, granite and iron mountain trap rock are examples of crushed porphyry).
 - (b) The asphalt material may include not more than 35% recycled asphalt material (RAP) or reclaimed asphalt material. (RAM)
- (4) The KCATA makes no guarantee on quantities or quality of the milled materials to be generated. The Contractor will make their own calculations of milled material to be generated based on the square yards to be cold milled.
- (5) If cold milled streets are added or deleted, changing square yards of cold milling thereby affecting quantities of milled materials, the appropriate change order will be prepared.
- (6) The Contractor will be expected to lay the quantity of recycled mix used in the proposal regardless of the percent composition used. The Contractor will obtain reclaimed material from another source, at no cost to the KCATA, or lay virgin material at the recycled unit bid price if no reclaimed material remains from the supply generated by this contract.

04.03.03 MATERIALS EVALUATION

- (1) The RAP and/or RAM shall have the following tests performed in addition to the usual Marshall procedures.
 - (a) A sieve analysis shall be performed on the RAP and/or RAM in accordance with ASTM C117, Test Method for Material Finer than No. 200 Sieve in Mineral Aggregate by Washing and ASTM C136, Method for Sieve Analysis of Fine and Coarse Aggregates.
 - (b) The Asphalt content shall be determined for the RAP using method A of ASTM Designation D2172, Test Method for Quantitative Extraction of Bitumen from Bituminous Paving Mixtures where the RAP content exceeds 30%. For Mixtures with RAP contents less than 30%, asphalt content may be determined using ASTM D6307.
 - (c) The asphalt used shall be determined as follows:
 - (i) For RAP contents of up to 20%, the asphalt grade shall be as specified in

the mix design.

- (ii) For RAP contents from 20% up to 30% the asphalt grade shall be decreased one temperature range.
- (iii) For RAP contents from 30% to 50%, the asphalt grade of the new asphalt shall be determined using the procedures outlined in MS-2, 6th Edition, Appendix A.
- (iv) All sources of RAP and/or RAM shall be approved by the KCATA or the KCATA designated representative.

04.03.04 MATERIAL REQUIREMENTS

- (1) New asphalt cements added to the aged asphalt shall meet the requirements of APWA Section 2205.3A "Asphaltic Concrete Surface and Base", "Materials" subsection.
- (2) Recycling Agents, if used, shall meet ASTM D 4552, Standard Practice for Classifying HOT MIX Recycling Agents.
- (3) The blend of RAP and/or RAM and virgin aggregates shall be checked for resistance to stripping. Using an accepted water sensitivity test and the same asphalt chosen for the project, determine if an anti-stripping agent is needed. The immersion compression test, ASTM D 1075, Effect of water on Cohesion of Compacted Bituminous Mixtures shall be performed for the compacted mixtures. The retained strength shall exceed 75 percent.
- (4) The RAP and /or RAM stockpiled at the plant site shall be maintained if adequate space is available, in numerous stockpiles separated on the basis of mix type - surface, binder and base. The RAP and/or RAM shall be processed such that 100% will pass the 1 ½ inch sieve and 90% will pass the 1-inch sieve.
- (5) The RAP and /or RAM stockpiles shall be free of foreign matter (e.g., old planer teeth, concrete, broken sewer casting, loop detector wire, protective membranes, rubberized joint filler materials and thermoplastic turn and lane markers).

04.03.05 COMPACTION

- (1) General: Rolling equipment for use in compacting mixes shall meet the requirements of APWA Section 2205.8B "Asphaltic Concrete Surface and Base", "Asphalt Paving Equipment" subsection. Unless otherwise approved by the KCATA representative at least three (3) rollers shall be required at all times. Additional rollers shall be used as necessary to provide specified pavement density. Asphaltic concrete surface density shall be 97 percent of maximum density and asphaltic concrete base shall be 95 percent of maximum density obtained by the Marshall Method.
- (2) Breakdown Rolling: Breakdown rolling shall immediately follow the rolling of the longitudinal joint and edges. The roller shall be operated as close to the paver as necessary to obtain adequate density without causing undue displacement. The breakdown roller shall be operated with the drive wheel nearest the finishing

machine. Exceptions may be made by the KCATA representative when working on steep slopes or super-elevated curves.

- (3) Intermediate Rolling: Pneumatic-tired rollers shall be used for intermediate rolling. The intermediate rolling shall follow the breakdown rolling as close as possible and while the paving mix is still of a temperature that will result in maximum density from this operation. Pneumatic-tired rolling shall be continuous after the initial rolling until all of the mix placed has been compacted to the required density. Turning of pneumatic-tired rollers on the hot paving mix which causes displacement shall not be permitted.
- (4) Finish Rolling: The finish rolling shall be accomplished while the material is still warm enough for the removal of roller marks. All roller marks shall be removed by the finish rolling operation.
- (5) All rolling operations shall be conducted in close sequence. In places inaccessible for the operations of standard rollers as specified the compaction shall be performed by trench rollers or other methods meeting the requirements of Section 2205.8.B entitled "Rollers". The trench roller shall be operated until the course is thoroughly compacted. Hand tamping, manual or mechanical may be used in such areas, if operations will provide the required density.

04.03.06 SPOT PATCHING

- (1) All soft areas in the existing pavement shall be repaired by spot patching prior to paving. A soft area is defined as an area of existing pavement of one square yard or less. Larger areas shall be repaired under the requirements of Base Repairs. Whenever a soft area is encountered in a street to be paved, the soft area shall be repaired by the following procedure:
 - (a) Remove all soft materials from the area.
 - (b) Compact the area to a minimum of 95% of standard proctor prior to placing of any asphalt.
 - (c) Place asphalt in the area in lifts of six (6) inches maximum depth to the surface. Compact each lift to the minimum standard density as specified in APWA 2205.9 E.
- (3) No separate payment will be made for spot patching. All costs shall be included in the unit bid pricing for other items.

04.03.07 PAVING RESTRICTIONS

- (1) All paving shall be completed during the daylight hours. No paving shall begin before sunrise. All paving shall cease a minimum of thirty (30) minutes before sunset to allow rolling to be completed during daylight hours.

END OF SECTION

04.04 AGGREGATE BASE COURSE

04.04.01 GENERAL REQUIREMENTS

- (1) Aggregate Base Course may be required in all areas of pavement placement as required by the contract drawings. If required, Aggregate Base Course shall consist placement of base material to a depth specified in the contract drawings.
- (2) Aggregate Base Course shall consist of appropriate aggregate listed below as directed by the KCATA:
 - (a) MoDOT: Refer to Section 1007.3 entitled "Type 5 Aggregate", Missouri Standard Specifications for Highway Construction, 2019 or the current edition.
 - (b) KDOT: Refer to Section 1110 entitled "Aggregates for Subgrade Modification or Reconstruction", Kansas Standard Specifications for State Road and Bridge Construction, 2015 or the current edition.
 - (c) APWA: Refer to KCAPWA Section 2203.03 (A) entitled "Untreated Compacted Aggregate"
- (3) Prior to placement of aggregate base course material, the previously prepared subgrade surface shall be cleared of all foreign substances and restored in shape, tolerance, and density as specified in the Kansas City Metropolitan Chapter APWA Specification (KCAPWA) Section 2201 entitled "Subgrade Preparation."
- (4) The material shall be uniformly spread in successive layers and in no case shall any individual layer have a compacted thickness of more than six (6) inches. Each layer shall be compacted as hereinafter specified before any succeeding layer is placed. Refer to KCAPWA Section 2200.3 "Placement" for further requirements.

END OF SECTION

04.05 SUBGRADE STABILIZATION – IDENTIFIED DURING CONSTRUCTION

01.01.02 GENERAL REQUIREMENTS

- (1) Subgrade Stabilization may be required in areas where the existing subgrade is determined to be unsuitable by the KCATA representative. Subgrade stabilization shall be completed in accordance with the “Subgrade Stabilization Detail” in the KCATA Standard Details.
- (2) Excavate unsuitable subgrade material below the bottom of the proposed subgrade elevation. The excavated material shall be disposed of according to the Demolition Disposal Section of this contract. The excavated material shall be unclassified and may consist of soil, rock, and/or manmade materials.
- (3) In lieu of excavation of unsuitable material, addition of self-cementing fly ash or lime to the soil may be administered as approved by the KCATA. For specifications of fly ash and lime addition, see the Kansas City Metropolitan Chapter APWA Specification (KCAPWA) Section 2202 entitled “Subgrade Stabilization.”
- (4) Subgrade Stabilization will be determined by the KCATA according to the following options:
 - (a) Placement of imported fill: Refer to KCAPWA Section 2201 entitled “Subgrade Preparation”
 - (b) Placement of Aggregate.
 - (i) MoDOT: Refer to Section 1007.3 entitled “Type 5 Aggregate”, Missouri Standard Specifications for Highway Construction, 2019 or the current edition.
 - (ii) KDOT: Refer to Section 1110 entitled “Aggregates for Subgrade Modification or Reconstruction”, Kansas Standard Specifications for State Road and Bridge Construction, 2015 or the current edition.
 - (iii) APWA: Refer to KCAPWA Section 2203.03 (A) entitled “Untreated Compacted Aggregate”
 - (c) After the subgrade is brought back to the proposed bottom of subgrade elevation, an approved geogrid system shall be installed in accordance with manufacturer’s specifications. Geogrid system shall include geogrid material and aggregate in accordance with manufacturer’s specifications.

END OF SECTION

04.06 CURB INLET

- (1) Local Jurisdiction's standard construction specifications and standard construction details shall be the controlling reference.
- (2) If the local jurisdiction does not have the specified standard construction specifications or standard construction details, the controlling references shall be the higher ranked in the follow list:
 - (a) The Kansas City Metropolitan Chapter of the American Public Works Association's latest DIVISION III STANDARD DRAWINGS and STANDARD SPECIFICATIONS AND DESIGN CRITERIA unless otherwise indicated on the plans.
 - (b) The State Department of Transportation's Standard Specifications and Standard Drawings unless otherwise indicated on the plans.

END OF SECTION

04.07 COLDMILL (EDGEMILL) EXISTING PAVEMENT

04.07.01 GENERAL REQUIREMENTS

- (1) This item shall consist of cold milling the existing asphalt surface with equipment which shall mill or shave the surface irregularities out of the existing pavements to produce a smooth surface and in some case to cut the pavement down to a pre-determined depth.
- (2) All cold milling work and equipment shall conform to APWA Section 2207, Planning of the Standard Construction and Materials Specification.
- (3) Before milling, the Contractor shall clean all dirt, trash and debris from the street. This material shall not be mixed with the milled material. After the street has been milled, all loose asphalt and debris shall be removed to the satisfaction of the KCATA Representative. The Contractor shall remove all asphalt material and debris left in the gutter and any material and debris that adhere to the curb and gutter. Final measurements for each segment of street will not be made until said cleanup has been approved by the KCATA Representative. All milled materials are to be considered the property of the Contractor.

END OF SECTION

04.08 CONCRETE BUS PADS / PAVEMENT

04.08.01 GENERAL REQUIREMENTS

- (1) All work in this section shall conform to the specifications issued by the Kansas City Metropolitan Chapter of APWA (KCAPWA) Section 2200, PAVING. This includes all the equipment, supplies, materials, and labor necessary to construct this item. The concrete replacement will be located as shown on the plans.
- (2) Base Stabilization, if required, shall be as directed by KCATA. The Base Stabilization-Aggregate shall conform to the Base Stabilization Section of this Contract.
- (3) The concrete to be used shall conform to the Kansas City Metropolitan Materials Board KCMMB5K Concrete. The Specifications may be referenced by www.kcmmb.org.
- (4) Concrete bus pads and pavement shall be installed with transverse joints equally spaced not greater than 15 feet. Each joint shall receive dowel baskets with 1.25" dia. epoxy coated steel bars spaced not greater than 12". Dowel and basket materials shall conform to current Missouri Department of Transportation standards.
- (5) Concrete bus pads and pavement repairs shall be installed with transverse joints equally spaced not greater than 15 feet. Each new joint shall be constructed as specified above. Each new joint created between new pavement and existing concrete pavement shall receive 1.25" dia. epoxy coated steel bars spaced not greater than 12". Dowel materials shall conform to current Missouri Department of Transportation standards.
- (6) The 10-inch concrete bus pad and/or pavement shall be air entrained and fiber reinforced according to the KCAPWA specification 2208.2.C.4. The fibers shall be applied at the rate of 1-1/2 pounds per cubic yard of concrete. Fibers for concrete reinforcement shall be composed of only 100% virgin homopolymer polypropylene, fibrillated and graded. Fibers shall contain no reprocessed olefin materials, and shall be specifically manufactured to an optimum gradation for use as secondary concrete reinforcement, meeting the requirements of ASTM C 1116, Type iii, 4.1.3, and ASTM C 1116 Performance Level 1, and a minimum residual strength of 30 psi per ASTM C 1399, average of four (4) beams sampled at the point of discharge (or when appropriate, the point of placement).
- (7) All concrete bus pads and concrete pavement shall receive a tine finish unless otherwise stated. Tining shall produce grooves of 1/8 inch wide x 1/8 inch deep spaced 3/4 inch apart. In areas where vehicle speeds are 25 mph or higher, tining grooves shall be parallel to the longitudinal joint. In areas where vehicle speeds are less than 25 mph, tining grooves may be transverse to the longitudinal joint. Tining devices shall be maintained clean and free from encrusted mortar and debris to ensure uniform groove dimensions. The tining finish shall not be performed too early whereby the grooves may close up.

- (8) All KCATA owned concrete bus pads and concrete pavement located outside of public right of way shall receive a three (3) day wet cure. This applies to pavement, sidewalks, curbs, etc. in locations such as the KCATA Central Facility and transit centers. After finishing concrete paving, Contractor shall conform to the following procedure for curing, jointing and application of curing/sealing compound:
- (a) Apply a light sprinkling of water to concrete surface. Cover concrete pavement with polyethylene.
 - (b) When concrete is sufficiently cured to not cause raveling, uncover pavement to saw-cut joints. Joints shall not be cut later than 24 hours after concrete placement.
 - (c) Following saw-cutting, apply light sprinkling of water to surface and re-cover with polyethylene.
 - (d) 72 hours after placement of concrete, uncover and power-wash concrete surface clean. Apply Prosoco "SingleStep" Cure & Seal compound (or approved equal) after surface becomes dry. Protect concrete surface from all traffic for minimum of 24 hours after application.
 - (e) Five (5) calendar days after placement of concrete, saw-cut joints wider and apply joint sealant.
 - (f) Construction and expansion joint sealant shall be Sonneborn Sonolastic SL1 Self Leveling Sealant (or accepted equal). Sealant color shall be gray.
 - (g) Contraction Joint sealant may be hot poured asphaltic sealant or Sonneborn Sonolastic SL1 Self Leveling Sealant (or accepted equal). Sealant color shall be gray.
 - (h) Do not allow any traffic on concrete surface until strength has achieved 4,000 psi.
- (9) Liquid membrane curing is only allowed for concrete pavement, curb, and sidewalk within public Right of Way. Liquid Membrane curing for any concrete located outside public Right of Way shall only be allowed by approval of the KCATA Chief Engineer unless otherwise noted in plans. Liquid membrane curing, where allowed, shall be applied in accordance with KCMO APWA section 2208.4.E.4
- (10) The removal of the existing pavement material shall include full depth pavement saw cuts (no separate payment) and shall conform to the Saw Cut Section of this Contract. The excavated material shall be disposed of in accordance with the Demolition Disposal Section of this Contract.

END OF SECTION

04.09 CONCRETE CURB

- (1) Local Jurisdiction's standard construction specifications and standard construction details shall be the controlling reference.
- (2) Liquid membrane curing is only allowed for concrete pavement, curb, and sidewalk within public Right of Way. Liquid Membrane curing for any concrete located outside public Right of Way shall only be allowed by approval of the KCATA Chief Engineer unless otherwise noted in plans. Liquid membrane curing, where allowed, shall be applied in accordance with KCMO APWA section 2208.4.E.4
- (3) If the local jurisdiction does not have the specified standard construction specifications or standard construction details, the controlling references shall be the higher ranked in the follow list:
 - (a) The Kansas City Metropolitan Chapter of the American Public Works Association's latest DIVISION III STANDARD DRAWINGS and STANDARD SPECIFICATIONS AND DESIGN CRITERIA unless otherwise indicated on the plans.
 - (b) The State Department of Transportation's Standard Specifications and Standard Drawings unless otherwise indicated on the plans.

END OF SECTION

04.10 DEMOLITION

04.10.01 GENERAL

- (1) All demolition shall conform to local building codes. Codes are available at Jurisdictional agency or controlling Municipality Hall.
- (2) The demolition Contractor shall be properly licensed in the Jurisdictional agency or controlling Municipality where work is being done.
- (3) The removed debris shall be disposed of off-site in accordance with all regulations and ordinances of the Jurisdictional agency or controlling Municipality in which the work is being completed.
- (4) It is the Contractor's responsibility to protect all existing utilities, drainage structures, paving, trees to remain, and trees adjacent to project limits. Damage shall be repaired at the Contractor's expense.
- (5) Refer to Section 02.05.09 of Section 02 General Provisions for information regarding existing utilities damaged during demolition.
- (6) Where existing asphalt or concrete surface is to be removed and adjacent asphalt or concrete surface is to remain, the existing surface shall be cut along neat lines (full depth saw cut).
- (7) Where existing structures, paving or roadways are to be removed which are adjacent to walls or structures to remain, the Contractor shall provide shoring as needed to protect and not damage structures or roadway to remain.
- (8) For sidewalks, unless otherwise noted, saw cut to nearest construction or expansion joint, remove sidewalk for new construction.
- (9) Dimensions given are approximate and may require adjustment to accommodate actual field conditions. Contractor is responsible for removing all quantities required allowing for new construction.
- (10) The Contractor shall be responsible for locating and protecting all surface and below grade utilities within the project area during construction. The Contractor shall notify and coordinate with utility companies prior to commencing required work in the vicinity of such utilities.
- (11) It is the Contractor's responsibility to control storm water, silt, and erosion onsite during construction.
- (12) Contractor shall adjust as necessary, all manhole lids, valve boxes, etc. to remain.
- (13) Contractor shall maintain access to all businesses and bus operations during working hours.

- (14) Except for items indicated to remain, the Contractor shall remove from project site and dispose (in authorized disposal sites) of all existing site improvements within the limit of demolition as shown. Removal items will include (but not limited too) paving, curbs, trees, fences, retaining walls, buildings, structures, utilities, etc.
- (15) The Contractor shall coordinate removal with the KCATA or the KCATA designated representative.
- (16) If an underground vault is determined to exist within or immediately adjacent to the improvement area, no demolition or construction may take place without the explicit approval of the vaults owner(s) / user(s).
- (17) All jurisdictional agency or controlling Municipality owned streetlighting equipment conflicts or repairs must be coordinated with the Jurisdictional agency or controlling Municipality Public Works Dept. Contractor will be responsible for all removal and relocation costs.

04.10.02 DEMOLITION DISPOSAL

- (1) All demolition materials, including cold millings, become the property of the Contractor and shall be disposed of in accordance with Jurisdictional agency or controlling Municipality and State laws.
- (2) Demolition is defined as hard surfaces and may include asphalt and concrete materials for sidewalks, curbs, roadways, drainage structures and other miscellaneous materials.
- (3) All demolition materials shall be disposed of at a legal demolition landfill or at a site where dumping of such materials is allowed under federal, state and local laws.
- (4) Soil, rock and gravel are not considered to be demolition debris and can be placed at properly permitted locations. Obtain grading permits, erosion control permits, and floodplain certificates as required from the Jurisdictional agency or controlling Municipality. Broken concrete with some reinforcing closely trimmed and removed may be placed in some earthen landfills subject to approval by the KCATA or the KCATA designated representative.
- (5) At the pre-construction conference the Contractor shall submit the proposed sites for disposal of demolition debris and earthen material in writing to KCATA. Once work starts, all substitute sites shall be submitted in writing to the KCATA Representative. Submittals shall include a copy of the permit authorizing each site. The Contractor shall not utilize such sites until proper authorization is given by the KCATA.
- (6) Failure to abide by these contract requirements to use an approved demolition disposal sites, whether intentional or inadvertent, is deemed to be a major violation of the contract. In the event of such violation the KCATA shall have two (2) special remedies, in addition to local ordinance penalties. It may at its sole option:
 - (a) Direct that the material which has been dumped be moved to the appropriate site, and that the unapproved dumping site be restored to its previous

condition, or

- (b) Terminate the contract immediately by written notice to the Contractor, in which case the Contractor shall have no right to cure its default.
 - (c) The Contractor shall be entitled to be paid for the completed portion of the contract, less the expense to remedy the unauthorized dumping is larger. Such payment shall be made only after the work is complete and all costs are finally determined.
- (7) Before either of such remedies is invoked, the Contractor will be given five (5) working days written notice of the alleged violation. During the five (5) day period, the Contractor may submit information for consideration by the KCATA. Due to the nature of illegal dumping, the KCATA need not have proof positive; "alleged" is herewith adjudged sufficient evidence to terminate the contract.

END OF SECTION

04.11 SANITARY & STORM SEWER MANHOLE ADJUSTMENTS

- (1) Local Jurisdiction's standard construction specifications and standard construction details shall be the controlling reference.
- (2) If the local jurisdiction does not have the specified standard construction specifications or standard construction details, the controlling references shall be the higher ranked in the follow list:
 - (a) The Kansas City Metropolitan Chapter of the American Public Works Association's latest DIVISION III STANDARD DRAWINGS and STANDARD SPECIFICATIONS AND DESIGN CRITERIA unless otherwise indicated on the plans.
 - (b) The State Department of Transportation's Standard Specifications and Standard Drawings unless otherwise indicated on the plans.

END OF SECTION

04.12 SAW CUTTING

04.12.01 GENERAL REQUIREMENTS

- (1) Where parts of the existing concrete curb, sidewalk, driveways, and asphaltic or Portland cement concrete pavement is to be removed at locations other than contraction or isolation joints, the existing concrete or asphalt shall be sawed with a concrete saw to the full depth of the existing slab or curb. Water shall be used as required to control dust during sawing operations. In order to provide true alignment and a vertical face against which the new concrete will be placed a greater depth of cut may be necessary. If the remaining concrete or asphalt is chipped or cracked during sawing or removal, it shall be re-sawed beyond the limits of the chip or crack, along a line parallel to or perpendicular with the nearest joint and/or as directed by KCATA's Representative to assure uniform appearance.

END OF SECTION

04.13 SIDEWALKS

04.13.01 GENERAL REQUIREMENTS

- (1) Construction of the Sidewalks shall conform to the specifications of the Kansas City Metropolitan Chapter APWA (KCAPWA) Section 2300, INCIDENTAL CONSTRUCTION, and the latest supplement thereto, and to the details as shown herein.
- (2) A full depth saw cut shall be constructed where shown on plans or as directed by the KCATA Representative. Sidewalk shall be removed full depth and in full sections except where shown on plans. The material will be disposed of according to the Demolition and Disposal Section of this Contract. The top six (6) inches of the subgrade shall be compacted to obtain a density of 95 percent of maximum in conformance with APWA Section 2201.3B.
- (3) All concrete used for the Sidewalks shall meet the requirements of the Kansas City Metropolitan Materials Board Mix KCMMB5K. All sidewalk thicknesses shall be in accordance with KCATA standard details. All corner radius sidewalk shall be eight (8) inches thick. Contraction joints shall be constructed as directed in KCAPWA Section 2300. Isolation joints shall be constructed where walk abuts driveways, adjacent sidewalks and similar structures and on 250-foot centers. All poles, manholes, and the like shall be adjusted to grade and boxed in with isolation joints.
 - (a) All construction, expansion and isolation joints shall be sealed.
 - (b) Sidewalk joint sealant shall be Sonneborn Sonolastic SL1 Self Leveling Sealant (or accepted equal). Sealant color shall be gray.
 - (c) All sidewalk surfaces shall be cured as specified in Section 2301.5C (and supplement) unless otherwise noted on plans.
- (4) Liquid membrane curing is only allowed for concrete pavement, curb, and sidewalk within public Right of Way. Liquid Membrane curing for any concrete located outside public Right of Way shall only be allowed by approval of the KCATA Chief Engineer unless otherwise noted in plans. Liquid membrane curing, where allowed, shall be applied in accordance with KCMO APWA section 2208.4.E.4
- (5) All excavation or embankment required shall conform to Section 2301.3B. Contractor shall proof roll the subgrade and under grade where directed by the KCATA Representative. Minor fills and under grading backfill are typically made with untreated compacted aggregate. The fill or embankment shall be considered incidental to the other pay items. Contractor may substitute untreated compacted aggregate at no additional cost to KCATA.
- (6) Concrete shall be placed in accordance with the requirement of MCIB Sections 10 (Cold Weather Concreting) and 11 (Hot Weather Concreting), as modified. Concrete with mix temperatures above 90 degrees F shall not be placed and shall be discarded.

END OF SECTION

04.14 ADA RAMPS

- (1) Local Jurisdiction's standard construction specifications and standard construction details shall be the controlling reference.
- (2) Liquid membrane curing is only allowed for concrete pavement, curb, and sidewalk within public Right of Way. Liquid Membrane curing for any concrete located outside public Right of Way shall only be allowed by approval of the KCATA Chief Engineer unless otherwise noted in plans. Liquid membrane curing, where allowed, shall be applied in accordance with KCMO APWA section 2208.4.E.4
- (3) If the local jurisdiction does not have the specified standard construction specifications or standard construction details, the controlling references shall be the higher ranked in the follow list:
 - (a) The Kansas City Metropolitan Chapter of the American Public Works Association's latest DIVISION III STANDARD DRAWINGS and STANDARD SPECIFICATIONS AND DESIGN CRITERIA unless otherwise indicated on the plans.
 - (b) The State Department of Transportation's Standard Specifications and Standard Drawings unless otherwise indicated on the plans.

END OF SECTION

04.15 DRIVEWAYS

- (1) Local Jurisdiction's standard construction specifications and standard construction details shall be the controlling reference.
- (2) Liquid membrane curing is only allowed for concrete pavement, curb, and sidewalk within public Right of Way. Liquid Membrane curing for any concrete located outside public Right of Way shall only be allowed by approval of the KCATA Chief Engineer unless otherwise noted in plans. Liquid membrane curing, where allowed, shall be applied in accordance with KCMO APWA section 2208.4.E.4
- (3) If the local jurisdiction does not have the specified standard construction specifications or standard construction details, the controlling references shall be the higher ranked in the follow list:
 - (a) The Kansas City Metropolitan Chapter of the American Public Works Association's latest DIVISION III STANDARD DRAWINGS and STANDARD SPECIFICATIONS AND DESIGN CRITERIA unless otherwise indicated on the plans.
 - (b) The State Department of Transportation's Standard Specifications and Standard Drawings unless otherwise indicated on the plans.

END OF SECTION

04.16 TRAFFIC CONTROL

(1) See Section 03.01.01 TRAFFIC CONTROL on Page 4

END OF SECTION

04.17 ELECTRICAL SERVICE

04.17.01 GENERAL REQUIREMENTS

- (1) Electrical service shall be installed in accordance with the approved electrical plans.
- (2) All electrical service shall be installed underground. The Contractor shall be responsible for coordination with the power company to obtain electrical service. New electrical service obtained from the power company shall be installed in accordance with their requirements.
- (3) The Contractor shall be responsible for all electrical installation fees.
- (4) Contractor shall install a $\frac{3}{4}$ " x 8' copper clad steel ground rod for the ground electrode system. A #4 AWG solid bare copper wire shall be used for the grounding electrode system connection.
- (5) Electrical work shall include completing wiring connections to all equipment including kiosks, markers, shelters, lights, etc.
- (6) All work shall be completed in accordance with applicable local and state electrical codes.

END OF SECTION

04.18 PROJECT PHOTOGRAPHS

- (1) The Contractor shall take and store photographs of the project's progression. These photos shall be made available to the KCATA upon request.

END OF SECTION

04.19 EARTHWORK

04.19.01 EXISTING UTILITIES:

- (1) Do not interrupt utilities serving any occupied facilities unless permitted in writing and then only after arranging to provide temporary utility services according to requirements indicated.

04.19.02 MATERIALS

- (1) Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- (2) Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, SW, SP, and SM, or a combination of these groups; free of rock or gravel larger than 1-1/2 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- (3) Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- (4) Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- (5) Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- (6) Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- (7) Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- (8) Drainage Course: Narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and 0 to 5 percent passing a No. 8 (2.36-mm) sieve.

04.19.03 PREPARATION

- (1) Protect structures, utilities, sidewalks, pavements, and other facilities from damage

caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

- (2) Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface.
- (3) Protect and maintain erosion and sedimentation controls during earthwork operations.

04.19.04 EXCAVATION

- (1) 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.
- (2) If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
- (3) Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
- (4) Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
- (5) Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.
- (6) Excavate trenches to indicated gradients, lines, depths, and elevations.
- (7) Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit, unless otherwise indicated.
 - (a) Clearance: 12 inches (300 mm) each side of pipe or conduit or as indicated.
 - (b) Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.
 - (c) Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material, 4 inches (100 mm) deeper elsewhere, to allow for bedding course.

04.19.05 PROOFROLL

- (1) Proof-roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
- (2) Reconstruct soft subgrades and subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed.
- (3) Subgrade and aggregate base for asphalt and concrete pavement must be proof rolled with a loaded dump truck in addition to density testing as specified. Proof roll truck shall have a minimum rear axle load of 20,000 lbs. for single axel or 40,000 lbs. for tandem axle. Proof rolling must be witnessed by the KCATA, its representative or the designated testing lab. Identified soft spots (areas rutting to a depth of greater than 1" shall be removed, re-compacted and retested prior to the Contractor proceeding with pavement placement.

04.19.06 STORAGE OF MATERIAL

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

04.19.07 TRENCH BACKFILL

- (1) Place backfill on subgrades free of mud, frost, snow, or ice.
- (2) Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- (3) Backfill trenches excavated under footings and within 18 inches (450 mm) of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Division 3 Section "Cast-in-Place Concrete"
- (4) Provide 4-inch- (100-mm-) thick, concrete-base slab support for piping or conduit less than 30 inches (750 mm) below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches (100 mm) of concrete before backfilling or placing roadway subbase.
- (5) Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch (25 mm) in any dimension, to a height of 12 inches (300 mm) over the utility pipe or conduit.
 - (a) Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

- (6) Place and compact final backfill of satisfactory soil to final subgrade elevation.

04.19.08 SOIL FILL

- (1) Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- (2) Place and compact fill material in layers to required elevations as follows:
 - (a) Under grass and planted areas, use satisfactory soil material. The top 6 inches of all fill in grass and planted areas shall be topsoil.
 - (b) Under walks and pavements, use satisfactory soil material.
 - (i) Under footings and foundations, use engineered fill.

04.19.09 SOIL MOISTURE CONTROL

- (1) Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
 - (a) 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.

04.19.10 COMPACTION OF SOIL BACKFILLS AND FILLS

- (1) Place backfill and fill soil materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.
- (2) Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.
- (3) Placement and Compaction shall be completed in accordance with the project geotechnical report. In the absence of a project geotechnical report, compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698:
 - (a) Under structures, and pavements, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill or fill soil material at 95 percent.
 - (b) Under walkways, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 92 percent.
 - (c) Under lawn or unpaved areas, scarify and recompact top 6 inches (150 mm)

below subgrade and compact each layer of backfill or fill soil material at 85 percent.

- (d) For utility trenches, compact each layer of initial and final backfill soil material at 90 percent.
- (4) Actual compaction requirements may vary from that listed above at the direction of the KCATA or its designated representative.

04.19.11 GRADING

- (1) 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.
- (2) Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
 - (a) Lawn or Unpaved Areas: Plus or minus 1 inch (25 mm)
 - (b) Walks: Plus or minus 1 inch (25 mm).
 - (c) Pavements: Plus or minus 1/2 inch (13 mm).

04.19.12 SUBBASE AND BASE COURSES

- (1) Place subbase and base course on subgrades free of mud, frost, snow, or ice.
- (2) On prepared subgrade, place subbase and base course under pavements and walks as follows:
 - (a) Shape subbase and base course to required crown elevations and cross-slope grades.
 - (b) Compact subbase and base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698.

04.19.13 FIELD QUALITY CONTROL

- (1) Testing Agency: The KCATA will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- (2) Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.
- (3) Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by the KCATA or the KCATA designated

representative.

- (4) Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2922, and ASTM D 2937, as applicable.
- (5) When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

04.19.14 PROTECTION

- (1) Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- (2) 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.
- (3) Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
 - (a) Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

04.19.15 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- (1) Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off property.

END OF SECTION

04.20 PIPE AND TUBE RAILINGS

04.20.01 GENERAL

- (1) In engineering railings to withstand structural loads indicated, determine allowable design working stresses of railing materials based on the following:
 - (a) Steel: 72 percent of minimum yield strength.
 - (b) Leaning Rails: 1-1/2" diameter (Schedule 40)
 - (c) Hand Railings: 1-1/2" diameter (Schedule 40)
 - (d) Fall Protection Railings: 2" diameter (Schedule 40)

04.20.02 STRUCTURAL PERFORMANCE

- (1) Provide railings capable of withstanding the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:
 - (a) Railings:
 - (i) Uniform load of 50 lbf applied in any direction.
 - (ii) Concentrated load of 200 lbf applied in any direction.
 - (iii) Uniform and concentrated loads need not be assumed to act concurrently.

04.20.03 CONTROL OF CORROSION

- (1) Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.

04.20.04 SUBMITTALS

- (1) Submit shop drawings and product data for all railing components including but not limited to steel tubing, galvanizing, paint products, etc. Shop drawings shall include plans, elevations, sections, details, and attachments to other work.
 - (a) Submittal of welding certificates may be requested. Welding shall be by qualified personnel according to AWS D1.1, "Structural Welding Code--Steel."

04.20.05 VERIFICATIONS OF LOCATION

- (1) Verify actual locations of walls and other construction contiguous with railings by field measurements before fabrication and indicate measurements on Shop Drawings.

04.20.06 MATERIALS

- (1) Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
- (2) Pipe shall be painted steel unless otherwise indicated on the drawings:
 - (a) Tubing: ASTM A 500 (cold formed) or ASTM A 513, Type 5 (mandrel drawn).
 - (b) Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
 - (c) Except for stainless steel, provide galvanized finish for exterior installations and where indicated. If painted finish is indicated, see finishes below.
 - (d) 316 stainless steel, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
- (3) Provide the following fasteners:
 - (a) Steel Railings: Stainless steel fasteners.
- (4) Anchors: Provide expansion anchors, fabricated from stainless steel materials with capability to sustain, without failure, a load equal to six times the load imposed when installed in unit masonry and equal to four times the load imposed when installed in concrete, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
- (5) Shop fabricate railings to comply with requirements indicated for design, dimensions, member sizes and spacing, details, finish, and anchorage, but not less than that required to support structural loads.

04.20.07 FINISHES, GENERAL

- (1) Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- (2) Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

04.20.08 FINISHES

- (1) Unless specifically noted on the plans to be stainless steel or painted steel, railings shall be installed with smooth galvanized finish.
- (2) Non-galvanized steel: Use Wasser 3-coat system with graffiti protection
 - (a) 1st Coat MC-Zinc

- (b) 2nd Coat MC-Ferrox B 100
 - (c) 3rd Coat MC-Luster 100
 - (d) 4th Coat MC-Antigraffiti 100
 - (e) Color shall be silver unless otherwise noted.
- (3) Galvanized steel: Use Wasser 2-coat system with graffiti protection
- (a) 1st Coat MC-CR
 - (b) 2nd Coat MC-Luster 100
 - (c) 3rd Coat MC-Antigraffiti 100
 - (d) Color shall be silver unless otherwise noted.
- (4) Matthews Paint under-coatings and MAP finish coating systems are also acceptable.
- (5) Smooth galvanized finishes.
- (6) Stainless steel: DA stainless steel finish.

END OF SECTION

04.21 CHAIN LINK FENCE

04.21.01 THIS SECTION INCLUDES THE FOLLOWING:

- (1) Steel chain link fence and gates and galvanized steel chain link fence.
- (2) Field Measurements: Verify actual locations of poles and other construction contiguous with fence by field measurements before fabrication and indicate measurements on Shop Drawings.

04.21.02 CHAIN-LINK FENCE FABRIC

- (1) General: Height indicated on Drawings. Comply with ASTM A 392, CLFMI CLF 2445, and requirements indicated below:
 - (a) Steel Wire Fabric: Polymer-coated wire with a diameter of 0.148-inch, 9 Gauge.
 - (b) Mesh Size: 2 inches
 - (c) Polymer Coating: ASTM D 668, Class 1 over metallic-coated steel wire.
 - (d) Color: Black, complying with ASTM F 934.
 - (e) Selvage: Knuckled at both selvages.

04.21.03 FENCE FRAMING

- (1) Posts and Rails: Comply with ASTM F 1043 for framing, ASTM F 1083 for Group IC round pipe, and the following:
 - (a) Group: IA, round steel pipe, Schedule 40
 - (b) Fence Height: Indicated on drawings
 - (c) Post Spacing: 10 feet (maximum)
 - (d) Strength Requirement: Light industrial according to ASTM F 1043.
 - (e) Coating for Steel Framing: Polymer coating over metallic coating.

04.21.04 TENSION WIRE

- (1) General: Provide horizontal tension wire at bottom of fence fabric.
- (2) Metallic-Coated Steel Wire: 0.177-inch diameter, marcelled tension wire complying with ASTM A 817 and ASTM A 824.
 - (a) Metallic Coating: Type III, Zn-5-Al-MM alloy.
- (3) Aluminum Wire: 0.192-inch diameter tension wire, mill finished, complying with

ASTM B 211, Alloy 6061-T94 with 50,000-psi minimum tensile strength.

04.21.05 FITTINGS

- (1) General: Comply with ASTM F 626.

04.21.06 CAST-IN-PLACE CONCRETE

- (1) Materials: Portland cement complying with ASTM C 150, Type I aggregates complying with ASTM C 33, and potable water.
 - (a) Concrete Mixes: Normal-weight concrete air entrained with not less than 3000-psi compressive strength (28 days), 3-inch slump, and 1-inch maximum size aggregate.

04.21.07 POLYMER FINISHES

- (1) Supplemental Color Coating: provide fence components with polymer coating.
- (2) Metallic-Coated Steel Tension Wire: PVC-coated wire complying with ASTM F 1664, Class 1.
- (3) Framing and Fittings: Comply with ASTM F 626 and ASTM F 1043 for polymer coating applied to exterior surfaces and, except inside cap shapes, to exposed interior surfaces.
- (4) Color: Black, complying with ASTM F 934.

04.21.08 INSTALLATION

- (1) General: Install chain-link fencing to comply with ASTM F 567 and more stringent requirements specified.
- (2) Post Excavation: Drill or hand-excavate holes for posts to diameters and spacings indicated, in firm, undisturbed soil.
- (3) Post Setting: Set posts in concrete at indicated spacing into firm, undisturbed soil or per retaining wall manufacturer design.
 - (a) Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
- (4) Terminal Posts: Locate terminal end, corner, and gate posts per ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment.
- (5) Line Posts: Space line posts uniformly at 10 feet on center.
- (6) Post Bracing and Intermediate Rails: Install according to ASTM F 567. Install braces at end and gate posts and at both sides of corner and pull posts.

- (7) Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fencing.
- (8) Top Rail: Install according to ASTM F 567.
- (9) Bottom Rails: Install, spanning between posts.
- (10) Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1 inch between finish grade or surface and bottom selvage, unless otherwise indicated.
- (11) Tie Wires: Attach wire per ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.
- (12) Fasteners: Install nuts for tension bands and carriage bolts on the side of the fence opposite the fabric side.

END OF SECTION

04.22 SHELTERS AND KIOSKS

04.22.01 GENERAL

“Off the shelf” shelter type fabrication shall be considered. Only one “off the shelf” structure type shall be allowed.

The product specified in this section, or approved equal, must meet or exceed the following criteria:

- Must be of equivalent quality, durability, and performance as the specified details included in the plans
- Must be able to be used without any modification or alteration to the equipment or system
- Must be from a reputable manufacturer with a proven track record of producing high-quality products
- Must comply with all applicable industry standards and technical specifications
- Must come with a manufacturer's warranty that is equal to or better
- Must be readily available for purchase and delivery within a reasonable timeframe

Any proposed alternative product must be submitted for approval by the Contractor or designated representative prior to purchase and installation. Failure to comply with these requirements may result in rejection of the alternative product and additional costs for obtaining the specified product at no additional cost to KCATA.

- (1) Shelter shall be fabricated in accordance with the following specifications, dimensional drawings and details.

04.22.02 EXECUTION

- (1) Contractor upon approval by KCATA shall order delivery of shelters and markers directly from the fabricator(s) and shall be present when the shelter and/or marker is delivered.

04.22.03 STRUCTURAL STEEL

(1) SUBMITTALS

- (a) Product Data: For each type of product indicated.
- (b) Shop Drawings: Show fabrication of structural-steel components.
- (c) Qualification Data: For qualified Installer and fabricator.
- (d) Welding certificates.
- (e) Mill test reports for structural steel, including chemical and physical properties.
- (f) Source quality-control reports.

(2) QUALITY ASSURANCE

- (a) Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.
 - (b) Installer Qualifications: A qualified installer who participates in the AISC Quality Certification Program and is designated an AISC-Certified Erector, Category CSE.
 - (c) Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
 - (d) Comply with applicable provisions of the following specifications and documents:
 - (e) AISC 303.
 - (f) AISC 360.
 - (g) RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
 - (h) Preinstallation Conference: Conduct conference at office of the KCATA.
- (3) STRUCTURAL-STEEL MATERIALS
- (a) Channels, Angles, S-Shapes: ASTM A 36/A 36M.
 - (b) Plate and Bar: ASTM A 36/A 36M except as noted on structural drawings. Use ASTM A 572/A 572M, Grade 50 (345) where noted.
 - (c) Cold-Formed Hollow Structural Sections: ASTM A 500, Grade B, structural tubing.
 - (d) Welding Electrodes: Comply with AWS requirements.
- (4) BOLTS, CONNECTORS, AND ANCHORS
- (a) Zinc-Coated High-Strength Bolts, Nuts, and Washers: ASTM A 325 (ASTM A 325M), Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade DH (ASTM A 563M, Class 10S) heavy-hex carbon-steel nuts; and ASTM F 436 (ASTM F 436M), Type 1, hardened carbon-steel washers.
 - (b) Finish: Hot-dip (ASTM A153) or mechanically deposited zinc coating, ASTM B695.
 - (c) Adhesive Anchors: Composed of an anchor rod assembly and injection cartridge.
 - (d) Anchor Rod Assembly: Chamfered and threaded stud of ASTM A36/A36M steel with nut and washer. Stud size as indicated on Contract Drawings.
 - (e) Injection Adhesive: A mixture of resin, hardener, cement and water to provide

optimal curing speed and high strength, furnished in side by side refill packs that keep two components separate until use; alternately, product may be furnished in large rigid cartridges.

- (f) Acceptable Manufacturers:
 - (g) Hilti Fastening Systems; HIT HY150
 - (h) Or Equal.
 - (i) Headed Anchor Rods: ASTM F 1554, Grade 36 straight.
- (5) GROUT
- (a) Non-metallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, non-metallic aggregate grout, non-corrosive and non-staining, mixed with water to consistency suitable for application and a 30-minute working time.
- (6) FABRICATION
- (a) Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.
- (7) SHOP CONNECTIONS
- (a) High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - (b) Joint Type: Snug tightened.
 - (c) Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
- (8) SHOP PRIMING
- (a) Shop prime steel surfaces except the following:
 - (b) Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches (50 mm).
 - (c) Surfaces to be field welded.
 - (d) Galvanized surfaces.
 - (e) Surface Preparation: Clean surfaces to be painted. Remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards:
 - (f) SSPC-SP 3, "Power Tool Cleaning."

- (g) Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to provide a minimum dry film thickness of 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.
- (9) SOURCE QUALITY CONTROL
 - (a) Testing Agency: KCATA will engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.
 - (b) Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.
 - (c) Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.
 - (d) Bolted Connections: Shop-bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
 - (e) Welded Connections: In addition to visual inspection, shop-welded connections will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - (i) Liquid Penetrant Inspection: ASTM E 165.
 - (i) Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - (ii) Ultrasonic Inspection: ASTM E 164.
 - (iii) Radiographic Inspection: ASTM E 94.
- (10) EXECUTION
 - (a) EXAMINATION
 - (i) Verify, with steel Erector present, elevations of concrete bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
 - (ii) Proceed with installation only after unsatisfactory conditions have been corrected.
 - (b) ERECTION
 - (i) Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
 - (ii) Base Bearing and Leveling Plates: Clean concrete bearing surfaces of bond-reducing materials and roughen surfaces prior to setting plates. Clean bottom surface of plates.

- (iii) Set plates for structural members on wedges, shims, or setting nuts as required.
- (iv) Weld plate washers to top of baseplate.
- (v) Drill and Epoxy anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
- (vi) Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.
- (vii) Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

(c) **FIELD CONNECTIONS**

- (i) High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
- (ii) Joint Type: Snug tightened.
- (iii) Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.
- (iv) Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.

(d) **FIELD QUALITY CONTROL**

- (i) Testing Agency: KCATA will engage a qualified independent testing and inspecting agency to inspect field welds and high-strength bolted connections.
- (ii) Bolted Connections: Bolted connections will be inspected according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
- (iii) Welded Connections: Field welds will be visually inspected according to AWS D1.1/D1.1M.
- (iv) In addition to visual inspection, field welds will be tested and inspected according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:
 - 1. Liquid Penetrant Inspection: ASTM E 165.
 - 2. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration will not be accepted.
 - 3. Ultrasonic Inspection: ASTM E 164.

4. Radiographic Inspection: ASTM E 94.
5. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents.

04.22.04 ARCHITECTURALLY EXPOSED STRUCTURAL STEEL FRAMING

(1) SUBMITTALS

- (a) Shop Drawings: Show fabrication of AESS components. Shop Drawings for structural steel may be used for AESS provided items of AESS are specifically identified and requirements below are met for AESS.
- (b) Include details of cuts, connections, splices, camber, holes, and other pertinent data.
- (c) Include embedment drawings.
- (d) Indicate welds by standard AWS symbols, distinguishing between shop and field welds, and show size, length, and type of each weld. Show backing bars that are to be removed and supplemental fillet welds where backing bars are to remain. Indicate grinding, finish, and profile of welds.
- (e) Indicate type, size, and length of bolts, distinguishing between shop and field bolts. Identify pretensioned and slip-critical high-strength bolted connections. Indicate orientation of bolt heads.
- (f) Indicate exposed surfaces and edges and surface preparation being used.
- (g) Indicate special tolerances and erection requirements.
- (h) Samples: Submit samples of AESS to set quality standards for exposed welds for Category 1 AESS.
- (i) Two steel plates, 3/8 by 8 by 4 inches (9.5 by 200 by 100 mm), with long edges joined by a groove weld and with weld ground smooth.
- (j) Steel plate, 3/8 by 8 by 8 inches (9.5 by 200 by 200 mm), with one end of a short length of rectangular steel tube, 4 by 6 by 3/8 inches (100 by 150 by 9.5 mm), welded to plate with a continuous fillet weld and with weld ground smooth and blended.
- (k) Qualification Data: For qualified fabricator.

(2) QUALITY ASSURANCE

- (a) Fabricator Qualifications: A qualified fabricator that participates in the AISC Quality Certification Program and is designated an AISC-Certified Plant, Category STD.
- (b) Shop-Painting Applicators: Qualified according to AISC's Sophisticated Paint Endorsement SSPC-QP 3, "Standard Procedure for Evaluating Qualifications

of Shop Painting Applicators."

- (c) Mockups: Build mockups of AESS to set quality standards for fabrication and installation.
 - (d) Build mockup of typical portion of AESS as shown on Drawings.
 - (e) Coordinate finish painting requirements with Division 9 painting Sections.
 - (f) Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- (3) DELIVERY, STORAGE, AND HANDLING
- (a) Use special care in handling to prevent twisting, warping, nicking, and other damage. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.
 - (b) Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.
- (4) PRIMER
- (a) Etching Cleaner for Galvanized Metal: Complying with MPI#25.
 - (b) Galvanizing Repair Paint:
 - (c) Shop Primer for Galvanized Steel: Vinyl wash primer complying with MPI#80
- (5) FABRICATION
- (a) Shop fabricate and assemble AESS to the maximum extent possible. Locate field joints at concealed locations if possible. Detail assemblies to minimize handling and to expedite erection.
 - (b) In addition to special care used to handle and fabricate AESS, comply with the following:
 - (i) Fabricate with exposed surfaces smooth, square, and free of surface blemishes including pitting, rust, scale, and roughness.
 - (ii) Grind sheared, punched, and flame-cut edges of Category 1 AESS to remove burrs and provide smooth surfaces and edges.
 - (iii) Fabricate Category 1 AESS with exposed surfaces free of mill marks, including rolled trade names and stamped or raised identification.
 - (iv) Fabricate Category 1 AESS with exposed surfaces free of seams to maximum extent possible.
 - (v) Remove blemishes by filling or grinding or by welding and grinding,

before cleaning, treating, and shop priming.

- (vi) Fabricate with piece marks fully hidden in the completed structure or made with media that permits full removal after erection.
- (vii) Fabricate Category 1 AESS to the tolerances specified in AISC 303 for steel that is designated AESS.
- (viii) Seal-weld open ends of hollow structural sections with 3/8-inch (9.5-mm) closure plates for Category 1 AESS.
- (ix) Curved Members: Fabricate indicated members to curved shape by rolling to final shape in fabrication shop.
- (x) Distortion of webs, stems, outstanding flanges, and legs of angles shall not be visible from a distance of 20 feet (6 m) under any lighting conditions.
- (xi) Tolerances for walls of hollow steel sections after rolling shall be approximately 1/2 inch (13 mm).
- (xii) Coping, Blocking, and Joint Gaps: Maintain uniform gaps of 1/8 inch (3.2 mm) with a tolerance of 1/32 inch (0.8 mm) for Category 1 AESS.
- (xiii) Bolt Holes: Cut, drill or punch standard bolt holes perpendicular to metal surfaces.
- (xiv) Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members.
- (xv) Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
- (xvi) Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
- (xvii) Weld threaded nuts to framing and other specialty items indicated to receive other work.

(6) SHOP CONNECTIONS

- (a) High-Strength Bolts: Shop install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
- (b) Joint Type: Snug tightened.
- (c) Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work, and comply with the following:
- (d) Assemble and weld built-up sections by methods that will maintain true alignment of axes without exceeding specified tolerances.
- (e) Use weld sizes, fabrication sequence, and equipment for AESS that limit distortions to allowable tolerances.

- (f) Provide continuous, sealed welds at angle to gusset-plate connections and similar locations where Category 1 AESS is exposed to weather.
 - (g) Provide continuous welds of uniform size and profile where Category 1 AESS is welded.
 - (h) Grind butt and groove welds flush to adjacent surfaces within tolerance of plus 1/16 inch, minus 0 inch (plus 1.5 mm, minus 0 mm) for Category 1 AESS.
 - (i) Remove backing bars or runoff tabs; back-gouge and grind steel smooth for Category 1 AESS.
 - (j) At locations where welding on the far side of an exposed connection of Category 1 AESS occurs, grind distortions and marking of the steel to a smooth profile aligned with adjacent material.
 - (k) Make fillet welds for Category 1 AESS of uniform size and profile with exposed face smooth and slightly concave. Do not grind unless directed to correct unacceptable work.
- (7) GALVANIZING
- (a) Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.
 - (b) Do not quench or apply post-galvanizing treatments that might interfere with paint adhesion.
 - (c) Fill vent and drain holes that will be exposed in the finished Work, unless indicated to remain as weep holes, by plugging with zinc solder and filing off smooth.
- (8) SHOP PRIMING
- (a) Shop prime steel surfaces except the following:
 - (b) Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches (50 mm).
 - (c) Surfaces to be field welded.
 - (d) Surfaces to be high-strength bolted with slip-critical connections.
 - (e) Galvanized surfaces.
 - (f) Preparing Galvanized Steel for Shop Priming: After galvanizing, thoroughly clean steel of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner.
 - (g) Priming: Immediately after surface preparation, apply primer according to manufacturer's written instructions and at rate recommended by SSPC to

provide a minimum dry film thickness of 1.5 mils (0.038 mm). Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

- (h) Stripe paint corners, crevices, bolts, welds, and sharp edges.
 - (i) Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.
- (9) EXECUTION
- (a) EXAMINATION
 - (i) Verify, with steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.
 - (ii) Prepare a certified survey of bearing surfaces, anchor rods, bearing plates, and other embedments showing dimensions, locations, angles, and elevations.
 - (iii) Examine AESS for twists, kinks, warping, gouges, and other imperfections before erecting.
 - (iv) Proceed with installation only after unsatisfactory conditions have been corrected.
 - (b) PREPARATION
 - (i) Provide temporary shores, guys, braces, and other supports during erection to keep AESS secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.
 - (ii) If possible, locate welded tabs for attaching temporary bracing and safety cabling where they will be concealed from view in the completed Work.
 - (c) ERECTION
 - (i) Set AESS accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.
 - (ii) Erect Category 1 AESS to the tolerances specified in AISC 303 for steel that is designated AESS.
 - (d) FIELD CONNECTIONS
 - (i) High-Strength Bolts: Install high-strength bolts according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts" for type of bolt and type of joint specified.
 - (ii) Joint Type: Snug tightened.
 - (iii) Orient bolt heads [in same direction for each connection and to maximum extent possible in same direction for similar connections.

- (iv) Weld Connections: Comply with requirements in "Weld Connections" Paragraph in "Shop Connections" Article.
- (v) Remove backing bars or runoff tabs; back-gouge and grind steel smooth for Category 1 AESS.
- (vi) Remove erection bolts in Category 1 AESS, fill holes, and grind smooth.
- (vii) Fill weld access holes in Category 1 AESS and grind smooth.

(e) FIELD QUALITY CONTROL

- (i) Testing Agency: KCATA will engage a qualified independent testing and inspecting agency to inspect AESS as specified in Division 5 Section "Structural Steel." The testing agency will not be responsible for enforcing requirements relating to aesthetic effect.
- (ii) The KCATA or its representative will observe AESS in place to determine acceptability relating to aesthetic effect.

(f) REPAIRS AND PROTECTION

- (i) Remove welded tabs that were used for attaching temporary bracing and safety cabling and that are exposed to view in the completed Work. Grind steel smooth.
- (ii) Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.
- (iii) Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.
- (iv) Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

04.22.05 DECORATIVE FORMED METAL

(1) SUBMITTALS

- (a) Product Data: For each type of product indicated, including finishing materials.
- (b) Shop Drawings: For ornamental metal. Include plans, elevations, component details, and attachments to other work. Indicate materials and profiles of each ornamental metal member, fittings, joinery, finishes, fasteners, anchorages, and accessory items.
- (c) Provide templates for anchors and bolts specified for installation under other Sections.
- (d) Samples for Verification: For each type of exposed finish required.
- (e) Sections of linear shapes.

- (f) Mill Certificates: Signed by manufacturers of stainless-steel products certifying that products furnished comply with requirements.
- (g) Welding certificates.
- (h) Qualification Data: For Installer fabricator organic-coating Applicator.

(2) QUALITY ASSURANCE

- (a) Installer Qualifications: Arrange for installation of ornamental metal specified in this Section by the same firm that fabricated it.
- (b) Fabricator Qualifications: A firm experienced in producing ornamental metal similar to that indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.
- (c) Welding: Qualify procedures and personnel according to the following:
- (d) AWS D1.2, "Structural Welding Code--Aluminum."
- (e) AWS D1.6, "Structural Welding Code--Stainless Steel."
- (f) Preinstallation Conference: Conduct conference at Project site to comply with requirements in Division 1 Section "Project Management and Coordination."

(3) DELIVERY, STORAGE, AND HANDLING

- (a) Store ornamental metal inside a well-ventilated area, away from uncured concrete and masonry, and protected from weather, moisture, soiling, abrasion, extreme temperatures, and humidity.
- (b) Deliver and store cast-metal products in wooden crates surrounded by sufficient packing material to ensure that products will not be cracked or otherwise damaged.

(4) PROJECT CONDITIONS

- (a) Field Measurements: Verify actual locations of walls and other construction contiguous with ornamental metal by field measurements before fabrication and indicate measurements on Shop Drawings.
- (b) Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating railings without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
- (c) If practical, provide allowance for trimming and fitting at site.

(5) COORDINATION

- (a) Coordinate installation of anchorages for ornamental metal items. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.
- (6) PRODUCTS
 - (a) METALS, GENERAL
 - (i) Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.
 - (b) ALUMINUM
 - (i) Aluminum, General: Provide alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated, and with strength and durability properties for each aluminum form required not less than that of alloy and temper designated below.
 - (ii) Extruded Bars and Shapes: ASTM B 221, Alloy 6063-T5/T52.
 - (iii) Plate and Sheet: ASTM B 209, Alloy 3003-H14.
 - (c) STAINLESS STEEL
 - (i) Tubing: ASTM A 554, Grade MT 304.
 - (ii) Castings: ASTM A 743/A 743M, Grade CF 8 or CF 20.
 - (iii) Sheet, Strip, Plate, and Flat Bar: ASTM A 666, Type 304.
 - (iv) Bars and Shapes: ASTM A 276, Type 304.
 - (d) FASTENERS
 - (i) Fastener Materials: Unless otherwise indicated, provide the following:
 - (ii) Aluminum Items: Type 304 stainless-steel fasteners.
 - (iii) Stainless-Steel Items: Type 304 stainless-steel fasteners.
 - (iv) Uncoated Steel Items: Plated steel fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating where concealed, Type 304 stainless-steel fasteners where exposed.
 - (v) Galvanized Steel Items: Plated steel fasteners complying with ASTM B 633, Class Fe/Zn 25 for electrodeposited zinc coating.
 - (vi) Dissimilar Metals: Type 304 stainless-steel fasteners.
 - (vii) Fasteners for Anchoring to Other Construction: Unless otherwise indicated, select fasteners of type, grade, and class required to produce connections suitable for anchoring indicated items to other types of construction indicated.
 - (viii) Provide concealed fasteners for interconnecting components and

for attaching ornamental metal items to other work, unless otherwise indicated.

- (ix) Provide tamper-resistant flat-head machine screws for exposed fasteners, unless otherwise indicated.

(e) MISCELLANEOUS MATERIALS

- (i) Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- (ii) For aluminum, provide type and alloy as recommended by producer of metal to be welded and as required for color match, strength, and compatibility in fabricated items.
- (iii) Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

(7) FABRICATION, GENERAL

- (a) Assemble items in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- (b) Form ornamental metal to required shapes and sizes, true to line and level with true curves and accurate angles and surfaces. Finish exposed surfaces to smooth, sharp, well-defined lines and arris.
- (c) Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.
- (d) Cut, drill, and punch metals cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch, unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.
- (e) Mill joints to a tight, hairline fit. Cope or miter corner joints. Fabricate connections that will be exposed to weather in a manner to exclude water.
- (f) Provide weep holes where water may accumulate.
- (g) Provide necessary rebates, lugs, and brackets to assemble units and to attach to other work. Cut, reinforce, drill, and tap as indicated to receive finish hardware, screws, and similar items, unless otherwise indicated.
- (h) Comply with AWS for recommended practices in shop welding. Weld behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded joints of flux, and dress exposed and contact surfaces.

(8) FABRICATING BUS SHELTER FRAME ENCLOSURES

- (a) General: Fabricate bus shelter frame enclosures to designs indicated from steel bars and shapes of sizes and profiles indicated. Form steel bars by

bending, forging, coping, mitering, and welding.

- (b) Welding: Interconnect enclosure members with full-length, full-penetration welds, unless otherwise indicated. Use welding method that is appropriate for metal and finish indicated and that develops full strength of members joined. Finish exposed welds and surfaces smooth, flush, and blended to match adjoining surfaces.
 - (c) Brackets, Fittings, and Anchors: Provide wall brackets, fittings, and anchors to connect ornamental window grilles to other work, unless otherwise indicated.
 - (d) Furnish inserts and other anchorage devices to connect ornamental window grilles to concrete and masonry work. Coordinate anchorage devices with supporting structure.
 - (e) Fabricate anchorage devices that are capable of withstanding loads indicated.
- (9) FINISHES, GENERAL
- (a) Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
 - (b) Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- (10) ALUMINUM FINISHES
- (a) Finish designations prefixed by AA comply with the system established by the Aluminum Association for designating aluminum finishes.
 - (b) Acrylic Polyurethane: Ultraviolet inhibited aliphatic acrylic polyurethane system engineered for extreme color and gloss retention. Lead and heavy metal free.
 - (c) Available Products:
 - (d) Undercoat: Matthews Paint, 7434Sp/74735SP Metal Pretreated, .25 mils dry film thickness minimum.
 - (e) Topcoat: Matthews Acrylic Polyurethane, 1 mil dry film thickness minimum.
 - (f) Color and Gloss: Match Architect's sample.
- (11) STAINLESS-STEEL FINISHES
- (a) Remove tool and die marks and stretch lines or blend into finish.
 - (b) Unless otherwise indicated, grind and polish surfaces to produce uniform finish indicated, free of cross scratches.

- (c) Run grain of directionally textured finishes with long dimension of each piece.
 - (d) Directional Satin Finish:
 - (e) Bus Shelter: Cleaned with denatured alcohol and 60 grit ceramic oxide paper followed by Scotch-Brite™ pads.
 - (f) When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
- (12) GRAFITTI PROTECTION
- (a) Graffiti Protection General: Coat all exposed stainless steel and aluminum surfaces with graffiti resistant system.
 - (b) Available Products:
 - (c) Matthews Paint (MPC); 6177SP High Performance Clear
 - (d) Thickness: 2 coats, minimum 1.0 dry mils per coat.
- (13) EXECUTION
- (a) EXAMINATION
 - (i) Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of ornamental metal.
 - (ii) Proceed with installation only after unsatisfactory conditions have been corrected.
 - (b) INSTALLATION, GENERAL
 - (i) Provide anchorage devices and fasteners where needed to secure ornamental metal to in-place construction.
 - (ii) Perform cutting, drilling, and fitting required to install ornamental metal. Set products accurately in location, alignment, and elevation; measured from established lines and levels. Provide temporary bracing or anchors in formwork for items to be built into concrete, masonry, or similar construction.
 - (iii) Fit exposed connections accurately together to form tight, hairline joints or, where indicated, with uniform reveals and spaces for sealants and joint fillers. Where cutting, welding, and grinding are required for proper shop fitting and jointing of ornamental metal, restore finishes to eliminate evidence of such corrective work.
 - (iv) Do not cut or abrade finishes that cannot be completely restored in the field. Return items with such finishes to the shop for required alterations, followed by complete refinishing, or provide new units as required.
 - (v) Install concealed gaskets, joint fillers, insulation, and flashings as work

progresses.

- (vi) Restore protective coverings that have been damaged during shipment or installation. Remove protective coverings only when there is no possibility of damage from other work yet to be performed at same location.
 - (vii) Retain protective coverings intact; remove coverings simultaneously from similarly finished items to preclude nonuniform oxidation and discoloration.
 - (viii) Field Welding: Comply with applicable AWS specification for procedures of manual shielded metal arc welding, for appearance and quality of welds, and for methods used in correcting welding work. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Grind exposed welded joints smooth and restore finish to match finish of adjacent surfaces.
 - (ii) Corrosion Protection: Apply bituminous paint or other permanent separation materials on concealed surfaces where metals would otherwise be in direct contact with substrate materials that are incompatible or could result in corrosion or deterioration of either material or finish.
 - (ix) Coat concealed surfaces of aluminum that will be in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.
- (c) CLEANING
- (i) Unless otherwise indicated, clean metals by washing thoroughly with clean water and soap, rinsing with clean water, and drying with soft cloths.
 - (ii) Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material.
- (d) PROTECTION
- (i) Protect finishes of decorative formed metal from damage during construction period with temporary protective coverings approved by ornamental metal fabricator. Remove protective covering at time of Substantial Completion.
 - (ii) Restore finishes damaged during installation and construction period so no evidence remains of correction work. Return items that cannot be refinished in the field to the shop; make required alterations and refinish entire unit or provide new units.

04.22.06 JOINT SEALANTS

(1) WARRANTY

- (a) Special Installer's Warranty: Installer's standard form in which Installer agrees to repair or replace elastomeric joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - (b) Warranty Period: Two years from date of Substantial Completion.
 - (c) Special Manufacturer's Warranty: Manufacturer's standard form in which elastomeric sealant manufacturer agrees to furnish elastomeric joint sealants to repair or replace those that do not comply with performance and other requirements specified in this Section within specified warranty period.
 - (d) Warranty Period: Five years from date of Substantial Completion.
 - (e) Special warranties specified in this Article exclude deterioration or failure of elastomeric joint sealants from the following:
 - (f) Movement of the structure resulting in stresses on the sealant exceeding sealant manufacturer's written specifications for sealant elongation and compression caused by structural settlement or errors attributable to design or construction.
 - (g) Disintegration of joint substrates from natural causes exceeding design specifications.
 - (h) Mechanical damage caused by individuals, tools, or other outside agents.
 - (i) Changes in sealant appearance caused by accumulation of dirt or other atmospheric contaminants.
- (2) PRODUCTS
- (a) MATERIALS, GENERAL
 - (i) Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.
 - (ii) Colors of Exposed Joint Sealants: As selected by KCATA from manufacturer's full range.
 - (b) ELASTOMERIC JOINT SEALANTS
 - (i) Elastomeric Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied chemically curing sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
 - (ii) Stain-Test-Response Characteristics: Where elastomeric sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

(iii) Multicomponent Nonsag Neutral-Curing Silicone Sealant:

1. Available Products:
2. Dow Corning Corporation; 756 H.P.
3. Type and Grade: M (multicomponent) and P (pourable).
4. Class: 50.
5. Use Related to Exposure: NT (nontraffic).
6. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
7. Use O Joint Substrates: aluminum coated with a high-performance coating and galvanized steel.
8. Single-Component Neutral-Curing Silicone Sealant:
9. Available Products:
10. Dow Corning Corporation; 790.
11. GE Silicones; SilPruf LM SCS2700.
12. Type and Grade: S (single component) and NS (nonsag).
13. Class: 100/50.
14. Use Related to Exposure: NT (nontraffic).
15. Uses Related to Joint Substrates: M, G, A, and, as applicable to joint substrates indicated, O.
16. Use O Joint Substrates: aluminum coated with a high-performance coating and galvanized steel.
17. Stain-Test-Response Characteristics: Nonstaining to porous substrates per ASTM C 1248.

(3) INSTALLATION OF JOINT SEALANTS

- (a) General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated unless more stringent requirements apply.
- (b) Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- (c) Install sealant backings of type indicated to support 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.
- (d) Do not leave gaps between ends of sealant backings.
- (e) Do not stretch, twist, puncture, or tear sealant backings.

- (f) Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- (g) Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- (h) Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 - (i) Place sealants so they directly contact and fully wet joint substrates.
 - (j) Completely fill recesses in each joint configuration.
 - (k) Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
 - (l) Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
- (m) Remove excess sealant from surfaces adjacent to joints.
- (n) Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- (o) Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- (p) Provide flush joint configuration where indicated per Figure 5B in ASTM C 1193.
- (q) Provide recessed joint configuration of recess depth and at locations indicated per Figure 5C in ASTM C 1193.
- (r) Use masking tape to protect surfaces adjacent to recessed tooled joints.

04.22.07 GLAZING

(1) GENERAL

- (a) General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.
- (b) Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

- (c) Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
- (2) SUBMITTALS
- (a) Product Data: For each glass product and glazing material indicated.
 - (b) Glass Samples: For each type of glass product; 12 inches square.
 - (c) Glazing Accessory Samples: For gaskets and sealants, in 12-inch lengths. Install sealant Samples between two strips of material representative in color of the adjoining framing system. Glazing Schedule: List glass types and thicknesses for each size opening and location. Use same designations indicated on Drawings.
- (3) QUALITY ASSURANCE
- (a) Source Limitations for Glass: Obtain ultraclear float glass from single source from single manufacturer for each glass type.
 - (b) Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.
 - (c) Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.
 - (d) GANA Publications: GANA's "Laminated Glazing Reference Manual" and GANA's "Glazing Manual."
 - (e) AAMA Publications: AAMA GDSG-1, "Glass Design for Sloped Glazing," and AAMA TIRA7, "Sloped Glazing Guidelines."
 - (f) Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - (g) Install glazing in mockups specified in Division 01-to match glazing systems required for Project, including glazing methods.
 - (h) Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
 - (i) Preinstallation Conference: Conduct conference at location selected by KCATA.
 - (j) Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 - (k) Review temporary protection requirements for glazing during and after installation.

(4) DELIVERY, STORAGE, AND HANDLING

- (a) Protect glazing materials according to manufacturer's written instructions. Prevent damage to glass and glazing materials from condensation, temperature changes, direct exposure to sun, or other causes.

(5) WARRANTY

- (a) Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.
 - (i) Warranty Period: 10 years from date of Substantial Completion.

(6) PRODUCTS

(a) GLASS PRODUCTS, GENERAL

- (i) Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.
- (ii) Strength: Where float glass is indicated, provide annealed float glass, Kind HS heat-treated float glass, or Kind FT heat-treated float glass. Where heat-strengthened glass is indicated, provide Kind HS heat-treated float glass or Kind FT heat-treated float glass. Where fully tempered glass is indicated, provide Kind FT heat-treated float glass.
- (iii) Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data, based on procedures indicated below:
- (iv) For monolithic-glass lites, properties are based on units with lites of thickness indicated.

(b) GLASS PRODUCTS

- (i) Ultraclear Float Glass (Alternate): ASTM C 1036, Type I, Quality-Q3, Class I, complying with other requirements specified and with visible light transmission not less than 91 percent and solar heat gain coefficient not less than 0.87.
- (ii) Products: Subject to compliance with requirements, provide one of the following:

(iii) LOCAL SHELTERS

1. AFG Industries, Inc.;
2. Guardian Industries Corp.;

3. Pilkington North America;
 4. PPG Industries, Inc.;
- (iv) BRT SHELTERS;
1. AFG Industries, Inc.; Krystal Klear.
 2. Guardian Industries Corp.; Ultrawhite.
 3. Pilkington North America; Optiwhite.
 4. PPG Industries, Inc.; Starphire.
- (c) GLAZING GASKETS
- (i) Dense Compression Gaskets: Molded or extruded gaskets of profile and hardness required to maintain watertight seal, made from **[one of]** the following:
1. Neoprene complying with ASTM C 864.
 2. Silicone complying with ASTM C 1115.
- (d) GLAZING SEALANTS
- (i) General:
1. Compatibility: Provide glazing sealants that are compatible with one another and with other materials they will contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.
 2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.
 3. Sealants used inside the weatherproofing system, shall have a VOC content of not more than 250 g/L when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 4. Sealants used inside the weatherproofing system shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."
 5. Colors of Exposed Glazing Sealants: As selected by KCATA from manufacturer's full range.
 6. Glazing Sealant: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 100/50, Use NT.
 7. Products: Subject to compliance with requirements, provide one of the following:
 - a. [Dow Corning Corporation; 790.](#)

- b. [GE Advanced Materials -Silicones; SilPruf LM SCS2700.](#)
- c. [May National Associates, Inc.; Bondaflex Sil 290.](#)
- d. [Pecora Corporation; 890.](#)
- e. [Sika Corporation, Construction Products Division; SikaSil-C990.](#)
- f. [Tremco Incorporated; Spectrem 1.](#)

(e) MISCELLANEOUS GLAZING MATERIALS

- (i) General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.
- (ii) Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.
- (iii) Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- (iv) Spacers: Elastomeric blocks or continuous extrusions of hardness required by glass manufacturer to maintain glass lites in place for installation indicated.
- (v) Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).
- (vi) Cylindrical Glazing Sealant Backing: ASTM C 1330, Type O (open-cell material), of size and density to control glazing sealant depth and otherwise produce optimum glazing sealant performance.

(f) FABRICATION OF GLAZING UNITS

- (i) Fabricate glazing units in sizes required to fit openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.
- (ii) Clean-cut or flat-grind vertical edges of butt-glazed monolithic lites to produce square edges with slight chamfers at junctions of edges and faces.
- (iii) Grind smooth and polish exposed glass edges and corners.

(7) EXECUTION

(a) EXAMINATION

- (i) Examine framing, glazing channels, and stops, with Installer present, for compliance with the following:
- (ii) Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.

- (iii) Presence and functioning of weep systems.
- (iv) Minimum required face and edge clearances.
- (v) Effective sealing between joints of glass-framing members.
- (vi) Proceed with installation only after unsatisfactory conditions have been corrected.

(b) PREPARATION

- (i) Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
- (ii) Examine glazing units to locate exterior and interior surfaces. Label or mark units as needed so that exterior and interior surfaces are readily identifiable. Do not use materials that will leave visible marks in the completed work.

(c) GLAZING, GENERAL

- (i) Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.
- (ii) Adjust glazing channel dimensions as required by Project conditions during installation to provide necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances.
- (iii) Protect glass edges from damage during handling and installation. Remove damaged glass from Project site and legally dispose of off Project site. Damaged glass is glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance.
- (iv) Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction testing.
- (v) Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
- (vi) Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
- (vii) Provide spacers for glass lites where length plus width is larger than 50 inches.
- (viii) Locate spacers directly opposite each other on both inside and outside faces of glass. Install correct size and spacing to preserve required face clearances, unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances and to

comply with system performance requirements.

- (ix) Provide 1/8-inch minimum bite of spacers on glass and use thickness equal to sealant width. With glazing tape, use thickness slightly less than final compressed thickness of tape.
- (x) Provide edge blocking where indicated or needed to prevent glass lites from moving sideways in glazing channel, as recommended in writing by glass manufacturer and according to requirements in referenced glazing publications.
- (xi) Set glass lites in each series with uniform pattern, draw, bow, and similar characteristics.
- (xii) Set glass lites with proper orientation so that coatings face exterior or interior as specified.
- (xiii) Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage so gasket cannot walk out when installation is subjected to movement.
- (xiv) Square cut wedge-shaped gaskets at corners and install gaskets in a manner recommended by gasket manufacturer to prevent corners from pulling away; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

(d) **GASKET GLAZING (DRY)**

- (i) Cut compression gaskets to lengths recommended by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
- (ii) Insert soft compression gasket between glass and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
- (iii) Installation with Drive-in Wedge Gaskets: Center glass lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in glass. Seal gasket joints with sealant recommended by gasket manufacturer.

(e) **CLEANING AND PROTECTION**

- (i) Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels and clean surfaces.
- (ii) Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove substances immediately as recommended in writing by glass manufacturer.

- (iii) Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less than once a month, for buildup of dirt, scum, alkaline deposits, or stains; remove as recommended in writing by glass manufacturer.
- (iv) Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.
- (v) Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended in writing by glass manufacturer

04.22.08 PLASTIC GLAZING

- (1) This Section includes the following:

- (a) Monolithic polycarbonate glazing.
- (b) Decorative polycarbonate glazing.
- (c) Decorative film overlays.

- (2) PERFORMANCE REQUIREMENTS

- (a) Provide plastic glazing sheets and glazing materials capable of withstanding normal temperature changes, wind and impact loads without failure, including loss or breakage of plastic sheets attributable to the following: failure of sealants or gaskets to remain watertight and airtight, deterioration of plastic sheet and glazing materials, or other defects in materials and installation.
- (b) Plastic Glazing Design: Plastic glazing thicknesses indicated are minimums. Confirm plastic glazing thicknesses by analyzing Project loads and in-service conditions. Provide plastic glazing lites in the thicknesses indicated for various size openings, but not less than thicknesses required to meet or exceed the following criteria:
 - (i) Plastic Glazing Thicknesses: Select minimum plastic glazing thicknesses to comply with written recommendations of plastic glazing manufacturers, according to the following requirements:
 - 1. Design Wind Loads: Determine design wind loads applicable to Project from basic wind speed indicated in miles per hour (meters per second) at 33 feet (10 m) above grade, according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures": Section 6.0, "Wind Loads"; based on mean roof heights above grade and locations and effective wind areas of plastic glazing applicable to Project indicated on Drawings.

- (3) SUBMITTALS

- (a) Product Data: For each type of plastic glazing sheet and glazing material indicated.
 - (b) Shop Drawings: For each type of plastic glazing installation indicated. Show details of fabrication and installation.
 - (c) Samples: For the following products, 12 inches square:
 - (i) Each decorative film overlay on type of plastic glazing sheet indicated.
 - (d) Samples for Verification: For each color and finish of plastic glazing sheet indicated, prepared on samples 12 inches (300 mm) square and of same thickness and material indicated for final Work.
 - (i) Include 12-inch- (300-mm-) long samples of each color of exposed glazing gasket selected or indicated. Install sample along with plastic glazing sheet sample between two strips of material representative of adjoining framing system in color.
 - (e) Material Certificates: For plastic glazing, signed by manufacturers.
 - (f) Research/Evaluation Reports: For plastic glazing sheets.
 - (g) Maintenance Data: For plastic glazing sheet materials and each decorative film overlay to include in maintenance manuals.
 - (h) Warranty: Special warranty specified in this Section.
- (4) QUALITY ASSURANCE
- (a) Source Limitations: Obtain plastic glazing materials through one source from a single manufacturer for each type of plastic glazing sheet and glazing material indicated.
 - (b) Glazing Publication: Comply with published recommendations in GANA's "Glazing Manual," unless more stringent requirements are indicated. Refer to this publication for definitions of glazing terms not otherwise defined in this Section or other referenced standards.
 - (c) Fire-Test-Response Characteristics: Provide plastic glazing sheets identical to those tested for the following fire-test-response characteristics per test method indicated below by UL or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify plastic glazing sheets with appropriate markings of applicable testing and inspecting agency.
 - (i) Self-Ignition Temperature: 650 deg F (343 deg C) or more when tested per ASTM D 1929 on plastic glazing sheets in thicknesses indicated for Work.
 - (ii) Smoke density of 75 or less when tested per ASTM D 2843 on plastic glazing sheets in thicknesses indicated for Work.
 - (iii) Relative Burning Characteristics: As follows, when tested per ASTM D 635:

1. Burning extent of 1 inch (25.4 mm) or less when tested on monolithic polycarbonate plastic glazing with a nominal thickness of 0.060 inch (1.52 mm) or thickness indicated for Work.
 2. Burning rate of 2.5 in./min. (1.06 mm/s) or less when tested on plastic glazing indicated below with a nominal thickness of 0.060 inch (1.52 mm) or thickness indicated for Work.
- (d) Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - (i) Locate mockups in the location and of the size indicated or, if not indicated, as directed by KCATA.
 - (ii) Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.
- (5) DELIVERY, STORAGE, AND HANDLING
 - (a) Comply with manufacturer's written instructions for shipping, storing, and handling plastic glazing sheets, for protection of decorative film overlays, and for removing protective coverings after installation.
 - (b) Maintain protective coverings on sheets to avoid exposures to abrasive substances, excessive heat, and other sources of possible deterioration.
- (6) PROJECT CONDITIONS
 - (a) Environmental Limitations: Do not proceed with installing glazing sealants when ambient and substrate temperature conditions are outside limits permitted by glazing sealant manufacturers or below 40 deg F (4.4 deg C).
- (7) WARRANTY
 - (a) Manufacturer's Special Warranty for Abrasion- and UV-Resistant, Monolithic Polycarbonate Sheet: Manufacturer's standard form, made out to KCATA and signed by polycarbonate manufacturer, in which manufacturer agrees to replace polycarbonate sheet that breaks or develops defects from normal use that are attributable to the manufacturing process and not to practices for maintaining and cleaning plastic glazing sheet contrary to manufacturer's written instructions. Defects include coating delamination, increases in haze, excessive yellowing, and losses in light transmission beyond the limits stated in plastic glazing sheet manufacturer's standard form.
 - (iii) Warranty Period: 10 years from date of Substantial Completion.
- (8) PRODUCTS
 - (a) MANUFACTURERS
 - (i) Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to,

products listed in other Part 2 articles.

(b) GLAZING PLASTICS, GENERAL

- (i) Sizes: Fabricate plastic glazing sheets to sizes required for glazing openings indicated. Allow for thermal expansion and contraction of plastic glazing without restraint and without withdrawal of edges from frames, with edge clearances and tolerances complying with written instructions of plastic glazing manufacturer.

(c) MONOLITHIC POLYCARBONATE GLAZING

- (i) Coated Monolithic Polycarbonate Sheet (sloped horizontal panels): ASTM C 1349, Appendix X1, Type II (coated mar-resistant, UV stabilized), with coating on both sides.

1. Available Products:

- a. ATOFINA Chemicals, Inc., ATOGLAS Division; Tuffak CM-2.
- b. GE Structured Products; Lexan MR 10.
- c. Sheffield Plastics Inc.; Makrolon AR1.

2. Nominal Thickness: As indicated.

3. Color: Transparent colorless.

- (ii) Coated Monolithic Polycarbonate Sheet (vertical panels): ASTM C 1349, Appendix X1, Type II (coated mar-resistant, UV stabilized) with coating on exposed sides. Sandwich inside face does not require coating.

1. Available Products:

- a. ATOFINA Chemicals, Inc., ATOGLAS Division; Tuffak CM-2.
- b. GE Structured Products; Lexan MR 10.
- c. Sheffield Plastics Inc.; Makrolon AR.

2. Nominal Thickness: As indicated.

3. Color: Transparent colorless.

(d) SILK-SCREENED MONOLITHIC POLYCARBONATE GLAZING

- (i) Silk-Screened-Polycarbonate Glazing complying with other specified requirements.

1. Silk-Screen Process: Apply manufacturer's standard glass paint or ink to glass surface and cure.

2. Glazing Thickness: As indicated.

3. Colors and Patterns: Match Architect's samples.

(e) DECORATIVE FILM OVERLAY

- (i) Cast PVC Film: Translucent, dimensionally stable cast PVC film, 2-mil minimum thickness, with pressure-sensitive clear adhesive back for

adhering to glass and releasable protective backing.

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited, to the following:

- a. Avery Dennison Graphics Division: Etchmark A5861-S.
- b. FDC Graphic Films, Inc.; Series 2100/2200, 007 Frosted Silver Metallic.
- c. Spar-Cal Division, Spartan International; Etchlight.
- d. 3M Commercial Graphics Division; Scotchcal Dusted Crystal.
- e. 3M Commercial Graphics Division; Scotchcal Frosted Crystal.

(f) GLAZING GASKETS

- (i) Dense Compression Gaskets: Molded or extruded gaskets, EPDM, ASTM C 864, or silicone, ASTM C 1115; and of profile and hardness required to maintain watertight seal.

(g) ACCESSORIES

- (i) Low Profile Standoffs and Caps: Provide Standoff Systems standoff barrel, 1'-1/2" dia. by 1/2" long, and Standoff Systems low profile cap, 1-1/2" dia.

(h) MISCELLANEOUS GLAZING MATERIALS

- (i) Compatibility: Provide materials with a proven record of compatibility with surfaces contacted in installation.
- (ii) Cleaners, Primers, and Sealers: Type recommended by sealant or gasket manufacturer and plastic glazing manufacturer.

(i) DECORATIVE PLASTIC GLAZING FABRICATION

- (i) Fabricate decorative plastic glazing and provide other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product manufacturer and referenced glazing standard.
- (ii) Cast PVC Film: Apply squarely aligned to glass edges, uniformly smooth, and free from tears, air bubbles, wrinkles, and rough edges, with graphic image as indicated on Drawings to the back face of clean glass, according to manufacturer's written instructions, including surface preparation and application temperature limitations.

(9) EXECUTION

(a) EXAMINATION

- (i) Examine plastic glazing framing, with glazing Installer present, for compliance with the following:

1. Manufacturing and installation tolerances, including those for size, squareness, and offsets at corners.
2. Minimum required face or edge clearances.
3. Effective sealing between joints of plastic glazing framing members.
4. Proceed with glazing only after unsatisfactory conditions have been corrected.

(b) PREPARATION

- (i) Clean glazing channels and other framing members to receive plastic glazing immediately before glazing. Remove coatings not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

(c) GLAZING, GENERAL

- (i) Comply with combined written instructions of manufacturers of plastic glazing materials, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publication.
- (ii) Glazing channel dimensions indicated on Drawings are designed to provide the necessary bite on plastic glazing, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust plastic glazing lites during installation to ensure that bite is equal on all sides.
- (iii) Remove burrs and other projections from glazing channel surfaces.
- (iv) Protect plastic glazing surfaces from abrasion and other damage during handling and installation, according to the following requirements:
 1. Retain plastic glazing manufacturer's protective covering or protect by other methods according to plastic glazing manufacturer's written instructions.
 2. Remove covering at border of each piece before glazing; remove remainder of covering immediately after installation where plastic glazing will be exposed to sunlight or where other conditions make later removal difficult.
 3. Remove damaged plastic glazing sheets from Project site and legally dispose of off-site. Damaged plastic glazing sheets are those containing imperfections that, when installed, result in weakened glazing and impaired performance and appearance.
- (v) Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.
- (vi) Install elastomeric setting blocks in sill channels, sized and located to comply with referenced glazing publication, unless otherwise instructed by plastic glazing manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.

- (vii) Provide edge blocking to comply with referenced glazing publication, unless otherwise instructed by plastic glazing manufacturer.
- (d) GASKET GLAZING (DRY)
 - (i) Fabricate compression gaskets in lengths recommended in writing by gasket manufacturer to fit openings exactly, with allowance for stretch during installation.
 - (ii) Insert soft compression gasket between plastic glazing and frame or fixed stop so it is securely in place with joints miter cut and bonded together at corners.
 - (iii) Center plastic glazing lites in openings on setting blocks and press firmly against soft compression gasket by inserting dense compression gaskets formed and installed to lock in place against faces of removable stops. Start gasket applications at corners and work toward centers of openings. Compress gaskets to produce a weathertight seal without developing bending stresses in plastic glazing. Seal gasket joints with sealant recommended by gasket manufacturer.
 - (iv) Install gaskets so they protrude past face of glazing stops.
- (e) PROTECTING AND CLEANING
 - (i) Protect plastic glazing from contact with contaminating substances from construction operations. If, despite such protection, contaminating substances do come into contact with plastic glazing, remove immediately and wash by method recommended in writing by plastic glazing manufacturer.
 - (ii) Remove and replace plastic glazing that is broken, chipped, cracked, abraded, or damaged in other ways during construction period, including natural causes, accidents, and vandalism.
 - (iii) Wash plastic glazing on both faces before date scheduled for inspections intended to establish date of Substantial Completion in each area of Project. Wash plastic glazing by method recommended in writing by plastic glazing manufacturer.

04.22.09 PAINTING (PROFESSIONAL LINE PRODUCTS)

(1) SUMMARY

- (a) This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces.
 - (i) Surface preparation, priming, and finish coats specified in this Section are in addition to shop priming and surface treatment specified in other Sections.
- (b) Paint exposed surfaces, except where these Specifications indicate that the surface or material is not to be painted or is to remain natural. If an item or a surface is not specifically mentioned, paint the item or surface the same as

similar adjacent materials or surfaces. If a color of finish is not indicated, KCATA will select from standard colors and finishes available.

- (c) Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.
 - (i) Finished metal surfaces include the following:
 - 1. Anodized aluminum.
 - 2. Stainless steel.
 - (ii) Operating parts include moving parts of operating equipment and the following:
 - 1. Linkages.
 - 2. Sensing devices.
 - (iii) Labels: Do not paint over UL, FMG, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.
- (2) DEFINITIONS
 - (a) General: Standard coating terms defined in ASTM D 16 apply to this Section.
 - (i) Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - (ii) Eggshell refers to low-sheen finish with a gloss range between 20 and 35 when measured at a 60-degree meter.
 - (iii) Semigloss refers to medium-sheen finish with a gloss range between 35 and 70 when measured at a 60-degree meter.
 - (iv) Full gloss refers to high-sheen finish with a gloss range more than 70 when measured at a 60-degree meter.
- (3) SUBMITTALS
 - (a) Product Data: For each paint system indicated. Include block fillers and primers.
 - (i) Material List: An inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.
 - (ii) Manufacturer's Information: Manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material.
 - (iii) After color selection, KCATA will furnish color chips for surfaces to be coated.
 - (b) Samples for Verification: For each color and material to be applied, with

texture to simulate actual conditions, on representative Samples of the actual substrate.

- (i) Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.
- (ii) Provide a list of materials and applications for each coat of each Sample. Label each Sample for location and application.
- (iii) Submit Samples on the following substrates for KCATA's review of color and texture only:
 - 1. Ferrous Metal: 4-by-8-inch Samples of flat metal and 8-inch long Samples of solid metal for each color and finish.

(c) Qualification Data: For Applicator.

(4) QUALITY ASSURANCE

- (a) Applicator Qualifications: A firm or individual experienced in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.
- (b) Source Limitations: Obtain block fillers and primers for each coating system from the same manufacturer as the finish coats.

(5) DELIVERY, STORAGE, AND HANDLING

- (a) Deliver materials to Project site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
 - (i) Product name or title of material.
 - (ii) Product description (generic classification or binder type).
 - (iii) Manufacturer's stock number and date of manufacture.
 - (iv) Contents by volume, for pigment and vehicle constituents.
 - (v) Thinning instructions.
 - (vi) Application instructions.
 - (vii) Color name and number.
 - (viii) VOC content.
- (b) Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45 deg F. Maintain storage containers in a clean condition, free of foreign materials and residue.
 - (i) Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily.

(6) PROJECT CONDITIONS

- (a) Apply waterborne paints only when temperatures of surfaces to be painted and surrounding air are between 50 and 90 deg F.
- (b) Apply solvent-thinned paints only when temperatures of surfaces to be painted and surrounding air are between 45 and 95 deg F.
- (c) Do not apply paint in snow, rain, fog, or mist; or when relative humidity exceeds 85 percent; or at temperatures less than 5 deg F above the dew point; or to damp or wet surfaces.
 - (i) Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature limits specified by manufacturer during application and drying periods.

(7) EXTRA MATERIALS

- (a) Furnish extra paint materials from the same production run as the materials applied and in the quantities described below. Package with protective covering for storage and identify with labels describing contents. Deliver extra materials to KCATA.
 - (i) Quantity: Furnish KCATA with an additional 5 percent, but not less than 1 gal. or 1 case, as appropriate, of each material and color applied.

(8) PRODUCTS

(a) MANUFACTURERS

- (i) Products: Subject to compliance with requirements, provide one of the products listed in other Part 2 articles.
- (ii) Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
 - 1. Wasser Paint System (Wasser) for Steel Parts
 - 2. Matthews Paint System (Matthews) for Aluminum Parts
 - 3. Benjamin Moore & Co. (Benjamin Moore).
 - 4. Dupont Industrial Coatings (Dupont)
 - 5. ICI Dulux Paint Centers (ICI Dulux Paints).
 - 6. PPG Industries, Inc. (Pittsburgh Paints).
 - 7. Sherwin-Williams Co. (Sherwin-Williams).
 - 8. Tnemec Company Inc. (Tnemec)

(b) PAINT MATERIALS, GENERAL

- (i) Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by

manufacturer based on testing and field experience.

- (ii) Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

- 1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

- (iii) Colors: Match Architect's color samples.

- 1. Interior custom paint colors are indicated in Division 9 Section "Finish Schedule". Provide products specified in this section to match the colors as described in the finish schedule.

(9) EXECUTION

(a) EXAMINATION

- (i) Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for paint application. Comply with procedures specified in PDCA P4.
 - 1. Proceed with paint application only after unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.
 - 2. Start of painting will be construed as Applicator's acceptance of surfaces and conditions within a particular area.
- (ii) Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
 - 1. Notify KCATA about anticipated problems when using the materials specified over substrates primed by others.

(b) PREPARATION

- (i) General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- (ii) Cleaning: Before applying paint or other surface treatments, clean substrates of substances that could impair bond of the various coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.
- (iii) Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
 1. Provide barrier coats over incompatible primers or remove and re-prime.
 2. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
 - a. Blast steel surfaces clean as recommended by paint system manufacturer and according to SSPC-SP 6/NACE No. 3.
 - b. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
 3. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- (iv) Material Preparation: Mix and prepare paint materials according to manufacturer's written instructions.
- (10) Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 1. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
 2. Use only thinners approved by paint manufacturer and only within recommended limits.
- (ii) Tinting: Tint each undercoat a lighter shade to simplify identification of each coat when multiple coats of same material are applied. Tint undercoats to match the color of the finish coat but provide sufficient differences in shade of undercoats to distinguish each separate coat.
- (b) APPLICATION
 - (i) General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.
 1. Paint colors, surface treatments, and finishes are indicated in the paint schedules.
 2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

3. Provide finish coats that are compatible with primers used.
 4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, grilles, convector covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
 5. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 6. Paint interior surfaces of ducts with a flat, nonspecular black paint where visible through registers or grilles.
 7. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 8. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 9. Sand lightly between each succeeding enamel or varnish coat.
- (c) Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. The number of coats and film thickness required are the same regardless of application method. Do not apply succeeding coats until previous coat has cured as recommended by manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.
 2. Omit primer over metal surfaces that have been shop primed and touchup painted.
 3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure that edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
 4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm and does not deform or feel sticky under moderate thumb pressure, and until application of another coat of paint does not cause undercoat to lift or lose adhesion.
- (ii) Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
1. Brushes: Use brushes best suited for type of material applied. Use brush of appropriate size for surface or item being painted.
 2. Rollers: Use rollers of carpet, velvet-back, or high-pile sheep's wool

as recommended by manufacturer for material and texture required.

3. Spray Equipment: Use airless spray equipment with orifice size as recommended by manufacturer for material and texture required.

(iii) Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate to achieve dry film thickness indicated. Provide total dry film thickness of the entire system as recommended by manufacturer.

(iv) Electrical Work: Painting of electrical work is limited to items exposed in occupied spaces.

(v) Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

(vi) Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

(vii) Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

(d) **CLEANING**

(i) Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.

1. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping without scratching or damaging adjacent finished surfaces.

(e) **PROTECTION**

(i) Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by KCATA.

(ii) Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.

1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

(f) **EXTERIOR PAINT SCHEDULE**

Substrate	1st Coat (Primer)	2nd Coat	3rd Coat	4th Coat
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Ferrous Metal, Carbon Steel framing, Decorative Metal Fabrications, and other structural steel members	Wasser MC-Zinc 100 3.0 – 5.0 mils	Wasser MC-Ferrox B 100 3.0 - 5.0 mils	Wasser MC-Luster 100 2.0 - 4.0 mils	Wasser MC-Anti-graffiti 100 1.5 – 2.0 mils
Exterior Steel Bolts, Buts, Washers, and other Miscellaneous Steel Items	Wasser MC-Zinc 100 3.0 – 5.0 mils	Wasser MC-Ferrox B 100 3.0 - 5.0 mils	Wasser MC-Luster 100 2.0 - 4.0 mils	
Zinc-Coated (Galvanized) Steel	Wasser MC-Ferrox B 100 3.0 - 5.0 mils	Wasser MC-Luster 100 2.0 - 4.0 mils	Wasser MC-Anti-graffiti 100 1.5 – 2.0 mils	
Aluminum framing, Decorative Metal Fabrications, and other exposed aluminum members	Matthews 6001SP Primer 3.0 – 5.0 mils	Matthews Satin VOC MAP 2.0 – 4.0 mils	Matthews 6178SP C 1.5 - 2.5 mils	

END OF SECTION

04.23 SIGNS

04.23.01 GENERAL

(1) GENERAL REQUIREMENTS

- (a) Drawings and General and Special Provisions of the Contract apply to this Section.
 - (i) Dimensional characters (letters and numbers) and logos for exterior use.

(2) SUBMITTALS

- (a) Product Data: Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of sign.
- (b) Shop Drawings: Include plans, elevations, and large-scale sections of typical members and other components. Show mounting methods, grounds, mounting heights, layout, spacing, reinforcement, accessories, and installation details.
 - (i) Provide message list for each sign, including large-scale details of wording, lettering, artwork, and braille layout.
- (c) Samples for Initial Selection: For each type of sign material indicated that involves color selection.
- (d) Samples for Verification: For each type of sign, include the following Samples to verify color selected:
 - (i) Vinyl Characters: Full-size Samples of each type of vinyl character (letter and number) required. Show character style, material, finish, and method of attachment.
 - (ii) Approved samples will not be returned for installation into Project.
- (e) Qualification Data: For Installer.
- (f) Maintenance Data: For signage cleaning and maintenance requirements to include in maintenance manuals.

(3) QUALITY ASSURANCE

- (a) Installer Qualifications: An employer of workers trained and approved by signage manufacturer.
- (b) Source Limitations: Obtain each sign type through one source from a single manufacturer.
- (c) Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.

(4) PROJECT CONDITIONS

- (a) Field Measurements: Where sizes of signs are determined by dimensions of surfaces on which they are installed, verify dimensions by field measurement before fabrication and indicate measurements on Shop Drawings.

04.23.02 PRODUCTS

(1) ACCESSORIES

- (a) Vinyl Film: Provide opaque nonreflective vinyl film, 0.0035-inch minimum thickness, with pressure-sensitive adhesive backing suitable for exterior applications.

(2) FINISHES, GENERAL

- (a) Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.
- (b) Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

04.23.03 EXECUTION

(1) EXAMINATION

- (a) Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.
- (b) Verify that items provided under other sections of Work are sized and located to accommodate signs.
- (c) Examine supporting members to ensure that surfaces are at elevations indicated or required to comply with authorities having jurisdiction and are free from dirt and other deleterious matter.
- (d) Proceed with installation only after unsatisfactory conditions have been corrected.

(2) INSTALLATION

- (a) General: Locate signs and accessories where indicated, using mounting methods of types described and in compliance with manufacturer's written instructions.
 - (i) Install signs level, plumb, and at heights indicated, with sign surfaces free from distortion and other defects in appearance.
- (b) Vinyl Characters: Provide heavy paper template to establish character spacing and to locate holes for fasteners.

(3) CLEANING AND PROTECTION

- (a) After installation, clean soiled sign surfaces according to manufacturer's written instructions. Protect signs from damage until acceptance by the KCATA or the KCATA designated representative.

END OF SECTION

05 PROJECT MEASUREMENT AND PAYMENT

THE FOLLOWING SCOPE OR BID ITEMS MAY NOT BE INCLUDED IN THE PROPOSAL OR BID FORM. THE ONLY BID ITEMS FOR THIS PROJECT ARE AS INDICATED IN THE BID FORM. THE COST OF ALL WORK NECESSARY TO COMPLETE THE PROJECT AS INDICATED IN THE PLANS AND SPECIFICATIONS SHALL BE INCLUDED IN THE ITEMS LISTED IN THE BID FORM.

05.01 MOBILIZATION

- 05.01.01 Mobilization shall be considered Lump Sum and paid at the contract unit price as shown on the bid form. Such payment and price shall constitute full compensation for all labor, all bonds, permits, insurance, temporary office, materials, and equipment necessary to complete the item.
- 05.01.02 Mobilization costs shall be paid as follows: 1st Payment application – 50%, 2nd Payment application – 25%, 3rd Payment application – 25%. If requested, the Contractor shall submit a breakdown of items included in Mobilization.

05.02 ADMINISTRATION AND MANAGEMENT

- 05.02.01 Administration & Management shall be considered Lump Sum and paid out as a percentage equal to the estimated percent complete of the project. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.

05.03 ASPHALT PAVING

- 05.03.01 Asphalt surface Type 5-01 will be paid at the contract unit price as shown on the bid form. The final measurement for this item shall be to the nearest square yard. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.
- 05.03.02 Asphalt base Type 1-01 will be paid at the contract unit price as shown on the bid form. The final measurement for this item shall be to the nearest square yard. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.

05.04 AGGREGATE BASE COURSE

- 05.04.01 Payment for Aggregate Base Course shall be paid per contract bid item as shown on the bid form. The final measurement for this item shall be to the nearest square yard. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.

05.05 SUBGRADE STABILIZATION – IDENTIFIED DURING CONSTRUCTION

- 05.05.01 Payment for Subgrade Stabilization shall be paid per contract bid price as shown on the bid

form. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.

05.06 CURB INLET

05.06.01 Payment for Curb Inlet shall be paid per the contract bid price as shown on the bid form. The final measurement for this item shall be per each acceptably installed Curb Inlet. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.

05.06.02 Construction of the throat, curb transition, and forming of inverts will be measured and paid for as a part of the item.

05.07 COLDMILL (EDGEMILL) EXISTING PAVEMENT

05.07.01 Cold Milling or Edge Milling of existing pavement will be measured, length by width to the nearest foot and converted to the nearest square yard for payment. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.

05.07.02 If applicable, Cold Milling for placement of Concrete Inlays or Bus Stopping Pads will not be measured and compensation for milling or other demolition shall be included in the contract unit pricing for those items.

05.08 CONCRETE BUS PADS / PAVEMENT

05.08.01 The extent of the pavement installed may vary from the plan quantity, but the contract unit price shall prevail regardless of the variation. The final measurement for this item shall be to the nearest square yard. Such payment and price shall constitute full compensation for all labor, materials, and equipment necessary to complete the item.

05.08.02 Unless otherwise included in the project bid form to be paid separately, sealing of concrete pavement joints shall be subsidiary to concrete pavement.

05.08.03 Unless otherwise included in the project bid form to be paid separately, three (3) day wet cure, where applicable, shall be subsidiary to other bid items.

05.09 CONCRETE CURB

05.09.01 Curbing will be measured to the nearest 0.1 foot and rounded to the nearest foot for payment. Curvilinear measure shall be along the back of the new curb. Curb shall not be measured through driveways. The driveway portion of curb shall be paid as Driveway. Curbs will not be measured through curb inlet throats or transition wings. Curb inlet throats and transition wings shall be paid as Curb Inlet. Any additional cost of the throat is incidental to the other pay items.

05.09.02 Unless otherwise included in the project bid form to be paid separately, three (3) day wet cure, where applicable, shall be subsidiary to other bid items.

05.09.03 "Concrete Curb," regardless of the respective type, will be paid for at the Contract Unit Price

per linear foot. Such payment and price shall be full compensation for all labor, equipment and materials to complete the item.

05.10 DEMOLITION

05.10.01 Demolition shall be considered lump sum and will be paid at the contract unit price as shown on the bid form. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.

05.10.02 No separate payment will be made demolition disposal, unless specifically listed. All costs pertaining thereto shall be included in the Contract Unit Price(s) for other items.

05.11 SANITARY & STORM SEWER MANHOLE ADJUSTMENTS

05.11.01 Sanitary and storm sewer manhole adjustments will be paid at the contract unit price as shown on the bid form. The final measurement for this item shall be per each acceptably adjusted manhole. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.

- (1) Only that work which is documented by both the Contractor and the KCATA representative on a daily basis will be considered for payment.
- (2) Subsurface conditions that require additional work beyond manufacturer's recommendations for installation of adjustable manhole assemblies shall be included in the Unit Bid Price.

05.12 SAW CUTTING

05.12.01 No separate payment will be made for concrete or asphalt sawing, pavement removal or new construction joints. All costs pertaining thereto shall be included in the Contract Unit Prices for other items.

05.13 SIDEWALKS

05.13.01 Sidewalks will be field measured to the nearest tenth of a foot along the neat lines of construction. Curvilinear measurement shall be along the outside edge of the curve. Payment will be rounded to the nearest square foot.

05.13.02 Unless otherwise included in the project bid form to be paid separately, sealing of joints shall be subsidiary to other items

05.13.03 Unless otherwise included in the project bid form to be paid separately, three (3) day wet cure, where applicable, shall be subsidiary to other bid items.

05.14 ADA RAMPS

05.14.01 ADA curb ramps shall be paid per each and shall include all labor, materials and equipment to construct the ramp. At locations where ramps are installed, all curb and sidewalk laid outside of the ramp will be paid at the respective contract bid item and price. When no unit price bid item for curb is included in the bid form, curb costs shall be included in the ADA ramp pricing.

- 05.14.02 Complete installation of ADA Ramps shall include the landing, turning space, ramp, and detectable warning surface installed in accordance with the plans and within allowable longitudinal and cross slopes. ADA Ramps determined to be non-compliant with ADA standards will be removed and replaced, within compliance, at no additional cost to the KCATA.
- 05.14.03 Unless otherwise included in the project bid form to be paid separately, sealing of joints shall be subsidiary to other bid items.
- 05.14.04 Unless otherwise included in the project bid form to be paid separately, three (3) day wet cure, where applicable, shall be subsidiary to other bid items.
- 05.15 DRIVEWAYS
- 05.15.01 A completed unit of work includes cleanup, accepted by the KCATA Representative. Driveways will be paid at the contract unit price as shown on the bid form. The final measurement for this item shall be to the nearest square yard. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.
- 05.15.02 Unless otherwise included in the project bid form to be paid separately, sealing of joints shall be subsidiary to other bid items.
- 05.15.03 No separate payment shall be made for curb transitions on driveway or radii. This work is to be considered part of the entrance and shall be measured with the drive entrances.
- 05.15.04 Unless otherwise included in the project bid form to be paid separately, three (3) day wet cure, where applicable, shall be subsidiary to other bid items.
- 05.16 TRAFFIC CONTROL
- 05.16.01 No separate payment will be made for "Traffic Control". All costs pertaining thereto shall be included in the contract prices for other items listed in the bid form.
- 05.17 ELECTRICAL SERVICE
- 05.17.01 Electrical Service shall be paid Lump Sum including but not be limited to electrical service to stations and building(s) if applicable, building connections, HVAC hookup including electrical and control wire connections, site electrical, roof canopy lighting, shelter, marker and kiosk connections, etc.
- 05.18 PROJECT PHOTOGRAPHS
- 05.18.01 No separate payment will be made for "Project Photographs". All costs pertaining thereto shall be included in the contract prices for other items listed in the bid form.
- 05.19 EARTHWORK
- 05.19.01 Earthwork shall be considered Lump Sum and paid at the contract unit price as shown on the bid form. Such payment and price shall constitute full compensation for all labor,

materials, and equipment necessary to complete the item.

- 05.19.02 It is the Contractor's responsibility to confirm Earthwork quantity. No classification of excavated materials will be made. No additional payment will be made for rock excavation. The Contractor is solely responsible for determining the amount of rock excavation, if any, to be included in his bid.
- 05.19.03 Estimated quantities may be provided "for information only". These quantities are not guaranteed, and the Contractor shall perform its own quantity estimate for bidding and construction purposes.
- 05.19.04 This work shall include all necessary site work including but not limited to subgrade preparation, adjustment of utility lids or other features flush with new pavement, sidewalk, or non-paved areas etc. The KCATA or its consultant(s) do not guarantee site earthwork is balanced. Contractor shall determine prior to bidding as to whether off-site fill material or excess haul-off is required.
- 05.20 PIPE AND TUBE RAILINGS
- 05.20.01 Pipe and Tube Railings shall be measured and paid per linear foot and paid at the contract unit price as shown on the bid form. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.
- 05.21 CHAIN LINK FENCE
- 05.21.01 Chain link fence shall be measured and paid per linear foot and paid at the contract unit price as shown on the bid form. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.
- 05.22 SHELTERS & KIOSKS
- 05.22.01 Shelter and Kiosks shall be considered Lump Sum and paid at the contract unit price as shown on the bid form. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item. Installation and masonry block knee-wall shall be included in other bid items.
- 05.23 SIGNS
- 05.23.01 Signs shall be paid per each and paid at the contract unit price as shown on the bid form. Such payment and price shall constitute full compensation for all labor, materials and equipment necessary to complete the item.