CONTRACT DOCUMENTS
AND
SPECIFICATIONS
FOR
PROJECT NO. SP 22-7 TULSA POLICE
DEPARTMENT HELIPORT

ATTENDANCE AT PRE-BID CONFERENCE IS MANDATORY

PREPARED BY:
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CITY OF
Tulsa
A New Kind of Energy™

PAUL D. ZACHARY, P.E., DIRECTOR
ENGINEERING SERVICES DEPARTMENT


Engineering Services Department
2317 South Jackson Avenue
Tulsa, Oklahoma 74107
(918) 596-9565

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**ENGINEERING SERVICES DEPARTMENT**

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NOTICE TO BIDDERS
SEALED BIDS FOR
PROJECT NO. SP 22-7

Notice is hereby given that pursuant to an order by the Mayor of the City of Tulsa, Oklahoma, sealed bids will be received in Room 260 of the Office of the City Clerk, City of Tulsa, 175 E. 2nd Street, Tulsa, Oklahoma 74103 until 8:30 a.m. the 30th day of June, 2023 for furnishing all tools, materials and labor and performing the work necessary to be done in the construction of the following:

PROJECT NO. SP 22-7 TULSA POLICE DEPARTMENT HELIPORT

The entire cost of the improvement shall be paid from Account No.
2159FR0283.Captial.Bldgs.3001.30013122-541104

A MANDATORY Pre-Bid Conference is scheduled for Tuesday, June 13, 2020 at 9:30 a.m. and will be held through video conferencing with Microsoft Teams, invitation presented on the City of Tulsa’s website at this link:
https://www.cityoftulsa.org/government/departments/engineering-services/construction-bids/

Attendance at the Pre-Bid Conference is MANDATORY. Bids will not be received from contractors who did not attend the Pre-Bid Conference.

Bids will be accepted by the City Clerk from the holders of valid pre-qualifications certificates from the City of Tulsa in one or more of the following classifications: A or B

Drawings, specifications and contract documents for construction of said public improvements of the said project have been adopted by the Mayor of said City. Copies of same may be obtained at the Office of the Director of Engineering Services at the City of Tulsa Engineering Services, 2317 South Jackson, Room 103, North Building, for a non-refundable fee in the amount of $50.00 made payable to the City of Tulsa by check or money order.

Contract requirements shall include compliance as required by law pertaining to the practice of non-discrimination in employment.

The overall aspirational Small Business Enterprise utilization goal for this project is ten (10) percent.
Attention is called to Resolution No. 18145 of August 23, 1988, requiring bidders to commit to the goal of employing on the project at least fifty percent bona fide residents of the City of Tulsa and/or MSA in each employment classification.

Attention is called to Resolution 7404 of November 8, 2006, requiring bidders, their subcontractors and their lower-tier subcontractors to hire only citizens of the United States.

The City of Tulsa itself is exempt from the payment of any sales or use taxes, and pursuant to Title 68 O.S. Section 1356(10), direct vendors to the City are also exempt from those taxes. A bidder may exclude from his bid appropriate sales taxes, which he will not have to pay while acting for and on behalf of the City of Tulsa.

A Certified or Cashier’s Check or Bidders Surety Bond, in the sum of 5% of the amount of the bid will be required from each bidder to be retained as liquidated damages in the event the successful bidder fails, neglects or refuses to enter into said contract for the construction of said public improvements for said project and furnish the necessary bonds within thirty days from and after the date the award is made.

The bidder to whom a contract is awarded will be required to furnish public liability and workmen’s compensation insurance; Performance, Statutory, and Maintenance bonds acceptable to the City of Tulsa, in conformity with the requirements of the proposed contract documents. The Performance, Statutory, and Maintenance bonds shall be for one hundred percent (100%) of the contract price.

All bids will be opened and considered by the Bid Committee of said City at a meeting of said Committee to be held in the City Council Room of City Hall in said City at 9:00 a.m. on the 30th day of June 2023.

Dated at Tulsa, Oklahoma, this 2nd day of June 2023.

(SEAL)

Christina Chappell  
City Clerk
INSTRUCTIONS TO BIDDERS

B-1. BIDS

Each bid Proposal shall be completed electronically on the electronic media provided, then printed, signed and submitted along with the electronic media and the complete bound copy of the contract documents. In the event of a discrepancy between the pricing on the electronic media and hard copy of a Proposal, the hard copy pricing will govern. If electronic media is not provided and the bid Proposal is manual, the bid Proposal shall be submitted in ink. The written words shall govern over the figures if there is a difference between the two. No alterations, additions, or erasures shall be made on the Proposal. Erroneous entries shall be lined out, initialed by the bidder, and the correct entry inserted. The unit price bid must cover all expense for furnishing the labor, materials, tools, equipment, and apparatus of every description to construct, erect, and furnish all work required by and in conformance with the Drawings and Specifications.

Each bid shall be enclosed in a sealed envelope addressed to the City of Tulsa, 175 E. 2nd Street, Room 260, City Hall, Tulsa, Oklahoma, identified on the outside with the words:

PROJECT NO. SP 22-7 TULSA POLICE DEPARTMENT HELIPORT

Pre-qualification Certificate Number ______________

And shall be filed with the City Clerk in Room 260, City Hall.

All addenda to the contract documents, properly signed by the bidder, shall accompany the bid when submitted.

B-2. BID SECURITY

Each bid shall be accompanied by a cashier's check, a certified check, or bidder's bond, in the amount of five percent (5%) of the total amount bid.

The bid security shall be made payable, without condition, to the City of Tulsa, Oklahoma. The bid security may be retained by and shall be forfeited to the City as liquidated damages if the bid is accepted, a contract based thereon is awarded, and the bidder fails to enter into a contract in the form prescribed, with legally responsible sureties, within thirty (30) days after such award is made by the City.

B-3 RETURN OF BID SECURITY

The bid security of each unsuccessful bidder will be returned when his bid is rejected. The bid security of the bidder to whom the contract is awarded will be returned when he executes a contract and files satisfactory bonds. The bid
security of the second lowest responsible bidder may be retained for a period of time not to exceed sixty (60) days pending the execution of the contract and bonds by the successful bidder.

**B-4 WITHDRAWAL OF BIDS**

No bidder may withdraw his bid for sixty (60) days after the date and hour set for the opening. A bidder may withdraw his bid any time prior to expiration of the period during which bids may be submitted by making a written request signed in the same manner and by the same person who signed the Proposal.

**B-5 REJECTION OF BIDS**

Bids received more than ninety-six (96) hours before the time set for opening bids, excluding Saturdays, Sundays, and holidays, as well as bids received after the time set for opening bids, will not be considered and will be returned unopened.

The City of Tulsa reserves the right to reject any and all bids when such rejection is in the best interest of the City of Tulsa. All bids are received subject to this stipulation and the City reserves the right to decide which bidder shall be deemed lowest responsible bidder.

A violation of any of the following provisions by the bidder shall be sufficient reason for rejecting his bid, or shall make any contract between the City of Tulsa and the Contractor that is based on his bid, null and void: divulging the information in said bid before the bids have been opened; submission of a bid which is incomplete, unbalanced, obscure, incorrect, or which has conditional clauses, additions, or irregularities of any kind not in the original proposal form, or which is not in compliance with the Instruction to Bidders and published Notice to Bidders, or which is made in collusion with another bidder. The City shall have the right to waive any immaterial defects or irregularities in any bid received.

**B-6 DISQUALIFICATION OF BIDDERS**

No contract will be awarded to any person or persons, firm, partnership, company, or corporation which is in arrears to the City upon any debt of contract, or in default as surety or otherwise upon any obligation to the City.

**B-7 SIGNATURE OF BIDDERS**

Each bid shall be properly signed with the full name of the company or individual submitting the bid, the bidder's address, and the name and title of all persons signing printed below their signature lines. Bids by partnerships shall be signed with the partnership name followed by the signature and title of one of the partners. Bids by corporations shall be signed with the name of the corporation followed by the signature and title of the president, vice president, chairman, or vice chairman of the Board of Directors with attestation by the corporate secretary or assistant corporate secretary. Resolution must be dated no more than 30 days prior to date of signature of the contract/bond etc. Bids by
joint ventures shall be signed by each participant in the joint venture. Bids by limited liability companies shall be signed with the name of the limited liability company followed by the signature and title of the Manager or Managing Member. Bid by limited partnerships shall be signed with the name of the limited partnership followed by the signature of the general partner. Note: The signature requirements listed above are for Oklahoma entities; entities organized in other states must follow the law of the state in which they are organized.

A bid by a person who affixes to his signature the word "President", "Manager", "General Partner", "Agent", or other title, without disclosing the name of the company for which he is signing, may be held to be the bid of the individual signing.

B-8 INTERPRETATION OF CONTRACT DOCUMENTS

If any person who contemplates submitting a bid is in doubt as to the true meaning of any part of the drawing, specifications, or other proposed contract documents, he may submit to the Engineer a written request for interpretation thereof. The person submitting the request shall be responsible for its prompt delivery. Interpretation of the proposed contract documents will be made only by addendum. A copy of each addendum will be mailed or delivered to each person obtaining a set of contract documents from the Engineer. The City will not be responsible for any other explanations or interpretations of the proposed contract documents.

B-9 LOCAL CONDITIONS AFFECTING WORK

Each bidder shall visit the site of the work and shall completely inform himself relative to construction hazards and procedure, labor, and all other conditions and factors, local and otherwise, which would affect prosecution and completion of the work and its cost. Such considerations shall include the arrangement and condition of existing structures and facilities, the procedure necessary for maintenance of uninterrupted operation of existing structures and facilities, the availability and cost for labor, and facilities for transportation, handling, and storage of materials and equipment. All such factors shall be properly investigated and considered in the preparation of the bid. There will be no subsequent financial adjustment for lack of such prior information.

B-10 TIME OF COMPLETION

The time of completion is an essential part of the contract and it will be necessary for each bidder to satisfy the City of his ability to complete the work within the allowable time set forth in the Bid Form. In this connection, attention is directed to the provisions of the General Conditions and Special Conditions relative to delays, extension of time, and liquidated damages.

B-11 QUALIFICATION OF BIDDERS
No bid will be received and filed by the City Clerk of the City of Tulsa unless the person submitting the bid has been pre-qualified as provided by ordinance, and is the holder of a current certificate of Pre-qualification in force and effect on the date such bid is to be submitted and filed.

B-12  TAXES AND PERMITS

Attention is directed to the requirements of the General Conditions regarding payment of taxes and obtaining permits. Contractor shall comply with all zoning ordinances of the City, as provided in the Tulsa Zoning Code, Title 42 Tulsa Revised Ordinances and conform with all zoning requirements established by the Tulsa Metropolitan Area Planning Commission and the Board of Adjustment. Contractor can call the Indian Nations Council of Governments (INCOG) at (918) 584-7526, to determine if any zoning requirements must be met.

B-13  OKLAHOMA LEGAL REQUIREMENTS

The Contractor must comply with the Oklahoma Scaffolding Law, 40 Oklahoma Statues, Sections 174 - 177, which cover erection and use of scaffolds, hoists, cranes, stays, ladders, supports, or other mechanical contrivances.

In accordance with Oklahoma Statutes, Title 68, Section 1701-1707, before commencing any work pursuant to this contract, any nonresident contractor shall give written notice by certified mail, return receipt requested, to the Oklahoma Tax Commission, the Oklahoma Employment Security Commission, the Workers Compensation Court, and the county assessor of each county in which work will be performed. The notices shall comply with the requirements set forth in said statute.

B-14  BONDS

The bidder to whom a contract is awarded will be required to furnish bonds as follows:

a. Performance Bond – A Performance Bond to the City in an amount equal to one hundred percent (100%) of the Contract price.

b. Statutory Bond – A Statutory Bond to the State of Oklahoma in an amount equal to one hundred percent (100%) of the contract price.

c. Maintenance Bond – A Maintenance Bond to the City in an amount equal to one hundred percent (100%) of the contract price.

The bonds shall be executed on the forms included in the contract documents by a surety company authorized to do business in the State of Oklahoma and acceptable as Surety to the City of Tulsa.

Accompanying the bonds shall be a “Power-of-Attorney” authorizing the attorney-in-fact to bind the Surety Company and certified to include the dates of the bonds.
B-15  **BOUND COPY OF CONTRACT DOCUMENTS**

The Bid Form or other pages shall not be removed from the bound copy of contract documents. The copy of contract documents filed with each bid shall be complete and shall include all items in the Table of Contents and all addenda.

B-16  **EQUAL EMPLOYMENT OPPORTUNITY REQUIREMENTS**

Each bidder agrees to comply with the terms of Title 5, Chapter 1, Section 111, of the Tulsa Revised Ordinances relating to Non-Discrimination.

B-17  **BASIS FOR AWARD OF CONTRACT**

The basis for award of a contract shall be the total base bid submitted by the lowest responsible bidder unless otherwise directed in the form of proposal. The City of Tulsa reserves the right to withhold the awarding of a contract for a reasonable period of time from the date of opening of bids. The awarding of a contract upon a successful bid shall give the bidder no right or action or claim against the City of Tulsa upon such contract until the same shall have been reduced to writing and duly signed by the contracting parties. The award of a contract will not be completed until the contract is duly executed and the necessary bonds and insurance approved.

B-18  **TIME FOR AWARDED OF CONTRACT**

The awarding of a contract to the lowest responsible bidder will be made within thirty (30) days after the opening of bids unless the City of Tulsa by formal recorded action and for good cause shown, provides for a reasonable extension to that period, which extension period shall not in any event exceed fifteen (15) days where only state or local funds are involved, or not to exceed ninety (90) days on any award of contract for the construction of public improvements where funds are utilized which are furnished by an agency of the federal government.

B-19  **SAFETY AND HEALTH REGULATIONS**

Bidders should note that they are subject to “Safety and Health Regulations for Construction”, Chapter XVII of Title 29, CFR, Part 1926 and that compliance, review and enforcement are the responsibility of the U.S. Department of Labor.

The Contractor is fully responsible for the safety of the work site and is expected to train their employees in all applicable safety issues. This should include but not be limited to: trench safety, confined space entry, head protection, etc. In accordance with construction contracts with the City, Authority, Board, or Commission, all applicable Labor and OSHA safety regulations must be followed.
Work sites must be monitored by the Contractor and safety provisions enforced. Contractors are asked to ensure that all employees are properly informed and trained in construction, work site safety.

**B-20  VENDORS AND SUBCONTRACTOR IDENTIFICATION**

Where Vendor and Subcontractor Identification Questionnaires are included in the bid documents, each bidder shall submit the Questionnaire directly to the Engineer no later than 5:00 p.m. on the first working day following the bid opening. Failure to submit the questionnaire may render the bid unresponsive and not eligible for award. The award of the Contract will be subject to the acceptability of the vendors and subcontractors listed. If an award is made, the vendors and subcontractors listed on the questionnaire shall be used on the project. No changes in the vendor and subcontractor list will be permitted unless prior consent is obtained from the Engineer.

**B-21  U.S. ENVIRONMENTAL PROTECTION AGENCY NPDES REQUIREMENTS FOR STORMWATER DISCHARGES**

The bidder’s attention is directed to U.S. Environmental Protection Agency (EPA) NPDES requirements for stormwater discharges. The Contractor shall be responsible for filing a Notice of Intent and development and implementation of a Stormwater Pollution Prevention Plan (PPP).

**B-22  AMERICANS WITH DISABILITIES ACT**

The Contractor shall take the necessary actions to ensure its facilities are in compliance with the requirements of the Americans with Disabilities Act (ADA). It is understood that the program of the Contractor is not a program or activity of the City of Tulsa. The Contractor agrees that its program or activity will comply with the requirements of the ADA. Any costs of such compliance will be the responsibility of the Contractor. Under no circumstances will the Contractor conduct any activity, which it deems non-compliant with the ADA.
RESOLUTION NO. 18145

A RESOLUTION REQUIRING THE INCLUSION IN PLANS AND SPECIFICATIONS FOR PUBLIC IMPROVEMENT CONTRACTS OF PROVISIONS PROVIDING FOR THE EMPLOYMENT OF BONA FIDE RESIDENTS OF THE CITY OF TULSA; AND/OR THE MSA; ALSO PROVIDING THAT AT LEAST OF FIFTY PERCENT (50%) OF EACH CLASS OF EMPLOYEES USED ON A PROJECT BE BONA FIDE RESIDENTS OF THE CITY OF TULSA AND/OR THE MSA; THAT THE DIRECTOR OF THE DEPARTMENT OF HUMAN RIGHTS IS CHARGED WITH ENSURING THAT ALL BIDS FOR PUBLIC CONSTRUCTION CONTRACTS COMPLY WITH THIS RESOLUTION; AND DECLARING AN EMERGENCY.

WHEREAS, City of Tulsa, Oklahoma, desires to achieve a goal of full employment.

WHEREAS, it is necessary for the protection of the health, safety and welfare of all residents of the City of Tulsa, Oklahoma, to accomplish this goal.

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COMMISSIONERS OF THE CITY OF TULSA, OKLAHOMA:

SECTION 1. The City of Tulsa is committed to the policy of achieving full employment of its citizens by encouraging the employment of bona fide Tulsa and MSA residents in public improvement contracts.

SECTION 2. Definitions. The definitions of certain terms used in this resolution are as follows:

a. "Bidding Documents" or "Bid" means the bid notice, plans and specifications, bidding form, bidding instructions, special provisions and all other written instruments prepared by or on behalf of an awarding public agency for use by prospective bidders on a public construction contract.

b. (i) "Bona Fide Residents" shall include only those persons who are either registered to vote in the City of Tulsa or who have resided within the city limits for at least six months, or who have purchased a permanent residence within the city limits or who have leased a residence for at least a six month term. Residency may be further determined by a valid Oklahoma driver's license, a current Oklahoma license tag, and a valid Oklahoma automobile inspection sticker. (ii) Bona fide residents of MSA shall include only those persons who are registered to vote in outlying MSA areas or who have resided within the outlying MSA area for at least six months, or who have purchased a permanent residence within the outlying MSA areas or who have leased a residence for at least a six month term. Residency may be further determined by a valid Oklahoma driver's license, a current Oklahoma license tag, and a valid Oklahoma automobile inspection sticker.

c. "Public Construction Contract" or "Contract" means any contract exceeding Seven Thousand Five Hundred Dollars ($7,500.00) in amount, awarded by the City of Tulsa for the purpose of making any public improvements or constructing any public building or making repairs to the same.

d. "Public Improvement" means any beneficial or valuable change or addition, betterment, enhancement or amelioration of or upon any real property, or interest therein, belonging to the City of Tulsa, intended to enhance its value, beauty or utility or to adapt it to new or further purposes. The term does not include the direct purchase of materials, equipment or supplies by the City of Tulsa.
e. "MSA". All of the land areas composed of Creek County, Osage County, Rogers County, Tulsa County and Wagoner County.

SECTION 3. Residency Requirements of Contractor’s Employees. Every employee and/or agent of the City of Tulsa, Oklahoma, charged or involved with the preparation of plans and specifications for any public improvement funded in whole or in part with funds of the City of Tulsa, is hereby charged to include in said plans and specifications the following provisions which shall be binding upon the successful bidders:

a. Each bid shall be accompanied by a sworn statement that the bidder is committed to the goal of employing at least 50% bona fide residents of the City of Tulsa and/or the MSA in each classification as determined by the Oklahoma Commissioner of Labor.

b. The successful bidder will be responsible for having like requirements placed upon any subcontractor.

c. The successful bidder will submit to the Director or his designated representative of the Department of Human Rights any compliance reports involving the bidder and its subcontractors required by Title 31, Chapter 1, Section 9, of the Tulsa Revised Ordinances. The reports shall include information about the residence of each employee in each laboring and trade class applicable to any City project.

SECTION 4. Unresponsive Bids. The failure to submit the documents required by Section 3 shall render a bid unresponsive. Said documents must be submitted prior to the opening of the bids. The Director of the Department of Human Rights Section of City Development is charged with ensuring that all bids comply with Section 3 prior to the bid opening date.

SECTION 5. Duty of Employees and/or Agents of the City of Tulsa. Any employee and/or agent of the City of Tulsa who fails to include the goals for residency requirements found in Section 3 in the plans and specifications for any public improvement may be subject to disciplinary action, including dismissal.

SECTION 6. Severability. The invalidity of any section, subsection, provision or clause or portion of this chapter, or the invalidity of the application thereof to any person or circumstance shall not affect the validity of the remainder of this chapter or the validity of its application to other persons or circumstances.

SECTION 7. Effect Date. This resolution shall take effect as of July 1, 1988.

SECTION 8. Emergency Clause. That an emergency exists for the preservation of the public peace, health and safety, by reason whereof this resolution shall take effect immediately upon its passage, approval and publication.

PASSED, with the emergency clause ruled upon separately and approved this 23rd day of August, 1988.

APPROVED, this 23rd day of August, 1988.

Rodger Randle
ATTEST: Philip W. Wood

(Philip W. Wood)
city Auditor

APPROVED: Neal E. McNeil

(Neal E. McNeil)
city Attorney

PASSED, with the emergency clause ruled upon separately and approved this 23 day of August, 1988.

APPROVED, this 23 day of August, 1988.

(Handwritten signature)
Mayor

ATTEST:

(Philip W. Wood)
city Auditor

APPROVED:

(Neal E. McNeil)
city Attorney

CITY OF TOLEDO
FILED
AUG 23 1988
by Office of City Auditor
CITY OF TULSA, OKLAHOMA
SMALL BUSINESS ENTERPRISE (SBE) UTILIZATION INSTRUCTIONS
BID OPENING AND AWARD SYSTEM

02.21.22
POLICY STATEMENT

The City of Tulsa (hereinafter City) is committed to implementing the City of Tulsa Small Business Enterprise (SBE) Program of the City of Tulsa, hereinafter referred to as SBE Program. The stated objectives of the programs are:

- To ensure the employment of SBE(s) in the award and administration of City agreements and contracts;
- To create a level playing field on which SBE firms can compete fairly for City contracts;
- To ensure that only firms that fully meet the eligibility standards are permitted to participate as SBE participants;
- To help remove barriers to participation in City contracts;
- To assist in the development of SBE firms so that they may graduate from the SBE Program and ultimately compete successfully in the marketplace.

GOALS BY BUSINESS CATEGORY – SBE

There are seven (7) Business Categories for the City of Tulsa: Construction Contractors (Prime and Subcontractor), Architecture / Engineering (Consultant and Subconsultant), Professional Services, Other Services, and Goods and Supplies. A general description of each category follows:

Construction
- General building contractors engaged primarily in the construction of commercial buildings.
- Heavy construction such as airport runways, bridges, plants, grading and drainage, roadways, and other municipal infrastructure.
- Light maintenance construction services such as carpentry work; electrical work; installation of carpeting; air-conditioning repair, maintenance, and installation; plumbing; and renovation.
- Other related services such as water and sewer lines and maintenance, asbestos abatement, drainage, dredging, grading, hauling, landscaping (for large construction projects such as boulevards and highways), paving, roofing, and toxic waste clean-up.

Architecture and Engineering
- Licensed Architect
- Landscape Architect
- Professional Engineer
- Professional Land Surveyor
- Construction observation
- Other professional design / construction related services
CITY OF TULSA, OKLAHOMA  
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Professional Services
- Financial Services
- Legal services
- Medical services
- Educational services
- Real Estate services
- Planning services.
- Other professional services

Other Services
- Janitorial and maintenance services
- Uniformed guard services
- Computer services
- Certain job shop services
- Graphics, photographic services
- Landscaping
- Other non-technical professional services

Good and Supplies
- Office goods
- Medical supplies
- Miscellaneous building materials
- Computers

The goals are to reflect resource availability and capability. The City of Tulsa’s goal is to mitigate and close the disparity between the availability/capability versus actual utilization of SBE firms in Creek, Okmulgee, Osage, Pawnee, Rogers, Tulsa, and Wagoner counties in Oklahoma.

The City enters various agreements and contracts with the private sector for services, goods and supplies, and construction activities. The agreements or contracts may have a specific or primary deliverable associated with one of the Business Categories. However, supplementary efforts may exist to fulfill the agreement or contract. Therefore, the table below is provided to show goals for all Business Categories. Good faith efforts shall first be focused on the Business Category or Categories that relate directly to the deliverables. Additional good faith efforts shall be in supplementary efforts from other categories to assist in meeting the overall project goal.

The project goals will be monitored and periodically adjusted to address the disparity between the available / capable / willing SBE firms versus actual utilization of SBE firms. The overall project goal is 10%.

SBE firms identified for utilization in an agreement or contract must be paid from the proceeds from that agreement or contract.
CITY OF TULSA, OKLAHOMA
SMALL BUSINESS ENTERPRISE (SBE) UTILIZATION INSTRUCTIONS
BID OPENING AND AWARD SYSTEM

<table>
<thead>
<tr>
<th>Business Category</th>
<th>SBE Goal (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction (Prime Contractors)</td>
<td>10</td>
</tr>
<tr>
<td>Construction (Subcontractors)</td>
<td>10</td>
</tr>
<tr>
<td>Architecture / Engineering (Consultant)</td>
<td>10</td>
</tr>
<tr>
<td>Architecture / Engineering (Subconsultant)</td>
<td>10</td>
</tr>
<tr>
<td>Professional Services</td>
<td>10</td>
</tr>
<tr>
<td>Other Services</td>
<td>10</td>
</tr>
<tr>
<td>Goods and Supplies</td>
<td>10</td>
</tr>
</tbody>
</table>

BIDDER'S ACTIONS

For a:

A. GENERAL / PRIME CONTRACTOR Contract: When the City has established SBE contract goals (hereinafter referred to as "goals"), the City will award a contract only to a bidder who makes good faith efforts to meet the goals.

B. CONSTRUCTION MANAGEMENT AT-RISK (CMAR) Contract: When the City has established SBE contract goals (hereinafter referred to as "goals"), the City will recommend award to the Construction Management (CM) firm the bidder who makes good faith efforts to meet the goals. However, Bidder(s) who are SBE(s) are not required to solicit other SBE firms but are encouraged.

The following summary outlines the procedures

Summary:

1. RECORD OF SOLICITATION FOR SBE form:
   These forms MUST be submitted with the bid documents. These documents establish the initial good faith, outreach efforts. In the event the bidder submitted the lowest bid, the SBE firms identified on these forms submitted with the bid are the only SBE firms that will be considered for establishing the bidder's projected utilization percentages for consideration of the award of bid.

2. LETTER OF INTENT TO CONTRACT WITH SBE form:
   The bidder that submits the apparent lowest bid will be notified by City staff no later than the Monday following bid opening. The apparent low bidder MUST submit these forms and the associated attachments by close of business on Thursday following bid opening. Only SBE firms documented on the RECORD(s) OF SOLICITATION FOR SBE forms submitted with the bid will be considered for establishing the bidder's projected utilization percentages for consideration of the award of bid. If Letters of Intent are not submitted, the projected utilization will be 0% and the apparent lowest bidder is subject to being deemed non-responsive.
3. ADMINISTRATIVE RECONSIDERATION:
If the City determines that a bidder failed to meet the requirements above, City staff will contact the bidder by phone to define the issue and clarify any miscommunications and/or inadvertent actions. If issue was not due to miscommunication and/or inadvertent actions, the bidder will be notified per the Administrative Reconsideration process defined below. If the apparent low bidder is deemed non-responsive, City staff will notify the next lowest bidder to submit their LETTERS OF INTENT TO CONTRACT WITH SBE by close of business of the 6th day following notification or may exercise its right to reject any and all bids.

4. CITY OF TULSA SBE UTILIZATION form:
This form is completed by the contractor (successful bidder) and submitted as part of the contract to perform the project. This form documents the “projected” utilization for the project. At the end of the project, this form is submitted with the final pay request documenting the “actual” utilization. The “actual” utilization must meet or exceed the “projected” utilization. Any change in the “projected” utilization must be documented, submitted to the City on the CHANGE REQUEST FOR SBE PARTICIPATION form, and approved by the City. Approval of the change must occur at the time of the change. If the change is a reduction and not submitted and approved per the instructions, the amount will be deducted from the contractor’s final pay request.

5. CHANGE REQUEST FOR SBE PARTICIPATION form:
This form documents any change to the “projected” utilization for the project. Change in utilization includes reduction, substitution, and/or increase. Utilization shall be checked with the submission of partial pay requests, but not longer than 30 day intervals throughout the project. The contractor’s acknowledgement that they have verified changes in his/her utilization is required as part of partial pay request documents. Reductions in utilization not approved prior to the final pay request will result in pay reduction to the contractor. If, at the completion of the project, the contractor has failed to meet the SBE contract goals, does not have an approved change request, and has not demonstrated good faith efforts to meet the contract goal, the contractor will be assessed liquidated damages for the difference between the contract goal and the actual SBE participation achieved.

Record of Solicitation

All bidders shall, with the submissions of their bids, show their RECORD(s) OF SOLICITATION FOR SBE that demonstrates the good faith outreach effort to meet or exceed the SBE goals established for the project.

If bidders cannot meet the established SBE goals, the bidders shall document and submit with their bid proposal, justification stating why they could not meet the established SBE goals. To demonstrate good faith efforts to meet the SBE goals, the bidders shall document their efforts to obtain SBE participation. City will review and determine that the information is complete, accurate and adequately documents the bidder’s good faith efforts before committing to the award of the contract to the bidder. In the event that the City awards a contract to a bidder who cannot meet the established SBE goals,
the findings of the City's review shall be in written form and shall be incorporated into and become part of the contract documents.

If the bidder to whom City proposes to award the contract is able to demonstrate good faith efforts, City may accept the bidder's proposed goal. Acceptance by the City of the bidder's proposed goal does not release the bidder from its contractual obligation to continue to make efforts throughout the duration of the project to utilize SBE firms on the project.

All bidders shall submit with their bid the completed and signed RECORD OF SOLICITATION FOR SBE form.

Letter of Intent

The bidder must submit to the Engineering Contract Coordinator written confirmation from the SBE firms on the form LETTER OF INTENT TO CONTRACT WITH SBE that it is participating in the contract as provided in the contractor's bid commitment. This may be submitted with the bid, but not later than the City's close of business of the Thursday following the bid opening. The signed forms will define the contractor's final proposed utilization and will be the basis of a final evaluation. If inadequate utilization is proposed, the bid shall be considered non-responsive.

The SBE firms submitted on the LETTER OF INTENT TO CONTRACT WITH SBE forms shall be considered binding and changes of committed SBE firms may only be made after the contract is fully executed, and may only be changed through the submission, review and approval of form CHANGE REQUEST FOR SBE PARTICIPATION.

Failure to make the written assurance (City form LETTER OF INTENT TO CONTRACT WITH SBE), which includes the names of the SBE firms to be used, the work they will perform, and the price for the work, or failure to demonstrate good faith efforts that is deemed acceptable to the City to meet or exceed the SBE goals, shall render a bid non-responsive.

It is the contractor's responsibility to submit the information necessary for the City to ascertain compliance with the good faith efforts requirement. Extra cost involved in finding and utilizing SBE firms shall not be deemed adequate reason for the bidder's failure to meet the project SBE goals unless such costs are grossly excessive.

In instances where a successful bidder's SBE commitment exceeds the actual SBE contract goals, the submitted goals of the bidder become the contractual obligation.

In instances where a successful bidder's SBE commitment is below the SBE contract goals, the submitted utilization goals become the contractual obligation.

Good Faith Efforts

The steps taken by the bidder to obtain SBE participation shall be documented in writing and shall include, but are not limited to, the following good faith efforts:
CITY OF TULSA, OKLAHOMA
SMALL BUSINESS ENTERPRISE (SBE) UTILIZATION INSTRUCTIONS
BID OPENING AND AWARD SYSTEM

A. Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) in the interest of all certified SBE firms capable to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the SBE firms to respond to the solicitation. The bidder must determine with certainty if the SBE firms are interested by taking appropriate steps to follow-up on the initial solicitation.

B. Selecting portions of the work to be performed by SBE firms in order to increase the likelihood that the SBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate SBE participation, even when the contractor might otherwise prefer to perform these work items with its own forces.

C. Providing interested SBE firms with adequate information about the plans, specifications and requirements of the contract in a timely manner to assist them in responding to a solicitation.

D. Negotiating in good faith with interested SBE firms:

   (1) It is the bidder's responsibility to make a portion of the work available to SBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available SBE subcontractors and suppliers, to facilitate SBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of SBE firms that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for SBE firms to perform the work. RECORD OF SOLICITATION FOR SBE form will be submitted.

   (2) A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including available SBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using SBE firms is not sufficient justification for a bidder's failure to meet the contract SBE goals, as long as such costs are reasonable. Also, the ability or desire of a contractor to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith efforts. Contractors are not, however, required to accept higher quotes from SBE firms to fulfill the SBE contract requirements if the price difference is excessive or unreasonable. Documentation of quotes shall be submitted to the City with the bid as part of the bidder's record of solicitation.

E. Thoroughly analyzing the capabilities of SBE firms before determining a firm's qualification for a project. The following shall not be legitimate causes for the rejection or non-solicitation of SBE quotes in the efforts of the contractor to meet the project goal: (1) the subcontractor's standing, unrelated to job performance, within the industry; (2) membership in specific groups or organizations; or, (3) association with certain political and/or social organizations.

Administrative Reconsideration
If City determines that a bidder fails to meet the requirements stated above, the bidder will be provided an opportunity for administrative reconsideration. City staff will contact the bidder by phone to define the issue and clarify any miscommunications or inadvertent actions. If issue was not due to miscommunication and/or inadvertent actions, the following process will be followed:

1. The bidder will be notified by fax/email within ten working days following the bid opening.

2. The bidder will have 2 working days from time of notification to schedule a meeting for the purpose of administrative reconsideration with a City of Tulsa Attorney. Reconsideration meetings will generally be held within 7 days of notification of a bidder being determined non-responsive.

   As part of this administrative reconsideration, the bidder will have the opportunity to meet in person with a City of Tulsa Attorney to present arguments concerning whether it met the goal or made adequate good faith efforts to do so. Submittal of additional information documenting solicitation, which was due with the original bid submission, will not be accepted or considered.

3. The decision on reconsideration will be made by a City of Tulsa Attorney who did not take part in the original determination that the bidder failed to meet the goal or make adequate good faith efforts to do so.

4. No awards will be made until all administrative reconsiderations as outlined herein are complete. A City of Tulsa Attorney will provide a written decision on reconsideration to the bidder. This decision will explain the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. The determination is copied to the Contract Administrator, City Engineer, and the Director of Human Rights.

**CONTRACTOR ACTIONS AFTER AWARD OF THE CONTRACT:**

**Counting SBE Participation Toward the Goal**

When a SBE participates in a contract, only the value of the work actually performed by the SBE is counted toward the contract goal.

The entire amount of that portion of a contract that is performed by the SBE firm’s own forces is counted, including the cost of supplies and materials obtained by the SBE for the work on the contract, including supplies purchased or equipment leased by the SBE (except supplies and equipment the SBE purchases or leases from their Prime Contractor).

When a SBE performs as a participant in a joint venture, the portion of the total dollar value of the contract equal to the clearly defined portion of the work that the SBE performs with its own forces may be counted toward the goal.
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Only expenditures to a SBE contractor who performs a commercially useful function may be counted toward a SBE goal.

**Commercially Useful Function**

A SBE performs a commercially useful function when it is responsible for the execution of the work of its contract and is carrying out its responsibilities by actually performing, managing and supervising the work involved. The SBE must be responsible, with respect to materials and supplies used on the contract, for negotiating price, determining quality and quantity, ordering the material, and installing (where applicable) and paying for the material itself.

To determine whether a SBE is performing a commercially useful function, City will evaluate the amount of work subcontracted, industry practices, whether the amount the firm is to be paid is commensurate with the work it is actually performing and the SBE credit claimed, and other relevant factors.

A SBE does not perform a commercially useful function if its role is limited to that of an extra participant in a transaction through which funds are passed in order to obtain the appearance of SBE participation. In determining whether a SBE is acting as a pass-through, City will examine similar transactions, particularly those in which SBE firms do not participate.

**Manufacturers and Material Suppliers**

If the materials or supplies are obtained from a certified SBE manufacturer, 100 percent of the cost of the materials or supplies will be counted toward the SBE goals. A manufacturer is a firm that operates or maintains a factory or establishment that produces, on the premises, the materials required under the contract as described by the specifications.

If the materials or supplies are purchased from a certified SBE regular dealer, 100 percent of the cost of the materials or supplies will be counted toward the SBE goals. A regular dealer is a firm that owns, operates or maintains a store, warehouse, or other establishment in which the materials, supplies, articles, or equipment described by the specification and required under the contract are bought, kept in stock, and regularly sold or leased to the public in the usual course of business.

To be a regular dealer, the firm must be an established, regular business that engages, as its principal business and under its own name, in the purchase and sale or lease of the products in question. A person may be a regular dealer in such bulk items as petroleum products, steel, cement, gravel, stone, or asphalt without owning, operating or maintaining a place of business as provided for in the above paragraph if the person both owns and operates distribution equipment for the products. Any supplementing of regular dealers' own distribution equipment shall be by a long-term lease agreement and not on an ad-hoc or contract-by-contract basis.

In order for a firm to qualify as a SBE supplier of metal and/or concrete pipe, the firm must also fabricate the pipe. Metal or concrete pipe is specialty pipe which is project specific and is inspected.
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during the manufacturing process. This arrangement provides for no warehousing of metal or concrete pipe and essentially requires the manufacturer to be the supplier. Merely ordering pipe from the fabricator and in turn selling it to contractors is not consistent with normal industry practice. Contractors normally purchase pipe directly from the manufacturer, thus eliminating the middleman. Supplying metal or concrete pipe is viewed as brokering and is considered inconsistent with SBE program requirements.

Change Request for SBE Participation

Substitution or replacement of a SBE firms will only be permitted or allowed after award and execution of the City contract.

A contractor may not terminate for convenience a SBE listed in their contract (or an approved substitute SBE firm) and then perform the work of the terminated subcontract with its own forces or those of an affiliate, without City’s prior written consent.

When a SBE is terminated, or fails to complete the work of the contract for any reason, the contractor must make good faith efforts to find another SBE to substitute for the original SBE. These good faith efforts shall be directed at finding another SBE to perform at least the same amount of work (not necessarily the same work) under the contract as the SBE that was terminated, to the extent needed to meet the SBE goals established in the contract.

When the contractor obtains a substitute SBE, the contractor shall provide the Engineering Contract Coordinator with copies of the CHANGE REQUEST FOR SBE PARTICIPATION form and supporting documentation.

If the contractor is unable to replace the SBE with another SBE, then the contractor must provide City with evidence in writing that they have made a good faith effort. The contractor must submit to the Engineering Contract Coordinator a CHANGE REQUEST FOR SBE PARTICIPATION form along with documentation to support they have made a good faith effort. City may adjust the goal as appropriate.

In the case where a contractor cannot meet the SBE goals of a contract, he or she should request a change of that portion of the SBE goal, which cannot be met. The request will be subject to the following:

- A written request for change will be initiated by the contractor at the time he or she reasonably knows that despite good faith efforts the contract goal cannot be achieved. The request will be included on the CHANGE REQUEST FOR SBE PARTICIPATION form and will contain written document all good faith efforts made to meet the goal as well as the reason for the change.

- The request for change, CHANGE REQUEST FOR SBE PARTICIPATION form, will be submitted for review to the Engineering Contract Coordinator. The City will make the decision on the approval or denial of the change request and inform the contractor.
If, at the completion of the project, the contractor has failed to meet the SBE contract goals, does not have an approved change request, and has not demonstrated good faith efforts to meet the contract goal, the contractor will be assessed liquidated damages for the difference between the contract goal and the actual SBE participation achieved. The City shall deduct the liquidated damages from the final payment. In the event insufficient earnings remain for the reduction of liquidated damages, the City may claim against the contractor’s bond, suspend the contractor under performance suspension, withhold further proposals, suspend prequalification and/or other remedies available under the law.

In those instances when the goal is not met due to a change in quantity, which occurs through no fault of the contractor, but due to City and/or changed site conditions, a change request will be recommended by Field Engineering at the time the change becomes known, but not later than the next progressive payment application from the contractor which covers the work identified for the SBE firm. The change request will include the statement of quantity change(s). The contractor shall endeavor, with good faith efforts, to mitigate underruns by utilizing other SBE firms.

Change in utilization includes reduction, substitution, and/or increase. Utilization shall be checked with the submission of each partial pay request, but not longer than 30 day intervals throughout the project. The contractor’s acknowledgement that they have verified changes in his/her utilization is required as part of partial pay request documents. Reductions in utilization not approved prior to the final pay request, will result in pay reduction to the contractor.

If a contractor fails to comply with this section, appropriate administrative remedies may be taken including, but not limited to:

- No additional progressive payments may be processed
- Refusal to issue proposals
- Liquidated damages
- Suspension of work on the project
- Suspension of prequalification
- Termination of the contract

Prompt Payments

To ensure that contractors’ obligations under City contracts are met, the contractor shall endeavor to pay all subcontractors for satisfactory performance of their contracts no later than fifteen (15) calendar days after receipt of each progressive payment from City. The contractor must further endeavor to make prompt release of retainage held to the SBE within thirty days after the work is satisfactorily completed, whether the contractor’s work is complete or not. The term “satisfactorily completed” is defined as when: 1) City finds the work completed in accordance with the Plans and Specifications; 2) any required paperwork, including material certification, payrolls, etc., have been received and approved by City; 3) Field Engineering has determined the final quantities on the subcontractor’s portion of the work; and 4) Contractor has received progressive payments from City which includes subcontractors’ work.
In an effort to accelerate payments to subcontractors, the City may pay the Contractor for acceptable material stockpiled or delivered to the project, at other approved or designated locations, or at a plant site required for Contractor's operations as approved by the City. This is governed by Oklahoma Department of Transportation Standard Specifications for Highway Construction 2009 or latest edition.

Contractor shall endeavor to include invoices from SBE for materials on hand, partially completed work, or complete work on the earliest partial payment request submitted to the City. It is incumbent on the SBE to submit invoices to the Contractor in a timely manner.

Failure to comply with the prompt payment and return of retainage provisions of the contract may result in sanctions under the contract, as listed below:

- Refusal to issue proposals
- Liquidated damages
- Suspension of work on the project
- No additional progressive payments may be processed
- Suspension of prequalification

Any delay or postponement of payment among the parties may take place only for good cause, with City written approval. The explanation from the contractor must be made in writing to the City.

**Record Keeping Requirements**

The contractor shall keep such records as are necessary to determine compliance with the SBE contract obligations. The records kept by the contractor will indicate:

1. The name(s) of SBE firms or other subcontractors, the type of work being performed, and payment for work, services and business.

2. Documentation of correspondence, verbal contracts, telephone calls, etc., to obtain services of SBE firms on the project.

Upon request, the contractor shall submit all subcontracts, purchase orders, contracts, agreements, and financial transactions, including canceled checks, executed with SBE firms with the reference to records referred to in this provision, in such form, manner, content prescribed by City.

The contractor should list all SBE firms in the contract and summarize total amounts paid to SBE firms and the project goal amount for each SBE firm.

**Reciprocity**

The City will grant reciprocity of membership in the SBE program to certified Oklahoma Department of Transportation Disadvantaged Business Enterprises which are located in the Tulsa Metropolitan Statistical Area.
CITY OF TULSA
BIDDER'S AFFIDAVIT FOR
SMALL BUSINESS ENTERPRISE (SBE) UTILIZATION GOALS

STATE OF )
) ss:
COUNTY OF )

______________________________ , of lawful age, being first duly sworn, says that s/he is the
agent authorized by the bidder to submit the attached bid. Affiant further states that the bidder
agrees to fully comply with the City of Tulsa's Resolution requiring that a good faith effort be
made to utilize small business enterprises as subcontractors.

Affiant further states that s/he will document on pages SBE-2BID, -3BID, -4BID, and -5BID
for public record, his/her good faith efforts in solicitation.

Affiant further states that s/he is responsible for having like requirements placed upon any
subcontractor of said bidder.

Affiant further states that s/he has read and agrees to the current CITY OF TULSA,
OKLAHOMA SMALL BUSINESS ENTERPRISE (SBE) UTILIZATION INSTRUCTIONS
FOR BID OPENING AND AWARD SYSTEMS.

________________________________
BIDDER (Company Name)

________________________________
SIGNED

________________________________
TITLE

SUBSCRIBED and SWORN to before me this ______ day of ________________, 20______.

________________________________
NOTARY PUBLIC

MY COMMISSION EXPIRES:

________________________________
SBE-1BID
RECORD OF SOLICITATION FOR SMALL BUSINESS ENTERPRISE (SBE) (MUST BE SUBMITTED WITH BID)

- Project Name:
- Project Number:
- Prime Contractor:
- Prime Contractor Representative:

Consultants, Subcontractors, Service, Regular Dealers, Material Suppliers, & Fabricators:
- Contact Date(s):
- Name of Company:
- Address (Street, City, County, State):

- City of Tulsa SBE: ☐ Yes ☐ No
- City of Tulsa SBE Certificate Number:
- Other SBE Certificate Number(s):

- Company Contact Person:
- Phone No.: Email:
- Description of Work:

- Contract Documents provided to and/or reviewed by Company: ☐ Yes ☐ No
- Will City of Tulsa SBE be utilized? ☐ Yes ☐ No
- If Yes, Estimated Agreement Amount: $
- If No, description of reasons why agreement could not be reached for City of Tulsa SBE to perform work:

SBE – 2BID

07 Record of Solicitation for SBE BID 20180123
LETTER OF INTENT
TO CONTRACT WITH SMALL BUSINESS ENTERPRISE (SBE)
(Must be submitted by close of business on Thursday following bid opening)

Engineering Services Department, Attn: Contract Administration
CITY OF TULSA
2317 South Jackson, N-103
Tulsa, Oklahoma 74107
Ph.: 918.596.9637
Fax: 918.596.1299

Project Name: ____________________________
Project Number: __________________________
Submittal Date: ____________________________

Prime Contractor

HEREBY, intends to subcontract items of work generally described as

to:

SMALL BUSINESS ENTERPRISE

Total amount of participation by City of Tulsa SBE: $________

City of Tulsa SBE: □ Yes □ No
City of Tulsa SBE Certificate Number: _______________________
Other SBE Certificate Number(s): __________________________

SMALL BUSINESS ENTERPRISE

Signature: ____________________________
Title: ________________________________
Date: ________________________________

PRIME CONTRACTOR

Signature: ____________________________
Title: ________________________________
Date: ________________________________

Signatures of Authorized representatives of the Prime Contractor and the City of Tulsa SBE firm above represent the written commitment by the Prime Contractor to subcontract with the City of Tulsa SBE firm and a written commitment by the City of Tulsa SBE firm to subcontract for work as described in the attached quote.

This form, along with the City of Tulsa SBE firm’s quote must be submitted to the City with the executed Contract documents. If this form is not received, the proposed utilization will NOT be counted as part of the Prime Contractor’s agreement. This may cause the agreement to be considered non-compliant and be rejected by the City of Tulsa.

SBE – 3BID
CHANGE REQUEST
FOR SMALL BUSINESS ENTERPRISE (SBE) PARTICIPATION

Project Name: ____________________________________________

Project Number: __________________________________________

Prime Contractor: __________________________________________

CHANGE: From / To (fill in both sides) OR ADD: To (fill in this side only)
FROM:

Name: ____________________________________________
City of Tulsa SBE: □ Yes □ No
City of Tulsa SBE Certificate Number: _________________________
Other SBE Certificate Number(s): ____________________________

Change in service to be performed: __________________________

Change in amount of participation by City of Tulsa SBE: $ __________________________

Reason for Change: __________________________________________

________________________________________________________________

NOTE: Attach a copy of the Letter of Intent for the original City of Tulsa SBE and a new Letter of Intent for the proposed City of Tulsa SBE.

PRIME CONTRACTOR

Signature: __________________________
Date: __________________________
Title: __________________________

Approved / Disapproved: __________________________ Date: __________________________
Engineering Services, Manager
(Planning, Design, or Field)

SBE SUBCONTRACTOR

Signature: __________________________
Date: __________________________
Title: __________________________

Approved / Disapproved: __________________________ Date: __________________________
Engineering Services / Contract Admin.

Distribution: Tulsa Authority for Economic Opportunity
Engineering Services Department Division (Planning, Design, or Field)

SBE – 4BID

10 Change Request for SBE BID 20200709
CITY OF TULSA
SMALL BUSINESS ENTERPRISE (SBE) UTILIZATION

<table>
<thead>
<tr>
<th>Project No.</th>
<th>Contractor</th>
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<th>Projected Contract %</th>
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PROJECTED:

Contractor Representative

Date

ACTUAL (Update and Submit with Final Payment):

Contractor Representative

Date

NOTE: REFER TO UTILIZATION INSTRUCTIONS

SBE – 5BID
(Must be submitted at time of Bid)
CITY OF TULSA
RESOLUTION NO. 7404
AFFIDAVIT OF COMPLIANCE

__________________________, of lawful age, being first duly sworn, states that s/he is the authorized agent of the Company set forth below.

Affiant further states that the Company, in compliance with City of Tulsa Resolution No. 7404, shall not hire or knowingly allow any of its subcontractors or lower tier subcontractors to hire anyone who is not a United States citizen or legal immigrant or anyone who does not have legal status as a temporary worker to perform work on any project which is the subject of a contract between the Company and the City of Tulsa.

Affiant further states that the Company shall not fail to comply with and shall not knowingly allow any of its subcontractors or lower tier subcontractors to fail to comply with all applicable laws including, but not limited to, labor, employment and taxation laws, in the performance of any work on any project which is the subject of a contract between the Company and the City of Tulsa.

Affiant further states that the Company shall make available to the City of Tulsa, at the City’s request, sufficient information and/or affirmations to allow the City to confirm Company’s compliance with Resolution No. 7404 relating to the performance of any contract between the Company and the City of Tulsa.

Company: ____________________________

Signed: ____________________________

__________________________
Title

SUBSCRIBED and SWORN to before me, this ____ day of __________, 20__.

__________________________
NOTARY PUBLIC

MY COMMISSION EXPIRES:

__________________________
COMMISSION NO.:

Resolution No. 7404
RAC-1
(Must be submitted at time of Bid)

CITY OF TULSA
50% RESIDENT RESOLUTION
AFFIDAVIT FOR BID

STATE OF
COUNTY OF

_________________________, of lawful age, being first duly sworn, states that s/he is the agent authorized by the bidder to submit the attached bid. Affiant further states that the bidder, in compliance with City of Tulsa Resolution No. 18145, is committed to the goal of employing at least 50% bona fide residents of the City of Tulsa and/or the Metropolitan Statistical Area (composed of Creek, Okmulgee, Osage, Pawnee, Rogers, Tulsa, and Wagoner counties).

Affiant further states that bidder is responsible for having like requirements placed upon any of its subcontractors.

_________________________ ___________________________
BIDDER (Company Name) SIGNED

_________________________
Title

SUBSCRIBED and SWORN to before me this ____ day of __________, 20__.

__________________________
NOTARY PUBLIC

MY COMMISSION EXPIRES:

_________________________
COMMISSION NO.:
(Must be submitted at time of bid)

NON-COLLUSION AFFIDAVIT

STATE OF

COUNTY OF

, of lawful age, being first duly sworn, says that:

1. I am the duly authorized agent of the bidder submitting the competitive bid associated with this sworn statement for the purpose of certifying facts pertaining to the existence of collusion among bidders and between bidders and municipal officers or employees, as well as facts pertaining to the giving or offering of things of value to governmental personnel in return for special consideration in the letting of any contract pursuant to the bid;

2. I am fully aware of the facts and circumstances surrounding the making of the bid and have been personally and directly involved in the proceedings leading to the submission of such bid;

3. Neither the bidder nor anyone subject to the bidder's direction or control has been a party:
   a. to any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding;
   b. to any collusion with any municipal official or employee as to quantity, quality or price in the prospective contract, or as to any other terms of such prospective contract; nor
   c. in any discussions between bidders and any municipal official concerning exchange of money or other things of value for special consideration in the letting of a contract.

4. If awarded the contract, neither the bidder nor anyone subject to the bidder's direction or control has paid, given or donated or agreed to pay, give or donate to any officer or employee of the City of Tulsa or of any public trust where the City of Tulsa is a beneficiary, any money or other thing of value, either directly or indirectly, in procuring the contract for which the bid is submitted.

______________________________
BIDDER (Company Name)  

______________________________
Signed

______________________________
Title

SUBSCRIBED and SWORN to before me this _____ day of ________________, 20__.

______________________________
NOTARY PUBLIC

MY COMMISSION EXPIRES:

______________________________
COMMISSION NO.: NA-1
(Must be submitted at time of bid)

BUSINESS RELATIONSHIP AFFIDAVIT

STATE OF )
) ss:
COUNTY OF )

, of lawful age, being first duly sworn, says that
s(he) is the agent authorized by the bidder to submit the attached bid. Affiant further
states that the nature of any partnership, joint venture or other business relationship
presently in effect or which existed within one (1) year prior to the date of this statement
with the architect, engineer, or other party to the project is as follows:


Affiant further states that any such business relationship presently in effect or which
existed within one (1) year prior to the date of this statement between any officer or
director of the bidding company and any officer or director of the architectural or
engineering firm or other party to the project is as follows:


Affiant further states that the names of all persons having any such business
relationships and the positions they hold with their respective companies or firms are as
follows:


(If none of the business relationships herein above mentioned exist, affiant should so state.)

Signed: ____________________________

BIDDER (Company Name)

Title:

SUBSCRIBED and SWORN to before me this _______ day of __________, 20__.

________________________________________
NOTARY PUBLIC

MY COMMISSION EXPIRES:

COMMISSION NO.:
INTEREST AFFIDAVIT

STATE OF _______________________

COUNTY OF _______________________

I, ______________________________, of lawful age, being first duly sworn, state that I am the agent authorized by Contractor, Engineer, Architect or provider of professional service [“Services Provider”] to submit the attached Agreement. Affiant further states that no officer or employee of the City of Tulsa either directly or indirectly owns a five percent (5%) interest or more in the Services Provider’s business or such a percentage that constitutes a controlling interest. Affiant further states that the following officers and/or employees of the City of Tulsa own an interest in the Services Provider’s business which is less than a controlling interest, either direct or indirect.

__________________________________

__________________________________

__________________________________

By________________________________

Signature

Title________________________________

Subscribed and sworn to before me this _____ day of __________, 20__.

__________________________________

Notary Public

My Commission Expires: _________________

Notary Commission Number: _______________

County & State Where Notarized: _______________

The Affidavit must be signed by an authorized agent and notarized.
ELECTRONIC BID PROPOSAL INSTRUCTIONS - EXCEL SPREADSHEET
TULSA POLICE DEPARTMENT HELIPORT
PROJECT NO: SP22-7

Please read the following instructions carefully.
1. After opening this file re-save it as your company’s name.
2. Open the BID FORM Sheet from the tabs below.
3. Input the unit price of the appropriate pay item in the Data Input cells.
4. Review all data input and check calculations to ensure accuracy of Bid.
5. Print hardcopy of the "PROPOSAL" tab, BID FORM and the "SIGNATURE PAGE" tab.
6. Complete and sign the "Signature Page" document.
7. Submit hardcopy and electronic disk with Contract Documents and Specifications for Bid opening date.

AGREEMENT FOR USING ELECTRONIC BID PROPOSAL

By and Between: BKL, Inc., (ARCHITECT/ENGINEER) and RECIPIENT. The enclosed electronic media is provided pursuant to your request and is for your limited use in connection with your submittal of Bid Proposal for Project No. SP22-7. In no event shall the information be used for any other purpose or be released to third parties without the written consent of the ARCHITECT/ENGINEER. In the event of a discrepancy between the hard copy and this electronic media at delivery or in the future, the hard copy shall govern. ARCHITECT/ENGINEER hereby disclaims any and all liability for the consequences from use of the electronic media and makes no warranty or guarantee of accuracy. RECIPIENT shall assume full responsibility for the uses and consequences of the electronic media. It is agreed that ARCHITECT/ENGINEER has and retains ownership of the electronic media. ARCHITECT/ENGINEER does not warrant or guarantee that the electronic data is compatible with RECIPIENT’S computer hardware or software, and ARCHITECT/ENGINEER’S responsibility for the electronic media is limited to replacement of defective media for a period of thirty (30) days after delivery to RECIPIENT. By opening and using this FILE, You AGREE to these TERMS AND CONDITIONS.
PROPOSAL
TULSA POLICE DEPARTMENT HELIPORT
PROJECT NO: SP22-7

TO: HONORABLE MAYOR
CITY OF TULSA, OKLAHOMA

THE UNDERSIGNED BIDDER, having carefully examined the drawings, specifications, and other Contract Documents of the above project presently on file in the City Clerk, City of Tulsa Oklahoma:

CERTIFIES THAT he has inspected the site of the proposed work and has full knowledge of the extent and character of the work involved, construction difficulties that may be encountered, and materials necessary for construction, class and type of excavation, and all other factors affecting or which may be affected by the specified work; and

CERTIFIES THAT he has not entered into collusion with any other bidder or prospective bidder relative to the project and/or bid: and

HEREBY PROPOSES: to enter into a contract to provide all necessary labor, materials, equipment and tools to completely construct and finish all the work required by the Contract Documents hereto attached and other documents referred to therein: to complete said work within 545 calendar days after the work order is issued; and to accept in full payment therefore the amount set forth below for all work actually performed as computed by the Engineer as set forth in the Contract.

Basis of Award
THE LOWEST RESPONSIBLE BID SHALL BE DETERMINED BY THE TOTAL BASE BID PLUS ADDITIVE ALTERNATES NO. 1 thru 8. THE ITEMS IN ADDITIVE ALTERNATES NO. 1 thru 8 MAY OR MAY NOT BE INCLUDED IN THE CONTRACT AWARD AT THE SOLE DISCRETION OF THE CITY OF TULSA. ANY PROPOSAL SUBMITTED WITH THE ADDITIVE ALTERNATES 1 thru 8 INCOMPLETE SHALL BE CONSIDERED NON-RESPONSIVE.

Note: Item numbers omitted or noted as "Not Used" are not a part of the Contract.
### BASE BID:

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<tr>
<th>BID ITEM</th>
<th>SPEC NO.</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
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<td>613(J)</td>
<td>Edge Drain Conduct - Perforated</td>
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<td>6 inch PVC AWWA C900 Class 200 DR-14 (RJ)</td>
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<td>COT 312</td>
<td>6 inch Ductile Iron Sleeve (RJ)</td>
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<td>COT 312</td>
<td>6 inch x 6 inch Ductile Iron Tee (RJ)</td>
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<td>37</td>
<td>COT 315</td>
<td>2 inch Service Line Extension</td>
<td>LF</td>
<td>640</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>38</td>
<td>COT 317</td>
<td>6 inch Gate Valve (RJ)</td>
<td>EA</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>39</td>
<td>COT 317</td>
<td>3-way Fire Hydrant, in place</td>
<td>EA</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>40</td>
<td>COT 318</td>
<td>Valve Box</td>
<td>EA</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>41</td>
<td>COT 318</td>
<td>Compound Water Meter</td>
<td>EA</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>42</td>
<td>312000</td>
<td>Building Pad</td>
<td>EA</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>43</td>
<td>PER SPECS</td>
<td>Hangar Building</td>
<td>EA</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>44</td>
<td>NOT USED</td>
<td>-</td>
<td>-</td>
<td></td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>45</td>
<td>NOT USED</td>
<td>-</td>
<td>-</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>46</td>
<td>NOT USED</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>47</td>
<td>NOT USED</td>
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<td>-</td>
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<tr>
<td>48</td>
<td>NOT USED</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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<tr>
<td>49</td>
<td>NOT USED</td>
<td>-</td>
<td>-</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>50</td>
<td>NOT USED</td>
<td>-</td>
<td>-</td>
<td></td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>51</td>
<td>NOT USED</td>
<td>-</td>
<td>-</td>
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<td>-</td>
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</tr>
</tbody>
</table>

**TOTAL BASE BID**

$75,000.00

### ADD ALTERNATE #1 - FENCING AND GATES

<table>
<thead>
<tr>
<th>BID ITEM</th>
<th>SPEC NO.</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>QTY</th>
<th>DATA INPUT</th>
<th>UNIT PRICE</th>
<th>TOTAL EACH ITEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>52</td>
<td>624(E)</td>
<td>Fence-Style CLF (6 ft high, Class A)</td>
<td>LF</td>
<td>1545</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>53</td>
<td>624(F)</td>
<td>Gates-Style CLF (8 ft high x 10 ft long)</td>
<td>EA</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**TOTAL ADD ALTERNATE #1**

$-
<table>
<thead>
<tr>
<th>BID ITEM</th>
<th>SPEC NO.</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>QTY</th>
<th>DATA INPUT</th>
<th>TOTAL EACH ITEM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td><strong>ADD ALTERNATE #2 - SODDING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>54</td>
<td>230(A)</td>
<td>Solid Slab Sodding</td>
<td>SY</td>
<td>6637</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>55</td>
<td>232(A)</td>
<td>Seeding Method A</td>
<td>AC</td>
<td>-2</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL ADD ALTERNATE #2</strong></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ADD ALTERNATE #3 - EXTERIOR FINISHES</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>042613</td>
<td>Brick Base at Building</td>
<td>SF</td>
<td>780</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>57</td>
<td>074213.23</td>
<td>Aluminum Composite Panel</td>
<td>SF</td>
<td>773</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL ADD ALTERNATE #3</strong></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ADD ALTERNATE #4 - PLANNING ROOM GLASS WALL</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>56</td>
<td>084513</td>
<td>Planning Room Glass Wall</td>
<td>SF</td>
<td>179</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>59</td>
<td>084513</td>
<td>Type E-F - Frameless Glass Door Pivot Hinge</td>
<td>EA</td>
<td>2</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>60</td>
<td>101400</td>
<td>City Map Glass Mural</td>
<td>SYS</td>
<td>1</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>61</td>
<td>123661.19</td>
<td>Planning Room Countertop-Quartz</td>
<td>LF</td>
<td>17</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>62</td>
<td>123213</td>
<td>30&quot; high 2 drawer Base Cabinet - 30&quot; Wide</td>
<td>EA</td>
<td>5</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL ADD ALTERNATE #4</strong></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ADD ALTERNATE #5 - GENERATOR</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>63</td>
<td>033000</td>
<td>Reinforced Concrete Pad</td>
<td>CY</td>
<td>8</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>263213.16</td>
<td>Emergency Generator and Transfer Switch - Furnished and Installed</td>
<td>EA</td>
<td>1</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL ADD ALTERNATE #5</strong></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ADD ALTERNATE #6 - POLYCARB GLAZING</strong></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>65</td>
<td>084513</td>
<td>Polycarbonate Panels - Furnished and installed</td>
<td>SF</td>
<td>251</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL ADD ALTERNATE #6</strong></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ADD ALTERNATE #7 - FLAGPOLE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>66</td>
<td>107516</td>
<td>Flagpole, concrete footing, light fixture, &amp; accessories - Furnished and Installed</td>
<td>SYS</td>
<td>1</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL ADD ALTERNATE #7</strong></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>ADD ALTERNATE #8 - HVLS FANS</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>67</td>
<td>233300</td>
<td>HVLS Fans</td>
<td>EA</td>
<td>2</td>
<td>$</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL ADD ALTERNATE #8</strong></td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>TOTAL BASE BID plus ALTERNATES 1 thru 8</strong></td>
<td></td>
<td></td>
<td></td>
<td>$75,000.00</td>
</tr>
</tbody>
</table>
BASE BID (ITEMS 1 thru 51) $ 75,000.00
ADD ALT #1 $ -
ADD ALT #2 $ -
ADD ALT #3 $ -
ADD ALT #4 $ -
ADD ALT #5 $ -
ADD ALT #6 $ -
ADD ALT #7 $ -
ADD ALT #8 $ -

TOTAL (BASE BID + ADD ALTERNATES 1 thru 8) $ 75,000.00

Enclosed is a ( ) Bidder's Surety Bond, ( ) Certified Check, ( ) Cashier's Check for

Words

Dollars ($___________) Figures

which the City of Tulsa may retain or recover as liquidated damages in the event that the undersigned fails to enter into contract for the work covered by this proposal, provided the Contract is awarded to the undersigned within thirty (30) days, from the date fixed for opening of bids and the undersigned fails to execute said Contract and furnish the required bonds and other requirements as called for in these Contract Documents within thirty (30) days after award of Contract.

Dated at Tulsa, Oklahoma, this _______ day of ________________________, 20_____.

Respectfully submitted,

________________________________________

(Complete legal name of company)

________________________________________

(State of Organization)

By: ______________________________

ATTEST:

Title: ______________________________

Title: Corporate Secretary

Printed Name: __________________________

Printed Name: __________________________

(SEAL)

Address: ______________________________

________________________________________

________________________________________

Telephone Number: ______________________

Fax Number: ___________________________

By signing above the bidder acknowledges receipt of the following Addenda (give number and date of each):

________________________________________

________________________________________

P-5.
Certificate of Secretary

The undersigned ________________ (Assistant) Secretary of ________________, a ________________ corporation, (the “Corporation”) hereby certifies that the following is a true and correct copy of a Resolution duly adopted by the Board of Directors of the Corporation on the _____ day of __________, 20__.  

RESOLVED, that ________________ is authorized to execute and enter into bids, contracts, bonds, affidavits and any ancillary documents, on behalf of the Corporation.

The undersigned further certifies that this Resolution is in full force and effect as of the date of this Certificate and has not been amended, modified, revoked or rescinded.

IN WITNESS WHEREOF, I have executed this Certificate this ___ day of __________, 20__.

(Signature)

Printed Name

(Assistant) Secretary
[SAMPLE CONSENT OF MEMBERS]

[NAME OF COMPANY], LLC

Consent of Members

The undersigned, being all of the Members of [Name of Company], LLC, an Oklahoma Limited Liability Company, hereby authorize, consent to, approve and ratify the execution by ______________ on behalf of [Name of Company], LLC of bid proposals, contracts, affidavits and related documents in connection with [Name of Project] of the City of Tulsa.

DATED, this ____________ day of ________________, 20__.  

Name printed: ____________________________

Name Printed: ____________________________

[ADD ADDITIONAL LINES FOR ADDITIONAL MEMBERS]

Disclaimer Statement: This form is made available for example purposes only and is not intended to be legal advice nor intended to be relied upon in lieu of consultation with an attorney."

CM-1
TO WHOM IT MAY CONCERN:

Please be advised that the City of Tulsa, Oklahoma, a municipal corporation, has contracted for the construction of a public improvement project as referenced above, and that pursuant to Title 68 § Section 1356 (10), sales on tangible personal property or services to be wholly consumed in the performance of such projects are exempt from Oklahoma and City of Tulsa Sales Tax when:

"...Any person making purchases on behalf of such subdivision or agency of the state shall certify, in writing, on the copy of the invoice or sales ticket to be retained by the vendor that the purchases are made for and on behalf of such subdivision or agency of this state and set out the name of such public subdivision or agency."

This letter of authorization expires.

A photostatic copy of this letter may be considered as the original.

CITY OF TULSA

Paul D. Zachary, P.E.
City Engineer

cc: Ryan McKaskle

HAS:KT:
EXTENSION OF TIME REQUEST
(to be submitted with each partial payment application)

DATE: ________________________________

CONTRACTOR: ______________________________________

ADDRESS: __________________________________________

____________________________________________________

CONTRACT NO.: ______________________________________

PROJECT NO.: _______________________________________

DESCRIPTION: ________________________________________

ARE THERE ANY CHANGES TO YOUR SBE UTILIZATION? _____ YES _____ NO

IF YES, GIVE REASON AND ATTACH CHANGE REQUEST FORM (SBE-4):

________________________________________________________________________

________________________________________________________________________

EXTENSION OF CONTRACT TIME REQUIRED: _____ YES _____ NO

TOTAL OF EXTENSION TIME REQUESTED: ______________________________________

IF YES GIVE REASON: _____________________________________________________

________________________________________________________________________

SIGNATURE - CONTRACTOR _________________________________________________

CONSULTING ENGINEER OR DEPARTMENT OF PUBLIC WORKS STAFF RECOMMENDATIONS

APPROVED: ___________________________ REJECTED: ___________________________

REASON: ______________________________ ________________________________

________________________________________________________________________

________________________________________________________________________

SIGNATURE___________________________________________________________

DATE: ______________________________

ACTION WILL BE TAKEN WITHIN 30 DAYS FROM RECEIPT OF REQUEST

ETR-1

1/1
CONTRACT FOR CONSTRUCTION OF PUBLIC IMPROVEMENTS
TULSA, OKLAHOMA

THIS CONTRACT made and entered into the ___ day of ____________, 2023, by and between an (list state) _______ (Corporation or Limited Liability Company) of _______ , Oklahoma, hereinafter called the "CONTRACTOR", and the CITY OF TULSA - TULSA, OKLAHOMA, a Municipal Corporation, herein called the "CITY."

WITNESSETH:

WHEREAS, the City has caused to be prepared the necessary Drawings, Specifications, and other Contract Documents for the public improvements herein described, and has invited bids for the construction thereof in accordance with the terms of this Contract, all of which is hereby designated as:

PROJECT NO. SP 22-7 TULSA POLICE DEPARTMENT HELIPORT

WHEREAS, the Contractor, in response to the Advertisement, has submitted to the City, in the manner and at the time specified, a sealed bid in accordance with the terms of this Contract; and,

WHEREAS, the City, in the manner prescribed by law, has publicly opened, examined, and canvassed the bids submitted, and has determined the above named Contractor to be the lowest responsible bidder for the work and has duly awarded to the said Contractor therefore, for the sum or sums named in the Contractor's bid, a copy of the Bid Form being attached to and made a part of this Contract;

NOW, THEREFORE, in consideration of the compensation to be paid to the Contractor and of the mutual agreements and covenants herein contained, the parties to this Contract have agreed and hereby agree, as follows:

ARTICLE I. That the Contractor shall (a) furnish all tools, equipment, supplies, superintendent, transportation, and other construction accessories, services, and facilities; (b) furnish all materials, supplies, and equipment specified and required to be incorporated in and form a permanent part of the completed work; (c) provide and perform all necessary labor; and (d) in a good, substantial, and workmanlike manner and in accordance with the requirements, stipulations, provisions, and conditions of the Contract as defined in the attached General Provisions, sometimes referred to as General Conditions in the Contract Documents, said documents forming the Contract and being as fully a part thereof as if repeated verbatim herein, perform, execute, construct, and complete all work included in and covered by the City's official award of this Contract to the said Contractor, such award being based on the acceptance by the City of the Contractor's bid, or part thereof, as follows:

C-1
PRODUCT NO. SP 22-7 TULSA POLICE DEPARTMENT HELIPORT

ARTICLE II. That the City shall pay to the Contractor for performance of the work embraced in this Contract, and the Contractor will accept as full compensation therefor, the sum (subject to adjustment as provided by the Contract) of ____________ AND /100 Dollars ($__________) for all work covered by and included in the Contract award and designated in the foregoing Article I; payments therefore to be made in cash or its equivalent, in the manner provided in the General Provisions.

ARTICLE III. That the Contractor shall start work within ten (10) days following the date stipulated in a written order from the City to proceed with the work to be performed hereunder, and shall complete the work within the number of consecutive calendar days after the authorized starting date, as stipulated below:

All Work Completed: 545 calendar days

ARTICLE IV. The sworn, notarized statement below shall be signed and notarized before this Contract will become effective.

ARTICLE V. Prior to submitting a final payment request, the Contractor shall furnish a lien waiver certifying that all subcontractors and suppliers have been paid.

IN WITNESS WHEREOF, the parties have hereto set their hands and seals,

this _________ day of ________, 2023.
STATE OF ___________________________

                                      )ss
COUNTY OF __________________________

____________________________________, of lawful age, being first duly
sworn, on oath says that (s)he is the agent authorized by the Contractor to submit
the above Contract to the CITY OF TULSA, Tulsa, Oklahoma.

____________________________________
Signature

Subscribed and sworn to before me this _____ day of ____________, 2023.

____________________________________
NOTARY PUBLIC

My Commission Expires:

____________________________________, ______.
PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we, the undersigned,
______________________________, (hereinafter called the Contractor"),
duly authorized by law to do business as a construction contractor in the State of
Oklahoma, and ________________________________ (hereinafter called the "Surety"), a corporation organized under the laws of the
State of _____________________, and authorized to transact business in the State of
Oklahoma, as Surety, are hereby held and firmly bound unto the City of Tulsa,
Tulsa, Oklahoma (hereinafter called the "City"), in the penal sum of

$_________________________, lawful money of the
United States, for the payment of which, well and truly to be made unto the said
City, we bind ourselves, our heirs, executors, administrators, successors, and
assigns, jointly and severally, firmly by these presents, as follows:

THE CONDITION OF THE FOREGOING OBLIGATION IS SUCH THAT,
WHEREAS, the Contractor has on the _____ day of _____________, _____,
entered into a written contract with the City of Tulsa, Tulsa, Oklahoma, for
furnishing all materials, labor, tools, equipment, and transportation necessary for:

PROJECT NO. SP 22-7 TULSA POLICE DEPARTMENT HELIPORT

NOW, THEREFORE, if said Contractor shall well and truly perform and complete
said project in accordance with said Contract, Advertisement for Bids, General
Conditions, Instructions to Bidders, Bid Form, Plans and Specifications, and
related documents, shall comply with all the requirements of the laws of the State
of Oklahoma; shall pay as they become due all just claims for work or labor
performed and materials furnished in connection with said contract, and shall
defend, indemnify and save harmless said City against any and all liens,
encumbrances, damages, claims, demands, expenses, costs and charges of
every kind, including patent infringement claims except as otherwise provided in
said specifications and other contract documents, arising out of or in relation to the
performance of said work and the provisions of said Contract, then these presents
shall be void; otherwise, they shall remain in full force and effect.

This obligation is made for the use of said City and also for the use and benefit of
all persons who may perform work or labor, or furnish any material in the
execution of said Contract, and may be sued on thereby in the name of the City.

The Surety, for value received, hereby stipulates and agrees that no change,
extension of time, alteration or addition to the terms of the Contract, or to the work
to be performed thereunder, or to the specifications accompanying same, shall in
any way affect its obligation on this bond; and it does hereby waive notice of any
such change, extension of time, alteration or addition of the terms of the Contract,
or to the work or to the specifications.
IN WITNESS WHEREOF, the said Principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its duly authorized officers, and the said Surety has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its attorney-in-fact, duly authorized so to do, the day and year first above written.

________________________________________
CONTRACTOR (Principal)

BY:                                      ATTEST:  ( SEAL )

______________________________________   ________________ Date: ______
Date: ______  Title: ______

______________________________________   ________________ Date: ______
Title: ______  Title: ______

______________________________________   ________________ Date: ______
Date: ______  Date: ______
Attorney In Fact **     Surety ( SEAL )

**This date shall match the notarized certificate on the Power-of-Attorney

(Accompany this Bond with Power Of Attorney)

APPROVED AS TO FORM:

______________________________________ Date: ______
City Attorney

______________________________________ Date: ______
City Clerk

PB - 2
STATUTORY BOND

WHEREAS, the undersigned __________________________________________ has entered into a certain contract dated the ____ day of __________, ____, designated as Project No. SP 22-7, for the construction of certain public improvements Consisting of Tulsa Police Department Heliport to be situated and constructed on and through the property described in said Contract, including all of the work mentioned and described in said Contract, and to be performed by the undersigned strictly and punctually in accordance with the terms, conditions, drawings and specifications thereof, on file in the office of the office of the City Clerk.

NOW, THEREFORE, KNOW ALL MEN BY THESE PRESENTS: That __________________________________________, as Principal, and __________________________________________, a Corporation organized under the laws of the State of ______________________, and authorized to transact business in the State of Oklahoma, as Surety, are held and firmly bound unto the State of Oklahoma in the penal sum of ______________________

Dollars (Full Amount of Contract) ($__________), lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our successors, and assigns, jointly and severally firmly by these presents.

NOW, THEREFORE, if the said Principal shall fail or neglect to pay all indebtedness incurred by Principal or sub-contractors of said principal who perform work in the performance of such contract, for labor and materials and repairs to and parts for equipment used and consumed in the performance of said contract within thirty (30) days after the same becomes due and payable, the person, firm or corporation entitled thereto may sue and recover on this bond the amount so due and unpaid.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration, or addition to the terms of the contract or to the work to be performed thereunder, or the specifications accompanying the same, shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration, or addition to the terms of the contract or to the specifications.
5/30/06
IN WITNESS WHEREOF, the said Principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its duly authorized officers, and the said Surety has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its attorney-in-fact, duly authorized so to do, the day and year first above written.

________________________________________
CONTRACTOR (Principal)

BY: ATTEST: ( SEAL )

_________________________ Date:  ____________
Title:  ___________________________ Date:  ____________

_________________________ Date:  ____________
Attorney-In-Fact  **  Surety  ( SEAL )

**This date shall match the date of the notarized certificate on the Power-of-Attorney.

(Accompany this Bond with Power-Of-Attorney)

APPROVED AS TO FORM:

_________________________ Date:  ____________
City Attorney

_________________________ Date:  ____________
City Clerk

SB-2
MAINTENANCE BOND

KNOW ALL MEN BY THESE PRESENTS:

That ___________________________, as Principal, and ___________________________, a corporation organized under the laws of the State of ____________ and authorized to transact business in the State of Oklahoma, as Surety, are held and firmly bound unto the City of Tulsa in the Penal sum of ____________________________

Dollars (full amount of Contract) ($__________) in lawful money of the United States of America for the payment of which, well and truly to be made, we bind ourselves and each of us, our heirs executors, administrators, trustees, successors, and assigns, jointly and severally, firmly by these presents.

The condition of this obligation is such that:

WHEREAS, said Principal entered into a written contract with the City of Tulsa, Oklahoma dated ____________________________, for

Project No. SP 22-7 Tulsa Police Department Heliport

all in compliance with the drawings and specifications therefore, made a part of said Contract and on file in the office of the City Clerk, Tulsa, Oklahoma.

NOW, THEREFORE, if said Principal shall pay or cause to be paid to the City of Tulsa, Oklahoma, all damage, loss, and expense which may result by reason of defective materials and/or workmanship in connection with said work, occurring within a period of one (1) year for all projects, from and after acceptance of said project by the City of Tulsa, Oklahoma; and if Principal shall pay or cause to be paid all labor and materials, including the prime contractor and all subcontractors; and if principal shall save and hold the City of Tulsa, Oklahoma, harmless from all damages, loss, and expense occasioned by or resulting from any failure whatsoever of said Principal, then this obligation shall be null and void, otherwise to be and remain in full force and effect.

It is further expressly agreed and understood by the parties hereto that no changes or alterations in said Contract and no deviations from the plan or mode of procedure herein fixed shall have the effect of releasing the sureties, or any of them, from the obligation of this Bond.
IN WITNESS WHEREOF, the said Principal has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its duly authorized officers, and the said Surety has caused these presents to be executed in its name and its corporate seal to be hereunto affixed by its attorney-in-fact, duly authorized so to do, the day and year first above written.

_________________________________________
CONTRACTOR (Principal)

BY: ________________________________ ATTEST: __________________________

______________ Date: ________________ ________________ Date: ________________
Title: ________________________________ Title: ________________________________

______________ Date: ________________ ________________ Date: ________________
Attorney-In-Fact ** Surety ( SEAL )

** This date shall match the date of the notarized certificate on the Power of Attorney
(Accompany this Bond with Power-Of-Attorney)

APPROVED AS TO FORM:

_________________________ __________________________
City Attorney Date: __________________________

_________________________ __________________________
City Clerk Date: __________________________
AFFIDAVIT OF CLAIMANT

STATE OF _______________________

COUNTY OF ____________________

The undersigned, of lawful age, being first duly sworn, on oath says that this contract is true and correct. Affiant further states that the work, services or materials will be completed or supplied in accordance with the contract, plans, specifications, orders or requests furnished the affiant. Affiant further states that (s)he has made no payment directly or indirectly of money or any other thing of value to any elected official, officer or employee of the City of Tulsa or any public trust of which the City is a beneficiary to obtain or procure the contract or purchase order.

By: _____________________________________

Signature

Name: _____________________________________

Company: _________________________________

Title: _____________________________________

Subscribed and sworn to before me this _____ day of ______________________, 20____.

________________________________________
Notary Public

My Commission Expires: ______________________

Notary Commission Number: __________________
GENERAL CONDITIONS OF CONTRACT

GC-1. SCOPE:
The Contract stipulations, which follow, are general in scope and may refer to conditions that will not be encountered in the performance of the work included in this Contract, and which are not applicable thereto. Any requirements, provisions, or other stipulations of these General Conditions, which pertain to a nonexistent condition, and are not applicable to the work to be performed hereunder, shall have no meaning in the Contract.

The specifications and drawings are intended to supplement, but not necessarily duplicate each other. Together they constitute one (1) complete set of specifications and drawings, so that any work exhibited in the one and not in the other shall be executed just as if it had been set forth in both, in order that the work shall be completed according to the complete design or designs as decided and determined by the Engineer.

Should anything be omitted from the specifications and drawings which is necessary to a clear understanding of the work, or should it appear various instructions are in conflict, then the Contractor shall request written clarification from the Engineer before proceeding with the construction affected by such omissions or discrepancies.

GC-2. CONTRACT DOCUMENTS:
It is understood and agreed that the Notice to Bidders, Instructions to Bidders, Proposal, Contract, Statutory Bond, Performance Bond, Maintenance Bond, Power of Attorney, Certificates of Insurance, General Conditions, Specifications, Drawings, Addenda, and duly authorized Change Orders, together with any and all supplementary drawings furnished by the Engineer as and when required to make clear and to define in greater detail the intent of the contract, drawings, and specifications, other drawings, specifications, and engineering data furnished by the Contractor (when accepted by the Engineer), and instructions furnished by manufacturers of equipment for the installation thereof, are each and all included in this Contract, and the work shall be done in full compliance and accord therewith.

GC-3. DEFINITIONS:
Any word, phrase, or other expression defined in this paragraph and used in these Contract Documents shall have the meaning herein given:

1. "Contract" or "Contract Documents" shall include all of the documents and drawings mentioned in Paragraph GC-2.

2. "City" shall mean the City of Tulsa, Tulsa County, Oklahoma.

3. "Contractor" shall mean the entity named and designated in the Contract who has entered into this Contract to perform the work covered thereby, and its, his, or their duly authorized agents and other legal representatives.

4. "Engineer" shall mean the Director of Engineering Services, or the Architect or Engineers who have been designated, appointed, or employed by the City for this project, or their duly authorized agents; such agents acting within the scope of the particular duties entrusted to them in each case.

5. "Inspector" shall mean the engineering or technical inspector or inspectors duly authorized by the Engineer, limited in each case to the particular duties entrusted to him or them.

6. "Surety" shall mean any entity that executes, as surety, the Contractor’s performance bond, maintenance bond, and statutory bond securing the performance of this Contract.
7. "Drawings" shall mean and include all drawings prepared by the City as a basis for proposals; all drawings submitted by the successful bidder with his proposal and by the Contractor to the City, when and as accepted by the Engineer, and all drawings submitted by the City to the Contractor during the progress of the work as provided herein.

8. "Subcontractor" shall mean a person, firm or corporation to whom any portion of this work has been sublet by the Contractor.

9. "Work" shall mean the task to be performed, necessary for the fulfillment of this Contract.

10. "Unit Price" shall mean the cost per specified unit of measurement of work and/or material.

11. "Lump Sum" shall mean the price of an item of work including all things necessary to complete the item as shown on the drawings and specifications. Such an item is not measured in units but is defined by description.

GC-4. MODIFICATIONS AND ALTERATIONS:
In executing the Contract, the Contractor agrees that the City shall have the right to make such modifications, changes, and alterations as the City may see fit, in the extent, or plan of the Work agreed to be done or any part thereof, or in the materials to be used therein, either before or after the beginning of construction thereof, without affecting the validity of the Contract or the liability of the Sureties upon the performance of this Contract or the Statutory Bond.

Where any modification, change, or alteration increases the quantity of Work to be performed, and is within the scope of a fair interpretation thereof, such increase shall be paid for according to the quantity of work actually done, either at Unit Prices included in the Contract, or in the absence of such unit, as extra Work. Modifications and alterations, which reduce the quantity of Work to be done, shall not constitute a claim for damages or for anticipated profits on Work involved in such reduction.

The Engineer shall determine, on an equitable basis, the amount of credit due the City for Work not performed as a result of modifications or alterations authorized hereunder; where the value of the omitted Work is not fixed by Unit Prices in the Contract; allowance to the Contractor for any actual loss incurred in connection with the purchase, delivery, and subsequent disposal of materials and equipment required for use on the Work as actually built; and any other adjustment of the Contract amount where the method to be used in making such adjustment is not clearly defined in the Contract Documents. In this respect, such determination shall be final and binding only when approved by the Director of Public Works.

GC-5. DRAWINGS TO BE FURNISHED BY CONTRACTOR:
The Contractor shall furnish all shop, fabrication, assembly, foundation, and other drawings required by the specifications; drawings of equipment and devices, offered by the Contractor for review by the Engineer, shall be in sufficient detail to show adequately the construction and operation thereof; drawings of essential details of any change in design or construction proposed for consideration of the Engineer, by the Contractor in lieu of the design or arrangement required by the Contract or any item of extra work thereunder. The Contractor shall submit to the Engineer, the required number, of each copy of such drawing for the Engineer's review. After review by the Engineer, all such drawings shall become a part of the Contract Documents and the work or equipment shown thereby shall be in conformity therewith unless otherwise required by the City.

The Engineer's check and acceptance of drawings submitted by the Contractor will be for, and will cover, only general conformity to the plans and specifications and will not constitute a blanket acceptance of all dimensions, quantities, and details of the material or equipment shown; nor shall
such acceptance relieve the Contractor of his responsibility for errors contained in such drawings.

GC-6. CONTRACTOR’S BUSINESS ADDRESS:
The business address of the Contractor given in the bid or proposal upon which this Contract is founded is hereby designated as the place to which all notices, letters, and other communications to the Contractor may be mailed or delivered. The delivery at the above named address, or depositing in any mailbox regularly maintained by the Post Office, of any notice, letter, or other communication to the Contractor, shall be deemed sufficient service thereof upon the Contractor and the date of said service shall be the date of such delivery or mailing. Such address may be changed at any time by a written instrument, executed by the Contractor and delivered to the Engineer. Nothing contained herein shall be deemed to preclude or render inoperative the service of any notice, letter, or communication upon the Contractor personally.

GC-7. CONTRACTOR’S RISK AND RESPONSIBILITY:
The performance of the Contract and the Work is at the risk of the Contractor until the final acceptance thereof and payment therefor. The Contractor shall take all responsibility of the Work, and shall bear all losses resulting because of the amount or character of the Work, or because the nature of the land in or on which the Work is done is different from what is assumed or expected, or on account of the weather, floods, fire, windstorm, or other actions of the elements, or any cause or causes, whatsoever, for which the City is not responsible. If the Work or any part or parts thereof is destroyed or damaged from any of the aforesaid causes, the Contractor, at his own cost or expense, shall restore the same or remedy the damage.

The Contractor shall, in a good and workmanlike manner, perform all Work and furnish all supplies and materials, machinery, equipment, facilities, and means, except as otherwise expressly specified, necessary or proper to perform and complete all Work required by the Contract within the time herein specified, in accordance with the provisions of these Contract Documents and Drawings of the Work covered by this Contract, and any and all supplemental Drawings. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements and limitations of the Contract, and shall complete the entire Work to the satisfaction of the Engineer and of the City.

GC-8. ASSIGNMENT AND SUBLETTING OF CONTRACT:
The Contractor shall give his personal attention to the fulfillment of this Contract, and shall not let, assign or transfer it or his right, title, or interest in any part thereof, by attorney or otherwise, or sublet any part of the Work to any other person without the prior consent of the City in writing.

Should any Subcontractor fail to perform his work in a satisfactory manner the Contractor upon notice from the City shall immediately terminate his subcontract. The Contractor shall be fully responsible to the City for the acts and omissions of his Subcontractor, and of persons either directly or indirectly employed by his Subcontractor. Nothing contained in these Contract Documents shall create any contractual relation between any Subcontractor and the City.

GC-9. CONTRACTOR’S REPRESENTATIVES:
The Contractor shall designate a person on the Work site to represent him when absent from the Work site.

GC-10. CONTRACTOR AND HIS EMPLOYEES:
The Contractor shall employ competent foremen, experienced mechanics, and others skilled in the Work in this Contract; and shall promptly discharge any and all incompetent or otherwise unsatisfactory employees. Contractor’s employees directly employed to perform the Work shall not be paid less than the prevailing minimum wage scale.

Necessary sanitary conveniences for the use of employees on the job site, properly secluded from public observation, shall be provided and maintained by the Contractor. The construction and
location of the facility and disposal of the contents shall comply with all laws of the City and State, relating to health and sanitation regulations.

GC-11. CONTRACTOR'S RIGHT OF PROTEST:
If the Contractor considers any work demanded of him to be outside the requirements of the Contract, or considers any record or ruling of the Engineers to be unfair, he shall, immediately upon such Work being demanded or such record or ruling being made, ask for written instructions or decisions, whereupon he shall proceed without delay to perform the Work or to conform to the record or ruling; and within ten (10) days after the date of receipt of written instructions or decision, he shall file a written protest with the Engineer, stating clearly and in detail the basis of his objections. Except for such protests and objections made of record in the manner herein specified and within the time stated, the records, rulings, or decisions of the Engineer shall be final and conclusive.

GC-12. INSURANCE AND BONDS:
The CONTRACTOR (and any subcontractors) shall carry and keep in force during this Contract, policies of insurance issued by an insurer authorized to transact business in Oklahoma in minimum amounts as set forth below or as required by the laws of the State of Oklahoma. The Contractor shall also furnish an Owner's Protective Policy in the same amounts naming the City of Tulsa as the assured, issued by the same insurance company as the Contractor's liability coverage and indemnifying the City of Tulsa against any and all actions, claims, judgments or demands arising from injuries of any kind and character sustained by any person or persons because of work performed by the Contractor.

General Liability Insurance with a bodily injury and property damage combined single limit of not less than $1,000,000.00 for each occurrence.

Employer's Liability and Workmen's Compensation in the amounts as required by law.

The Contractor shall provide proof of such coverage:

(a) By providing Certificate(s) of Insurance prior to the execution of this contract; and
(b) By submitting updated Certificate(s) of Insurance with each and every subsequent request for payment. The Certificate(s) should show that the policies are current and should be dated within 30 days of the payment request.

The Contractor shall not cause any required insurance policy to be cancelled or permit it to lapse. If the Contractor cancels, allows to lapse, fails to renew or in any way fails to keep any required insurance policy in effect, the City will suspend all progress and/or final payments for the project until the required insurance is obtained. Further, a Contractor who fails to keep required insurance policies in effect may be deemed by the City to be in breach of contract, ineligible to bid on future projects, and/or ineligible to engage in any new contracts.

The Contractor shall execute and furnish a Statutory Bond for the protection of laborers, mechanics, and material men in a sum equal to one hundred percent (100%) of the contract price.

The Contractor shall execute and furnish a Performance Bond in a sum equal to one hundred percent (100%) of the contract price.

The Contractor shall execute and furnish a Maintenance Bond in a sum equal to one hundred percent (100%) of the contract price.
Prior to doing blasting, the Contractor shall furnish a Certificate of Insurance, which shall certify that any damage caused by blasting is within the coverage of the Contractor’s liability insurance to the full limits thereof.

All bonds and insurance must be executed by a company licensed to do business in the State of Oklahoma, and must be acceptable to the Authority.

GC-13. TIME FOR COMPLETION:
The Work shall commence within ten days from and after the date of a written work order from the City. The Contractor agrees that the Work shall be performed regularly, diligently and uninterruptedly at a uniform rate of progress so as to ensure completion within the number of days after the day on which the work order is issued. If the Contractor fails to complete all Work within the time specified, then the Contractor agrees to pay the City, not as a penalty, but as liquidated damages for breach of contract, the sum of **Two Thousand Five Hundred Dollars ($2,500.00)** for each and every calendar day beyond the date on which the work was to be completed. The said amount is fixed and agreed upon because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the City would sustain in such event. It is expressly understood and agreed that the said time for completion of the work described herein is a reasonable time for the completion of same.

The Contractor shall commence work within twenty-four (24) hours of traffic control devices being established at the project location. If the Contractor fails to commence work within twenty-four (24) hours of traffic control devices being established at the project location, then the Contractor agrees to pay the City, not as a penalty, but as liquidated damages the sum of **One Thousand Dollars ($1000.00)** per lane for each day of failure to commence work after the specified time set forth. The amount is fixed and agreed upon because of the impracticability and extreme difficulty of fixing and ascertaining the actual damage the City would sustain in such event.

**Within 14 days** after Bid Opening and prior to Award of Bid the successful Contractor will be required to furnish the Engineer with a progress schedule, in a format approved by the Engineer, setting forth in detail the procedure he proposes to follow, and giving the dates on which he expects to start and to complete separate portions of the Work. If at any time, in the opinion of the Engineer, proper progress is not being maintained, such changes shall be made in the schedule of operations, which will satisfy the Engineer that the Work will be completed within the period stated in the Proposal. Monthly progress meetings will be conducted to maintain coordination between all project entities.

The Contractor will be required to provide a full-time, onsite English speaking superintendent for this Work for direct contact with City and coordination of Subcontractors. A working foreman is not acceptable as a project superintendent. The superintendent shall be required to be present at the Work site whenever the Contractor or Subcontractors are performing Work. The superintendent shall be a representative of the Contractor with the authority to make decisions. If the Contractor fails to provide a non-working superintendent on a day when Work is being performed, the Contractor agrees to pay the City, not as a penalty, but as liquidated damages for such breach of contract, the sum of **One Thousand Dollars ($1000.00)** for each and every calendar day it fails to provide a non-working superintendent at the Work site. This amount is fixed and agreed upon because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the City would sustain in such an event.

It is further agreed that time is of the essence as to each and every portion of this Contract and the specifications wherein a definite and certain time is fixed for the performance of any act whatsoever; and where under the Contract an allowance of additional time for completion of any Work is made, the new time fixed by such extension shall be of the essence of this Contract.
Failure to complete the Work within the specified time, as set forth in the Contract, may be grounds for disqualification for future consideration for contracts with the City of Tulsa.

Final acceptance of the Work is defined as the completion of the Work and the Contractor moving off the project site. No defined or additional Work is needed.

Contract Evaluation forms will be compiled by City staff upon completion of Work to provide a record of the Contractor’s performance for use in subsequent projects.

**GC-14. EXTENSIONS OF TIME:**
Should the Contractor be delayed in the final completion of the Work by any act or neglect of the City or Engineer, or any employee of either, or strikes, injunctions, fire, or other causes outside of and beyond the control of the Contractor and which, in the opinion of the Engineer, could have been neither anticipated nor avoided, then an extension of time sufficient to compensate for the delay, as determined by the Engineer, shall be granted by the City, provided, however, that the Contractor shall give the City and the Engineer notice in writing of the cause of each delay on the "Extension of Time Request" form enclosed in these documents, and agrees that any such claim shall be fully compensated for by an extension of time to complete performance of the Work.

The Contractor shall submit the "Extension of Time Request" form with each partial payment application. Failure to submit the Extension of Time Request with a partial payment application shall constitute a complete waiver of any claim for time extension for the period covered by the partial payment.

Extensions of time will not be granted for delays caused by unsuitable ground conditions, inadequate construction force, or the failure of the Contractor to place orders for the equipment or materials a sufficient time in advance to insure delivery when needed. Any extension of time granted by the City shall not release the Contractor and Surety herein from the payment of liquidated damages as provided in the General Conditions of this Contract, for a period of time not included in the original Contract or the time extension, as herein provided.

In no event shall the City be liable or responsible to the Contractor, Surety, or any person for or on account of any stoppage or delay of Work herein provided for by injunction or any other kind of legal, equitable proceedings, or from or by or on account of any delay from any other cause whatsoever.

**GC-15. ENGINEER’S POWERS AND DUTIES:**
The Engineer will provide general administration of the Contract, including performance of the functions hereinafter described.

The Engineer will be the City’s representative during construction and until final payment. The Engineer will have authority to act on behalf of the City to the extent provided herein unless otherwise modified by written instrument, which will be shown to the Contractor. The Engineer will advise and consult with the City, and all of the City’s instructions to the Contractor shall be issued through the Engineer. Nothing contained in the Contract documents shall create any contractual relationship between the Engineer and the Contractor.

The Engineer shall at all times have access to the Work as provided elsewhere herein. The Engineer will make periodic visits to the Work site to familiarize himself generally with the progress and quality of the Work and to determine in general whether the Work is proceeding in accordance with the Contract. On the basis of his on-site observations as Engineer, he will keep the City informed of the progress of the Work and will endeavor to guard the City against defects and deficiencies in the Work caused by the Contractor. The Engineer will not be responsible for construction means, methods, techniques, sequences or procedures, or for safety precautions and programs in connection with the Work, and will not be responsible for the Contractor’s failure to carry out the Work in accordance with the Contract. Based on such observations and the
Contractor's applications for payment, the Engineer will determine the amounts owing to the Contractor and will issue certificates for payment in amounts as provided elsewhere herein.

The Engineer may provide one or more full-time project representatives to assist the Engineer in carrying out his responsibilities at the Work site. The duties, responsibilities and limitations of authority of the Engineer as the City's representative during construction as set forth herein will not be modified or extended without written consent of the City, the Contractor and the Engineer.

The Engineer will not be responsible for the acts or omissions of the Contractor, any Subcontractors, or any of their agents or employees, or any other persons performing any of the Work.

The Engineer shall decide the meaning and intent of any portion of the specifications, and of any plans or Drawings, where the same are found to be obscure or be in dispute; he shall have the right to correct any errors or omissions therein when such corrections are necessary to further the intent of said specifications, plans or Drawings; the action of such correction shall be effective from the date that the Engineer gives due notice thereof.

Any differences or conflicts, which may arise between the Contractor and other contractors with the City in regard to their work, shall be adjusted as determined by the Engineer.

Neither the Engineer's authority to act under this article or elsewhere in the Contract nor any decision made by the Engineer in good faith either to exercise or not to exercise such authority shall give rise to any duty or responsibility of the Engineer to the Contractor, any Subcontractor, any manufacturer, fabricator, supplier or distributor, or any of their agents or employees or any other person performing any of the Work.

Whenever in the Contract the terms "as ordered", "as directed", "as required", "as allowed", or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives of like effect or import are used, to describe requirements, direction, review or judgement of the Engineer as to the Work, it is intended that such requirement, direction, review, or judgement will be solely to evaluate the Work for compliance with the Contract (unless there is a specific statement indicating otherwise). The use of any such term or adjective never indicates that the Engineer shall have authority to supervise or direct performance of the Work or authority to undertake responsibility contrary to the provisions of this General Condition.

GC-16. CITY'S RIGHT OF INSPECTION:
The City shall appoint or employ such engineers or inspectors as the City may deem proper to inspect the materials furnished and the work performed, and to determine whether said materials are furnished and work is performed in accordance with the Drawings and specifications therefor. The Contractor shall furnish all reasonable aid and assistance required by the Engineer, or by the Inspectors, for the proper inspection and examination of the Work and all parts thereof, even to the extent of uncovering or taking out portions of finished Work. Should the Work thus exposed or examined prove satisfactory, the uncovering or removing and the replacing of the covering or the making good of the parts removed shall be paid for by the City; however, should the Work exposed or examined prove unsatisfactory, the uncovering, taking out, replacing, and making good shall be at the expense of the Contractor.

Such inspection shall not relieve the Contractor of any obligation to perform said Work strictly in accordance with the Drawings and specifications or any modifications thereto as herein provided; and the Work not so constructed shall be removed and made good by the Contractor at his own expense; and free of all expense to the City, whenever so ordered by the Engineer, without reference to any previous oversight or error in inspection.

GC-17. SUSPENSION OF WORK ON NOTICE:
The Contractor shall delay or suspend the progress of the Work or any part thereof whenever he
shall be so required by written order of the City or Engineer, and for such period of time as it or he shall require. Any such order of the City or Engineer shall not modify or invalidate in any way the provisions of this Contract.

GC-18. QUALITY OF WORKMANSHIP:
All workmanship shall be the best possible, both as to material and labor that could be demanded by these Contract Documents or if no specific description is given, it is understood that the best quality is required.

GC-19. SATURDAY, SUNDAY, HOLIDAY, AND NIGHT WORK:
No work shall be done between the hours of 6:00 p.m. and 8:00 a.m., nor on Saturday, Sunday, or legal holidays without the written approval or permission of the Engineer in each case, except such work as may be necessary for the proper care, maintenance, and protection of work already done, or of equipment, or in the case of an emergency.

GC-20. LAWS AND ORDINANCES:
The Contractor shall keep himself fully informed of all existing and current regulations of the City, county, state and national laws which in any way limit or control the actions or operations of those engaged upon the Work, or affecting the materials supplied to or by them. The Contractor shall at all times observe and comply with all applicable ordinances, laws, and regulations; and shall protect and indemnify the City and the City's employees and agents against any claims or liability arising from or based on any violations of the same.

The contractor certifies that it and all of its Subcontractors to be used in the performance of the Contract are in compliance with 25 O.S. Sec. 1313 and participate in the Status Verification System. The Status Verification System is defined in 25 O. S. Sec. 1312 and includes but is not limited to the free Employee Verification Program (E-Verify) available at www.dhs.gov/E-Verify.

The Contractor shall take the necessary actions to ensure its facilities are in compliance with the requirements of the Americans with Disabilities Act (ADA). It is understood that the program of the Contractor is not a program or activity of the City. The Contractor agrees that its program or activity will comply with the requirements of the ADA. Any costs of such compliance will be the responsibility of the Contractor. Under no circumstances will Contractor conduct any activity which it deems to not be in compliance with the ADA.

GC-21. TAXES AND PERMITS:
Unless otherwise specified in these Contract Documents, the Contractor shall pay all sales, use, and other taxes that are lawfully assessed against the City or Contractor in connection with the Work included in this Contract and shall obtain all licenses, permits, and inspections required for the Work. Contractor shall comply with all zoning ordinances of the City, as provided in the Tulsa Zoning Code, Title 42 Tulsa Revised Ordinances and conform with all zoning requirements established by the Tulsa Metropolitan Area Planning Commission and the Board of Adjustment. Contractor can call the Indian Nations Council of Governments (INCOG) at (918) 584-7526, to determine if any zoning requirements must be met.

GC-22. PROTECTION OF PROPERTY:
The protection of City, state, and government monuments, street signs, and other City property is of prime importance, and if the same be damaged, destroyed, or removed, they shall be repaired, replaced, or paid for by the Contractor.

GC-23. PATENT RIGHTS:
All fees for any patented invention, article, or arrangement that is based upon, or in any manner connected with the construction, erection, or maintenance of the Work or any part thereof embraced in the Contract and these specifications, shall be included in the price stipulated in the Contract for said Work. The Contractor shall protect and hold harmless the City against any and all demands of
such fees or claims.

GC-24. DEFENSE OF SUITS:
In case any action at law or suit in equity is brought against the City or any employer, officer, or agent thereof, for or on account of the failure, omission or neglect of the Contractor to do and perform any of the covenants, acts, matters, or things required by this Contract to be done or performed, or for injury or damage caused by negligence or willful act of the Contractor or his Subcontractors or his or their agents, or in connection with any claim or claims based on the lawful demands of Subcontractors, workmen, material men, or suppliers of machinery and parts thereof, equipment, power tools, and supplies incurred in the fulfillment of this Contract, the Contractor shall indemnify and save harmless the City and it's employees, officers, and agents, and the Engineer and any employees, officers and agents thereof, of and from all losses, damages, costs, expenses, judgements, or decrees whatsoever arising out of such action or suit that may be brought without requiring said parties to give any notice thereof.

The City may suspend payments of any sum due or to become due for work done on this Contract until such claims, suits, actions, or proceedings are final and liability has been determined. The amount of such damages or liability shall be deducted from sums due or to become due on this Contract. The City will retain the sums mentioned above until the Contractor furnishes evidence that satisfactory settlement has been made. Any action taken by the City shall not excuse the Contractor for failure to perform this Contract or bar the City from legal action to recover from the Contractor the amount of damages or liability suffered in excess of the amount retained.

The Contractor shall furnish the City with satisfactory evidence upon demand that all persons who have done work on the Contract or furnished materials for the Contract have been paid in full. If such evidence is not furnished, the amount necessary to pay the lawful claims may be retained until such evidence is furnished, or if such evidence is not furnished, the City may apply any sums retained to valid claims and charge the amounts disbursed, including the costs of any action that may be necessary to prove or disprove the claims against the Contractor.

GC-25. REMOVAL OF CONDEMNED MATERIALS AND STRUCTURES:
The Contractor shall remove from the site of the Work, without delay, all rejected and condemned materials or structures of any kind brought to or incorporated in the Work, and upon his failure to do so, or to make satisfactory progress in so doing, within forty-eight (48) hours after the service of a written notice from the Engineer ordering such removal, the condemned material or structures may be removed by the City and the cost of such removal be taken out of the money that may be due or may become due the Contractor by virtue of this Contract. No such rejected or condemned material shall again be offered for use by the Contractor under this or any other Contract under this project.

GC-26. EXTRA WORK:
If a modification increases the amount of the Work, and the added Work or any part thereof is of a type and character which can properly and fairly be classified under one or more Unit Price items of the Bid Form, then the added Work or part thereof shall be paid for according to the amount actually done and at the applicable Unit Price. Otherwise, such work shall be paid for as hereafter provided.

Claims for extra work will not be paid unless the City authorized the work covered by such claims in writing. The Contractor shall not have the right to take action in court to recover for extra work unless the claim is based upon a written order from the City. Payments for extra Work will be based on agreed lump sums or on agreed Unit Prices whenever the City and the Contractor agree upon such prices before the extra Work is started.

For the purpose of determining whether proposed extra work will be authorized, or for determining the payment method for extra work, the Contractor shall submit to the Engineer, upon request, a detailed cost estimate for proposed extra work. The estimate shall show itemized quantities and charges for all elements of direct cost. The cost shall include only those extra costs for labor and materials expended in direct performance of the extra work and may include:
(a) **Labor.** For all labor and foremen in direct charge of the specific operations, the Contractor shall receive the rate of wage (or scale) agreed upon in writing before beginning work for each and every hour that said labor and foremen are actually engaged in such work. An amount equal to fifteen (15) percent of the sum of the above items will also be paid the Contractor.

(b) **Bond, Insurance, and Tax.** For property damage, liability, and workmen's compensation insurance premiums, unemployment insurance contributions and social security taxes on the force account work, the Contractor shall receive the actual cost, to which cost no percentage will be added. The Contractor shall furnish satisfactory evidence of the rate or rates paid for such bond, insurance, and tax.

(c) **Materials.** For materials accepted by the Engineer and used, the Contractor shall receive the actual cost of such materials delivered on the Work site, including transportation charges paid by him (exclusive of machinery rentals as hereinafter set forth), to which cost ten (10) percent will be added.

(d) **Equipment.** For any machinery or special equipment (other than small tools), including fuel, lubricants and transportation costs, the use of which has been authorized by the Engineer, the Contractor shall receive the rental rates agreed upon in writing before such work is begun for the actual time that such equipment is in operations on the Work, as provided in the ODOT Subsection 109.04 (b3), to which rental sum no percentage will be added.

(e) **Miscellaneous.** No additional allowance will be made for general superintendence, the use of small tools, or other costs for which no specific allowance is herein provided.

The form on which field cost records are kept, the construction methods and the type and quantity of equipment used shall be submitted to the Engineer for approval.

Construction equipment which the Contractor has on the Work site and which is of a type and size suitable for use in performing the extra Work shall be used. The hourly rental charges for equipment, including all insurance, taxes, fuel, and operating costs, shall not exceed twelve (12) percent of the latest applicable Associated Equipment Distributors published monthly rental rates and shall apply to only the actual time the equipment is used in performing the extra Work.

When extra Work requires the use of equipment which the Contractor does not have on the Work site, the Contractor shall obtain the approval of the Engineer before renting or otherwise acquiring additional equipment. The rental charges for the additional equipment shall not exceed the latest applicable Associated Equipment Distributors published rental rates.

The Contractor shall file with the Engineer, certified lists in duplicate, of any equipment and the schedule of pay rates for common and semi-skilled labor and operators of various classes which are intended to be used in performing the Work covered by this Contract. These rates shall be subject to the review of the Engineer. This information will be used by the Engineer for computation of extra work as mentioned above; however, if the Contractor fails to file these lists with the Engineer prior to starting any Work covered by this Contract, then the Engineer's computation shall be based on average wages and rates paid on City work.

**GC-27. PAYMENT FOR CONTRACTOR'S PLANT AND MISCELLANEOUS TEMPORARY WORK:** For providing plant, tools, and equipment, and for furnishing, erecting, maintaining, and removing scaffolding and construction plant, construction roads, camps, sanitary conveniences, temporary water supply, trestles, dewatering and other temporary works, the Contractor shall receive no direct payment, but compensation for them shall be considered as having been included in the prices stipulated for the appropriate items.

GC-10
GC-28. BASIS OF PAYMENT FOR ITEMS OF WORK:
The Contractor shall be paid for all Work performed under the Contract based on the Engineer's computations of as-built quantities and the Contractor's Unit Price or Lump Sum bid per item. This payment shall be full compensation for furnishing all supplies, materials, tools, equipment, transportation, and labor required to do the Work; for all loss or damage, because of the nature of the work, the action of the elements or any unforeseen obstruction or difficulty which may be encountered in the performance of the Work, and for which payment is not specifically provided; for all expense incurred by or because of any suspension or discontinuance of all or any part of the Work; and for faithfully completing the Contract according to the Drawings and specifications and requirements of the Engineer.

GC-29. PAYMENTS:
(1) Partial: If the work is progressing in good and workmanlike manner and if the Contractor is faithfully carrying out the terms of this Contract, approximate estimates of the work done shall be made by the Engineers between the first and fifteenth of each calendar month, including labor actually performed and supplies or materials actually used or incorporated in the Work, and an allowance will be made for acceptable materials satisfactorily delivered, stored and secured on the site of the Work in such amount as can be incorporated in the Work within a reasonable time. The City shall have a lien as owner on any materials stored on the site of the Work.

Each partial estimate for payment shall contain or have attached an affidavit in the form found in this book of specifications, as required by law.

The Contractor shall submit with each partial pay estimate a complete list of vendors and suppliers with itemized purchases and invoices from each vendor. Each list shall contain the name of the contractor or Subcontractor ordering the materials or supplies, and the specific use or placement of each of the materials purchased by the City of Tulsa for this project in accordance with Article IIB of the Contract. At the direction of the Contractor, the City of Tulsa will withhold retainage in the amount of 5% on materials and supplies to be purchased under the terms of this Contract.

Each month that work is performed for which payment is due, the Contractor shall submit to the Engineer an application for such payment, provided said payment is not less than $1,000.00, and, if required, receipts or other vouchers from Subcontractors showing his payments to them shall be submitted.

Each estimate shall be of the approximate value of all work performed and materials in place or delivered to the Work site, determined as aforesaid from the beginning of this contract to the date fixed for the current estimate, from which shall be deducted five percent (5%) or a lesser amount approved by the City, and, in addition thereto, all previous payments and all other sums withheld under the foregoing provisions of this Contract, the remainder to become due and payable; after the estimate has been reviewed and signed by the Engineer the City shall pay the estimate in the regular manner in the amount determined as due unless it shall be known by the City that there is good reason under the terms of this Contract for withholding same.

When the Contractor has completed Work constituting more than fifty percent (50%) of the total Contract amount, the retainage will continue at five percent (5%) of the amount earned to date; provided, however, that the City or its duly authorized representative has determined that satisfactory progress is being made and upon approval by the Surety.

The Contractor may withdraw any part or the whole of the amount which has been retained from partial payment to the Contractor pursuant to the terms of Contract, upon depositing with or delivery to the City:
(1) United States Treasury Bonds, United States Treasury Notes, United States Treasury bills, or

(2) General Obligation Bonds of the State of Oklahoma, or

(3) Certificates of Deposit from a state or national bank having its principal office in the State of Oklahoma.

No retained amount shall be withdrawn which would represent an amount in excess of the market value of the securities at the time of deposit or of the par value of such securities, whichever is lower.

All partial estimates are subject to correction in the final estimate.

(2) Final Payment:
When this contract, in the opinion of the Engineer, shall be completely performed on the part of the Contractor, the Engineer shall proceed with all reasonable diligence to measure up the Work and shall make out the final estimate for the same, and shall, except for cause herein specified, give to the Contractor, within thirty (30) days after receiving said certificate, an order on the City for the balance found to be due, excepting therefrom such sum or sums as may be lawfully retained under any of the provisions of the Contract; PROVIDED, that nothing herein contained shall be construed to affect the rights of the City hereby reserved to reject the whole or any portion of the aforesaid Work should the said estimate and certificate be found or known to be inconsistent with the terms of this Contract or otherwise improperly given; PROVIDED, that if, in case after the work hereunder has been accepted and final payment made, it shall be discovered that any part of the Contract has not been fully performed or has been done in an improper or faulty manner, the Contractor shall immediately remedy such defect, or, in case of neglect to do so within a reasonable time after notice thereof, shall be liable for and shall pay to the City the cost ofremedying such defect or a sum equal to the damages sustained thereby, as the City shall elect, and the acceptance of and final payment for the Work shall be no bar to suit on any bond against any principal or principals, or Surety or Sureties, or both, given for the due performance of the Contract, or for the recovery of such cost or the equivalent of such damage.

The City will pay to the Contractor interest at the rate of three-fourths percent (3/4%) per month on the final payment due the Contractor. For lump sum contracts, the interest shall commence thirty (30) days after the Work under the Contract has been completed and accepted and all required material certifications and other documentation required by the Contract have been furnished the City by the Contractor, and shall run until the date when the final payment or estimate is tendered to the Contractor. For contracts bid by Unit Prices, the interest will commence sixty (60) days after the above conditions are satisfied. When contract quantities or the final payment amount is in dispute, the interest-bearing period will be suspended until the conclusion and settlement of the dispute.

GC-30. CONTRACTOR REIMBURSEMENT FOR SURETY BOND:
For contracts of $1,000,000.00 or more, the Contractor may receive reimbursement for the cost of the surety bonds after issuance of a work order. To receive reimbursement, the Contractor shall submit a standard partial payment form and affidavit, and a copy of the surety bond invoice. The final partial pay estimate will be reduced by the amount paid for surety bond reimbursement.

GC-31. RELEASE OF LIABILITY AND ACCEPTANCE:
The acceptance of the Contractor of the final payment shall operate as, and shall be a release to the City and every employee, officer and agent thereof, from all claims and liability to the Contractor for anything done or furnished for or relating to the Work, or for any act or neglect of the City or of any person relating to or affecting the Work, and, following such acceptance, no person, firm, or corporation other than the signor of this Contract as Contractor, will have any interest hereunder, and no claim shall be made or be valid, and neither the City nor any employees, officers, or agents thereof shall be liable or be held to pay any money, except as herein provided.

GC-1.2
It shall be the duty of the Engineer to determine when the Work is completed and the Contract fulfilled, and to recommend its acceptance by the City. The Work herein specified to be performed shall not be considered finally accepted until the City has accepted all the Work.

GC-32. RIGHT OF CITY TO TERMINATE CONTRACT:
If the Work to be done under this Contract shall be abandoned by the Contractor, or if this Contract shall be assigned by him otherwise than as herein provided, or if the Contractor should be adjudged bankrupt, or if a general assignment of his assets be made for the benefit of his creditors, or if a receiver should be appointed for the Contractor or any of his property; or if at any time the Engineer shall certify in writing to the City that the performance of the Work under this Contract is being unnecessarily delayed, or that the Contractor is executing the same in bad faith or otherwise not in accordance with the terms of the Contract; or if the work be not substantially completed within the time named for its completion, or within the time to which such completion date may be extended, then the City may serve written notice upon the Contractor and his Surety of said City's intention to terminate this Contract, and unless within five (5) days after service of such notice upon the Contractor, a satisfactory arrangement is made for the continuance of the Contract, this Contract shall cease and terminate. In the event of such termination, the City shall immediately serve notice upon the Surety and Contractor, and the Surety shall have the right to take over and complete the Work, provided, however, that if the Surety does not commence performance thereof within fifteen (15) days from the date of said notice of termination, the City may take over the Work and perform same to completion, by Contract or otherwise, for the account and at the expense of the Contractor, and the Contractor and his Surety shall be liable to the City for any and all excess cost sustained by the City by reason of such performance and completion. In such event the City may take possession of and utilize in completing the Work, all such materials, equipment, tools, and plants as may be on the site of the Work and necessary therefor. The Contractor shall not receive any other payment under the Contract until said Work is wholly finished, at which time, if the unpaid balance of the amount to be paid under the Contract shall exceed the expense incurred by the City in finishing the Work as aforesaid, the amount of the excess shall be paid to the Contractor, but if such expense shall exceed the unpaid balance, the Contractor shall pay the difference to the City.

GC-33. ADMINISTRATIVE COSTS AND FEES:
Cash Improvements - In the event the improvements are to be paid for in cash, the costs and fees for publication, engineering, filing, recording, abstracting, acquisition of easements, flushing, and pipe testing, shall be paid by the City unless otherwise provided for in these Contract Documents.

Assessment Improvements: In the event the improvements are to be paid for by the issuance of special assessment bonds, the costs and fees for publication, engineering, filing, recording, abstracting, acquisition of easements, flushing, pipe testing, and other authorized costs shall be added to the contract price and paid for in the same manner as the other Work included in this Contract. The Contractor shall pay the City the amount of said charges before the execution and delivery of the special assessment bonds or other payments. If the Contractor fails, neglects, or refuses to pay said charges within thirty (30) days after the bonds are ready for delivery, he shall pay the City interest at the rate of seven percent (7%) per annum and shall be liable for same in a civil suit. The Contractor shall pay the pipe testing fees directly to the testing laboratory.

GC-34. PAYMENT OR ACCEPTANCE NOT A WAIVER BY CITY:
Neither acceptance by the City or the Engineer or any employee of either nor any order by City for the payment of money, or the payment thereof, nor any taking of possession by City, nor the granting of any extension of time, shall operate as a waiver of any rights or powers of the City hereunder, and in the event that after the Work hereunder has been accepted and final payment made, it should be discovered that any part of this Contract has not been fully performed, or has been done in a faulty or improper manner, the Contractor shall immediately remedy such defect, or in the event of neglect to do so within a reasonable time after notice thereof, shall be liable for and shall pay to City the cost of remedying such defect, or a sum equal to the damage caused thereby, as City may elect. The acceptance of the Work or final payment therefor shall be no bar to suit against the Contractor or Surety, or both.
GC-35. CONTRACTOR’S OBLIGATION AFTER ACCEPTANCE:
Contractor further agrees, without cost other than is specially provided for in this Contract, at any and all times during one (1) year next following the completion and final acceptance of the Work embraced in this Contract, without notice from City, to repair or rework any work that fails to function properly due to defective material or workmanship and to indemnify, save harmless and defend the City from any and all suits and actions of every description brought against City for, or on account of injuries or damages alleged to have been received or sustained by any party or parties by reasons of, or arising out of the failure of Contractor to repair or rework any work where such failures have occurred, which said injuries or damages are alleged to have been received or incurred within one (1) year from the final acceptance of the Work hereunder, and to pay any and all judgements that might be rendered against City in any suits and actions, together with such expenses or attorney fees expended or incurred by City in the defense thereof, and Contractor hereby expressly waives any notice that might by law be required to be given to them by City of any defect, break, settling, or failure or of any other condition that might be the cause of injury or damage to any person on account of which a claim or suit might be made or filed against City, or a judgement taken for damages against City. It is expressly agreed that the acceptance of the Work by City shall constitute no bar against any person injured or damaged by the failure of the Contractor to perform all of his covenants and agreements hereunder from maintaining an action against the Contractor, or against City from enforcing its rights against the Contractor hereunder.

GC-36. NOTICES:
Any notices or other communications hereunder may be given to Contractor at the address listed in the Proposal, to the Surety at the office of the Attorney-in-Fact signing the bond or at Surety’s home office address on file with the Insurance Commissioner of the State of Oklahoma, and to City in care of the Deputy Director of Public Works, or at such other place as may be designated in writing. The delivery to such address, or depositing in any mailbox regularly maintained by the Post Office, of any notice, letter, or other communication to the Contractor, shall be deemed sufficient service thereof, and the date of said service shall be the date of such delivery or mailing.

GC-37. RELATION TO OTHER CONTRACTORS:
Nothing herein contained and nothing marked upon the Drawings shall be interpreted as giving the Contractor exclusive occupancy of the territory or right-of-way provided. The City and its employees, officers, and agents for any just purpose, and other contractors of the City for any purpose required by their respective contracts, may enter upon or cross this territory or occupy portions of it or take materials therefrom as directed or permitted. When two or more contracts are being executed at one time on the same or adjacent land in such manner that the work on one contract may interfere with the work on another, the Engineers shall decide which contractor shall cease work and which shall continue, or whether the work on both contracts shall progress at the same time and in what manner. When the territory of one contract is the necessary or convenient means of access for the transportation or movement of men, machines, or appliances for the execution of another contract, such privilege of access or any other reasonable privilege may be granted by the Engineers to the contractor desiring it, to the extent, amount, in the manner and at the time permitted. Any decision regarding the method or time of conducting the work or the use of the territory shall not be made the basis of claims for delay or damage except as otherwise stipulated. The Contractor shall not cause any unnecessary hindrance or delay to any other contractors on the premises, and shall bear all damages done to the work of such other contractors by him or by his employees.

GC-38. PARTIAL OCCUPANCY AND USE:
The City, upon advance written notification to the Contractor, shall have the right to occupy and use any completed or partially completed portions of the Work site when such occupancy and use are in the City’s best interest, notwithstanding completion of the entire project.

Such partial occupancy and use shall be upon the following terms:
a. The Engineer shall make an inspection of the portion or portions of the Work concerned, and report to the City his findings as to the acceptability and completeness of the Work. The Engineer's report shall include a list of items to be completed or corrected before final payment.

b. The City, upon acceptance of the Engineer's report, shall give written notice to the Contractor of the City's intention to occupy and use said portions of the Work site. The City's notice shall include a copy of the Engineer's report, shall clearly identify the portions of the Work site to be occupied and used, and shall establish the date of said occupancy and use.

c. From the date thus established, the City shall assume all responsibilities for operation, maintenance, and the furnishing of water, gas, and electrical power for the portions of the Work site thus occupied and used. The City shall have the right to exclude the Contractor from those portions of the Work site but shall provide the Contractor reasonable access to complete or correct necessary items of Work.

d. The one year guarantee required by the General Conditions shall not begin until completion and final acceptance of the entire project, except as to any items of mechanical or electrical equipment such as pumps, blowers, process equipment, instrumentation, controls, metering equipment, heating, and ventilating equipment and similar items having movable or operable components, and any of which are thus used by the City. For said equipment, the one-year warranty shall start from the date established in the written notice from the City.

e. Occupancy or use of any space in the Work site shall not constitute acceptance of Work not performed in accordance with the Contract, nor relieve the Contractor of liability to perform any Work required by the Contract but not completed at the time of said occupancy and use.

f. The Contractor shall not be held responsible for normal wear and tear or damage resulting from said occupancy, except to the extent that such damage is covered by the one-year guarantee.

g. The partial occupancy and use of any portions of the Work site by the City shall not constitute grounds for claims by the Contractor for release of any amounts retained from payments under the provisions of the Contract. The retained amounts will not be due until completion of the entire project for final acceptance and final payment, as set forth in the General Conditions.
SPECIAL

PROVISIONS
1. Successful Contractor shall return fully executed contract documents (including bonds and insurance) to the City of Tulsa, Contract Administration Section, Room N-103, 2317 South Jackson Avenue within two (2) weeks after bid opening.

2. If the successful Contractor can provide proper bonds and insurance and the contract is executed, the Pre-Construction Conference for this project will be held within eight (8) weeks after bid opening.
SPECIAL PROVISIONS

INSURANCE REQUIREMENTS

In reference to Ordinance No. 24616 Adoption of State Specification for Highway Construction, Section 107.12 shall be modified as follows:

The CONTRACTOR (and any subcontractors) shall carry and keep in force during this Contract, policies of insurance issued by an insurer authorized to transact business in Oklahoma in minimum amounts as set forth below or as required by the laws of the State of Oklahoma. The CONTRACTOR shall also furnish an Owner’s Protective Policy in the same amounts naming the City of Tulsa as the assured, issued by the same insurance company as the CONTRACTOR’S liability coverage and indemnifying the City of Tulsa against any and all actions, claims, judgments or demands arising from injuries of any kind and character sustained by any person or persons because of work performed by the CONTRACTOR.

General Liability Insurance with a bodily injury and property damage combined single limit of not less than $1,000,000.00 for each occurrence.

Employer’s Liability and Workmen’s Compensation in the amounts as required by law.

The CONTRACTOR shall provide proof of such coverage:

(a) By providing Certificate(s) of Insurance prior to the execution of this contract; and

(b) By submitting updated Certificate(s) of Insurance with each and every subsequent request for payment. The Certificate(s) should show that the policies are current and should be dated within 30 days of payment request.

The CONTRACTOR shall not cause any required insurance policy to be cancelled or permit it to lapse. If the CONTRACTOR cancels, allows to lapse, fails to renew or in any way fails to keep any required insurance policy in effect, the City will suspend all progress and/or final payments for the project until the required insurance is obtained. Further, a CONTRACTOR who fails to keep required insurance policies in effect may be deemed by the City to be in breach of contract, ineligible to bid on future projects, and/or ineligible to engage in any new contracts.

The Contractor shall execute and furnish a Statutory Bond for the protection of laborers, mechanics, and material men in a sum equal to one hundred percent (100%) of the contract price.

The Contractor shall execute and furnish a Performance Bond in a sum equal to one hundred percent (100%) of the contract price.

The Contractor shall execute and furnish a Maintenance Bond in a sum equal to one hundred percent (100%) of the contract price.

Prior to doing blasting, the Contractor shall furnish a Certificate of Insurance, which shall certify that any damage caused by blasting is within the coverage of the Contractor’s liability insurance to the full limits thereof.

All bonds and insurance must be executed by a company licensed to do business in the State of Oklahoma and must be acceptable to the City.
SPECIAL PROVISIONS

ENVIRONMENTAL ISSUES

1.1 ENVIRONMENTAL ISSUES

A. Contractor shall immediately report to Owner (City of Tulsa):
   1. Any environmental issue, whether observed, uncovered, exposed, caused or created;
   2. Any activity, action or failure to act, which may be causative of increased environmental liability, degradation of the environment, or that could adversely affect or impact human health and/or safety.

B. No action by Owner shall be deemed to relieve Contractor of these requirements.

C. All Work performed and all Work subcontracted shall comply with all Local, State and Federal laws and regulations.

D. Disposal of any material, including but not limited to waste, excess, spoil, or overburden, shall be done in a manner to comply with any and all Local, State and Federal laws and regulations.

END OF SECTION
SPECIAL PROVISIONS

GEOTECHNICAL REPORTS

1.1 GEOTECHNICAL REPORTS

A. A Geotechnical investigation report has been provided by the Owner for the sole purpose of guidance and recommendations for the design of this Project.

B. The Geotechnical report is NOT included as a part of the Contract Documents. However, for reference only, a copy of the report may be viewed and/or obtained from the office of the Architect/Engineer during the bidding process.

END OF SECTION
SPECIAL PROVISIONS
OWNER ALLOWANCE

The "Owner Allowance" may be used for various work and miscellaneous items not specifically identified in the Contract Documents with the following provisions:

A. The allowance shall be used for cost of design and construction, including all materials, labor, equipment, profit and overhead, of work items not specifically identified in the Construction Documents, or included in original pay items bid for the contract.

B. The allowance shall be utilized only at the discretion of the City of Tulsa. Any balance remaining at the completion of the Project will be retained by the City of Tulsa.

C. The Contractor shall provide, to the City of Tulsa, a written request for the use of any allowance, including a schedule of values and associated backup information, including validity of need, materials, labor, equipment, and time required to perform the associated work.

Contractor shall proceed with the allowance work only after receiving written permission from the City of Tulsa. Proceeding with associated allowance work without written permission from the City of Tulsa will be at the Contractor's sole expense.
SPECIAL PROVISIONS

SUBSTANTIAL COMPLETION

1.1 SUBSTANTIAL COMPLETION

A. Re: General Conditions

B. Substantial Completion shall mean; the time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of the Engineer of Record, City Special Projects, City Field Engineering, and the User Group/Tenant are in agreement that the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially complete" as applied to all or part of the Work refer to Substantial Completion thereof.

C. When Contractor considers the entire Work ready for its intended use Contractor shall notify the Engineer of Record, Owner (City Special Projects, City Field Engineering), and User Group/Tenant in writing that the entire Work is substantially complete (except for items specifically listed by Contractor as incomplete) and request the Engineer of Record issue a certificate of Substantial Completion.

D. Promptly after Contractor’s notification, Engineer of Record, Owner (City Special Projects, City Field Engineering), and User Group/Tenant shall make an inspection of the Work to determine the status of completion. If the Engineer of Record does not consider the Work substantially complete, Engineer of Record will notify Contractor in writing giving the reasons therefor.

E. If Engineer of Record considers the Work substantially complete, Engineer of Record will deliver to Owner a tentative certificate of Substantial Completion which shall fix the date of Substantial Completion. There shall be attached to the certificate a tentative list of items to be completed or corrected before final payment.

F. Final Inspection: Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer of Record will promptly make a final inspection with Owner (City Special Projects, City Field Engineering) and User Group/Tenant and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

END OF SECTION
SPECIAL PROVISIONS

CITY OF TULSA PROJECT SECURITY

1.1 CITY OF TULSA PROJECT SECURITY

A. All employees of Contractor that will be on site will be required to register with the City of Tulsa Construction Manager and will be issued an identification badge specific to this project that must be worn for access to the project and to work on site. Visitor badges will be issued for persons temporarily on site such as material delivery persons.

B. The requirements for Project Security at all times are as follows: Per Oklahoma State law O.S. Title 57, §§583-584, anyone required to register as a sex offender do so with the City of Tulsa Construction Manager, all employees must be legal citizens of the U.S./or have current work visa. All employees and must have valid identification for background investigation, which includes U.S. Driver’s license, Social Security card, birth certificate, passport, and/or INS card. The Contractor must certify to the City of Tulsa Construction Manager that they have not employed any person on this site that does not meet these requirements.

C. The requirements for project security once the building shell is in place, the building closed in, and indoor work commences are as follows: No employees that have felonies within ten years; note, any misdemeanors or felonies within twenty years are subject to scrutiny; No employees that have current criminal proceedings regarding sex offenses, acts of violence, fraud, embezzlement, and/or burglaries; and No employees with outstanding warrants. All employees of Contractor on site will be required to have an Oklahoma State Bureau of Investigation Criminal History Record Information check processed and on file with this Contractor. This Contractor shall be responsible for the expense of said background checks as part of this package. The Contractor must certify to the City of Tulsa Construction Manager that they have not employed any person on this site that does not meet the requirements.

D. There is no cost for badges or background checks as long as badges are returned after the project is completed. However if a badge is issued and subsequently lost, there is then a $15 replacement fee charged before a new badge is issued.

END OF SECTION
SPECIAL PROVISIONS

REMOVAL OF CASTINGS

1.1 REMOVAL OF CASTINGS

A. All water, sanitary sewer, and storm sewer manhole castings, lids, frames, curb hoods, grates, hydrants, valves, and other fittings removed as part of any construction project are property of the City of Tulsa. Contractor will not take ownership.

B. All storm sewer and sanitary sewer castings shall be salvaged and delivered by the Contractor to the Underground Collections North Sewer Base Stockyard at 9319 East 42nd Street North. Contractor will coordinate the return of such items with the Stockyard personnel at (918)669-6130.

C. All hydrants, valves, and other fittings from abandoned water mains shall be salvaged and delivered by the Contractor to the South Yard at 2317 South Jackson Avenue. Contractor will coordinate the return of such items with the South Yard personnel at (918)596-9401.

END OF SECTION
SPECIAL PROVISIONS

UTILITY RELOCATIONS AND DESIGN ISSUES

1.1 UTILITY RELOCATIONS AND DESIGN ISSUES

A. It is the intent of this specification to provide no more than seventy five (75) calendar days due to delays caused by required utility relocations and required design clarifications. Should the Contractor be delayed in the final completion of work by any utility relocation or design issue, additional days as determined by the Engineer shall be granted by the City. However, the Contractor shall give the Engineer notice in writing of the cause of the delay in each case on the Extension of Time Request Form enclosed in these documents, and agrees that any claim shall be fully compensated for by the provisions of this specification to complete performance of the work. An adjustment will not be made to the Contract time bid for incentive purposes.

B. Any time granted for utility relocations or design issues up to (75) calendar days will be in addition to the number of days shown in the Proposal for computation of disincetive and liquidated damages.

END OF SECTION
SECTION 011000

SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Project information.
4. Purchase Order Work (P.O.)
5. Access to site.
6. Coordination with occupants.
7. Work restrictions.
8. Specification and Drawing conventions.

B. Related Documents and Requirements:
1. Drawings and general provisions of the Contract, including City of Tulsa Bidding Documents, General, Supplementary Conditions, Special Provisions and Division 01 Specification Sections, apply to this Section.
2. Section 012300 – Alternates, for complete description of Base Bid Work and each Alternate and procedures for incorporation into the Work.
3. Section 015000 - Temporary Facilities and Controls, for limitations and procedures governing temporary use of Owner's facilities.

1.2 PROJECT INFORMATION

A. Project Identification: Tulsa Police Department Heliport.

1. Project Number: SP 22-7
2. Project Location: 6066 East 66th Street North, Tulsa, OK 74117

B. Owner: City of Tulsa.

1. Project Manager: Max Wells, AIA, CCS.
2. Phone: 918.596.9404

C. Architect: BKL, Inc.

1. Contact: Jennifer Hammock, AIA.
2. Address: 1623 E 6th Street, Tulsa, OK 74120
3. Phone: 918.835.9588
1.3 CORRELATION AND INTENT OF THE CONTRACT DOCUMENTS

A. The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

B. Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

C. Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

D. Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

E. Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information (RFI) in such form as the Architect and Owner may require.

1.4 GEOTECHNICAL REPORT

A. A Geotechnical Investigation Report has been prepared for the Owner for the sole purpose of design guidance and recommendations for this Project.


C. For Reference only: A copy of the Geotechnical Report may be obtained from the office of the Architect/Engineer or City of Tulsa Project Manager during the bidding process.

D. Geotechnical Report prepared by: Terracon Consultants, Inc. 9522 E 47th Pl, Tulsa, OK 74145

1. Terracon Project Number: 04225042
2. Date: November 15, 2022
3. Phone: 918.250.0461

E. If Contractor believes that any subsurface or physical condition that is uncovered differs materially from that shown or indicated in the Contract Documents or from conditions ordinarily encountered, then Contractor shall promptly notify the City and Architect/Engineer in writing about such
condition. Contractor shall not further disturb such condition until receipt of written direction to proceed.

1.5 PURCHASE ORDER WORK (P.O.)

A. General: City has negotiated Purchase Contracts (P.O.’s) with suppliers of material, equipment and installation services, to be incorporated into the Work. Contractor’s responsibilities for oversee, coordination and preparation for P.O. items to be incorporated into the Work are the same as if Contractor had negotiated purchase contracts himself.

B. Purchase Contracts Information:

1. TPD Heliport IT Networking Infrastructure: P.O. #231836
   a. Purchase Contract Firm: Presidio Networked Solutions, 6120 S Yale Ave, Suite 110. Contact: Roy Hackett or Linda Beaver Phone: (918)770-4223
   b. Purchase Contract Scope: Miscellaneous equipment for network switching, etc. per Presidio quote.
   c. A copy of the Presidio quote and P.O. may be obtained from the office of the City of Tulsa Project Manager during the bidding process.

2. TPD Heliport Communication and Fiber Optics: P.O. #231835
   a. Purchase Contract Firm: LynxSystems, LLC, 11415 E 19th Street, Suite A, Tulsa, OK 74128, Contact: Accounting@lynxsystemsusa.com, Phone: (918)728-6000
   c. A copy of the Presidio quote and P.O. may be obtained from the office of the City of Tulsa Project Manager during the bidding process.

3. TPD Heliport Access Control and Video Surveillance Camera Systems: P.O. # 232263
   b. Purchase Contract Scope: TPD Heliport Communication and Fiber Optic installation including upgrade of communication systems for TPD Academy and Firing Range as per LynxSystems, LLC proposal SOW-COT-TPD Academy-Heliport-2023-056 (Fiber Option #1 omitted.)
   c. A copy of the JCI quote and P.O. may be obtained from the office of the City of Tulsa Project Manager during the bidding process.

C. P.O. work will be conducted simultaneously with work under the Contract.

D. Cooperate fully with City’s P.O. Vendors so work on those purchase orders may be carried out smoothly, without interfering with or delaying work under this Contract or other contracts.
E. Perform work specifically identified as work by others or work excluded from the P.O. vendor quotes and as specified in the Contract Documents.

1.6 ACCESS TO SITE

A. General: Contractor shall have full use of Project site for construction operations during construction period and hours of operations. Contractor's use of Project site may be limited at times by TPD Academy operations.

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

   a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
   b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

1.7 COORDINATION WITH OCCUPANTS

A. City Occupancy: Tulsa Police Department will occupy portions of the property during entire construction period, with the exception of areas under construction. Cooperate with TPD during construction operations to minimize conflicts and facilitate TPD usage. Perform the Work so as not to interfere with TPD operations. Maintain existing access roads and gates unless otherwise indicated.

1. Maintain access to existing roads and gates and other adjacent occupied or used facilities. Do not close or obstruct traffic to and from or other occupied or used facilities without written permission from TPD.
2. Provide not less than 72 hours notice to TPD of activities that will affect Police operations.
1.8 WORK RESTRICTIONS

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

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.

B. On-Site Work Hours: Limit work at the Project Site to working hours as specified in General Conditions.

C. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:

1. Notify Owner not less than two days in advance of proposed utility interruptions.
2. Obtain Owner's written permission before proceeding with utility interruptions.

D. Security: Contractor to coordinate security requirements with the City of Tulsa Representative.

E. Employee Identification: City will provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.

1.9 SPECIFICATION AND DRAWING CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.

B. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.

C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on Drawings to identify materials and products:

1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
2. Abbreviations: Materials and products are identified by abbreviations published as part of the U.S. National CAD Standard and scheduled on Drawings.
3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 012300

ALTERNATES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for alternates.

1.2 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if the Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.3 PROCEDURES

A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Execute accepted alternates under the same conditions as other work of the Contract.

C. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate 1 – Fencing and Gates
   • Base Bid – Fencing and gates are not included in the base bid. Existing fence at building location is to be removed.
   • Add Alternate – Provide new fencing and gates per documents. Keep section of existing fence on south side of building per plans.

B. Alternate 2 – Sodding
   Base Bid – Seed is to be provided in base bid per plans.
   Add Alternate – Sodding is to be provided as an alternate in lieu of seeding.

C. Alternate 3 – Exterior Finishes
   • Base Bid – Rigid frame at gridline 9 is to be exposed and painted. Refer to all base bid porch details included in drawings. All exterior wall panels at hangar and office are to be pre-finished metal panels with color 1 at top and color 2 at wainscot. Contractor to coordinate slab dimensions accordingly.
   • Add Alternate – Rigid frame at gridline 9 is to be clad in ACM metal panels as specified and per drawing details. Wainscot at office is to be brick as shown on drawings. Contractor to coordinate slab dimension and brick ledge.

D. Alternate 4 – Planning Room Glass Wall
   • Base Bid – Provide Planning Room 111 as shown on sheet A1-02.
   • Add Alternate – Provide Planning Room 111 as shown on sheet A5-01 and specification 102215.

E. Alternate 5 – Generator
   • Base Bid – Provide all electrical per sheet E0-10 for future installation of generator.
   • Add Alternate – Provide generator and concrete pad to provide a complete and operational generator package per the drawings and specifications.

F. Alternate 6 – Polycarbonate Glazing System
   • Base Bid – Provide all aluminum windows with glazing as shown on drawings.
   • Add Alternate – In lieu of window system W8, provide a polycarbonate system per specification 088400 in the same size and location.

G. Alternate 7 – Flag Pole
   • Base Bid – Flag pole and lighting fixtures are not included in base bid. Power and conduit for future lighting is included.
   • Add Alternate – Provide flag pole and lighting per documents.

H. Alternate 8 – HVLS Fans
   • Base Bid – Provide all power and PEMB framing required to install two HVLS fans in the future.
• Add Alternate – Provide two HVLS fans, power, framing, and accessories per documents.

I. Alternate 9 – Fencing and Gates
• Base Bid – Fencing and gates are not included in the base bid.
• Add Alternate – Provide fencing and gates per documents.

J. Alternate 10 – Sodding
Base Bid – Seed is to be provided in base bid per plans.
Add Alternate – Sodding is to be provided as an alternate in lieu of seeding.

END OF SECTION
SECTION 012500

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Work includes:
   1. Product options and substitutions.
   2. Administrative and procedural requirements for Substitutions for Cause.
   3. Administrative and procedural requirements for Substitutions for Convenience, also consider Substitutions Prior to Bidding.

1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

   1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
   2. Substitutions for Convenience or Substitution prior to bidding: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.3 ACTION SUBMITTALS

A. Substitution Requests: Submit electronic copy of each request for consideration with standard CSI substitution request form. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

   1. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

      a. Statement indicating why specified product or fabrication or installation method cannot be provided, if applicable.
      b. Coordination of information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors that will be necessary to accommodate proposed substitution.
      c. Detailed comparison of significant qualities of proposed substitutions with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes, such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.
f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects, with project names and addresses as well as names and addresses of architects and owners.
h. Material test reports from a qualified testing agency, indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project, from ICC-ES.
j. Detailed comparison of Contractor's construction schedule using proposed substitutions with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents, except as indicated in substitution request, is compatible with related materials and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

2. Owner's Representative's Action: If necessary, Owner's Representative will request additional information or documentation for evaluation within reasonable number of days of receipt of a request for substitution. Owner's Representative will notify Contractor of acceptance or rejection of proposed substitution within reasonable number of days of receipt of request, or of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Owner's Representative's Supplemental Instructions for minor changes in the Work.

1.4 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

B. To the greatest extent possible, provide products, materials and equipment of a singular generic kind and from a single source.

C. Where more than one choice is available as options for Contractor's selection of a product or material, select an option which is compatible with other products and materials already selected.

1.5 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.
B. Requirements Included:
1. The Contract is based on the standards of quality established in the Contract Documents.
2. All products proposed for use, including those specified by required attributes and performance shall require approval by the Owner’s Representative before being incorporated into the work.
3. Do not substitute materials, equipment or methods unless substitution has been specifically approved for this work by the Owner’s Representative and Owner.

C. Substitutions:
1. Only written requests with complete data for evaluation will be considered.
   a. Request must be received at least 10 calendar days prior to the bid date.
2. For bidding purposes; base all bids on materials, equipment and procedures specified or approved by Addenda.
3. Addenda listing approved substitutions will be published.
4. No verbal or written approvals other than by Addenda will be valid.
5. After end of that period, requests will only be considered only in case of product unavailability or other conditions beyond the control of Contractor.
6. Submit separate request for each substitution on with the attached form to the Owner’s Representative.
7. The Contractor shall support each request with;
   a. Product identification, including manufacturer's name.
   b. Manufacturer’s literature, marked to indicate specific model, type, size, and options to be considered:
      1) Product description.
      2) Performance and test data.
      3) Reference standards.
      4) Difference in power demand, air quantities, etc.
      5) Dimensional differences from specified unit.
   c. Full size samples if requested.
      1) Field Engineer reserves right to retain sample until physical units are installed on project for comparison purposes.
      2) Requester pay all costs of furnishing and return of samples.
      3) Field Engineer is not responsible for loss of, or damage to, samples.
   d. Name, address and phone numbers of at least 5 similar projects and name and phone number of Owner’s representative that Field Engineer can contact; to discuss product, installation, and field performance data.
   e. Itemized comparison of the propose substitution with product specified; list significant variations.
   f. Data relating to changes in construction schedule.
   g. Any effect of substitution on separate contracts.
   h. List of changes required in other work or products.
   i. Accurate cost data comparing proposed substitution with product specified.
   j. Amount of net change to Contract Sum.
   k. Designation of availability of maintenance services, sources of replacement materials.
8. In making request for substitution, Contractor and suppliers represent:
   a. Has personally investigated proposed product or method, and have determined that it is equal or superior in all respects to that specified, and that it will perform intended function.
   b. Will provide same or better warranty for substitute item as for product or method specified.
c. Will coordinate installation of accepted substitution into Work, to include building modifications if necessary, making such changes as may be required for Work to be complete in all respects.

d. Certify cost data presented is complete and includes all related cost except any redesign cost of Owner’s Representative.

e. Waive all claims for additional costs or time related to substitution which subsequently become apparent or caused by substitution.

f. Will pay all Owner’s Representative redesign cost and other costs caused by substitution.

g. Proposed substitution is in full compliance with applicable code requirements.

h. Acknowledge acceptance of these provisions in request.

9. Substitute products shall not be ordered or installed without written acceptance of Owner's Representative and Owner.

10. Owner's Representative will recommend acceptability of proposed substitutions.

D. Owner’s Representative Duties:
1. Review Contractor’s request for substitutions with reasonable promptness.
2. Recommend to Owner acceptance or rejection of request.
3. Notify Contractor, in writing, of decision to accept or reject requested substitution.

1.6 REJECTION OF SUBSTITUTIONS

A. Substitutions will not be considered for acceptance when:
1. They are indicated or implied on shop drawings or product data submittals without a formal request from Contractor.
2. They are requested directly by a subcontractor or supplier.
3. Acceptance will require substantial revision of Contract Documents.
4. They are not submitted in accord with this document.
5. Acceptance will require substantial revision of Contract Documents, or building spaces.
6. Request for substitution does not indicate specific item for which request is submitted.
7. Request form is not properly executed.
8. Acceptance of manufacturer only will not be made.

1.7 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than 30 calendar days prior to time required for preparation and review of related submittals.
1. Substitutions for Cause will only be considered in the case of product unavailability or other conditions beyond the control of Contractor.

2. Conditions: Owner's Representative will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner’s Representative will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Owner’s Representative will consider requests for substitution for convenience if received 10 calendar days prior to bidding. Substitutions for Convenience will only be received prior to bidding. Requests received after that time will not be considered.

1. Conditions: Owner’s Representative will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Owner’s Representative will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Owner's Representative for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.
f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 013300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Submittal schedule requirements.
   2. Administrative and procedural requirements for submittals.

1.2 DESCRIPTION

A. See General Conditions and Supplementary Conditions for additional requirements.

B. General Contractor or Subcontractors may require submittals for coordination purposes even if not required by Contract Documents for review.

C. Submittals which are not required by Contract Documents may be returned to Contractor without review or action by Owner’s Representative.

1.3 DEFINITIONS

A. Shop Drawing submittals are drawings to scale, diagrams, schedules and other data specially prepared for Work by Contractor or a Subcontractor, sub-subcontractor, manufacturer, supplier or distributor to illustrate some portion of Work.

B. Product Data submittals are illustrations, standard schedules, performance charts, instructions, brochures, color charts, performance curves, diagrams, test data and other information furnished by Contractor to illustrate material, product, equipment or system for some portion of Work.

C. Project Information submittals are items pertaining to quality control and Owner information which do not require review or response by Owner’s Representative and are to be retained for project file only.
   1. Examples include but are not limited to:
      b. Certifications.
      c. Design calculations.
      d. Coordination drawings.

D. Contract Closeout Information submittals are items pertaining to quality control and Owner information, which are required at Substantial or Final Completion, and do not require review or response by Owner’s Representative.
1. Examples:
   a. Pre-occupancy test reports.
   b. Warranties.
   c. Operation and maintenance data.
   d. Owner instruction reports.

E. Shop Drawings, Product Data, Samples, Project Information and similar submittals are not Contract Documents.
1. Purpose of submittal is to demonstrate for those portions of Work, for which submittals are required, the way Contractor proposed to conform to information given and design concept expressed in Contract Documents.

F. "Base" manufacturer:
1. Manufacturer listed as "Base" in Part 2 of specification section.
2. Manufacturer listed as "Base" is the particular manufacturer of a specific product used as the basis of design.

G. "Optional" manufacturer:
1. Manufacturer listed as "Optional" in Part 2 of specification section.
2. More than one manufacturer may be listed as "Optional".
3. Manufacturers listed as "Optional" are particular manufacturers of products similar to the specific product used as the basis of design.
4. Listing of manufacturer as "Optional" indicates acceptance of that manufacturer as supplier of the product, but only if that product complies with the specified requirements, including the salient qualities provided by "Base" manufacturer's product.
5. Salient qualities include but are not necessarily limited to following:
   a. Purpose and function.
   b. Material and finish.
   c. Strength, durability and other applicable physical properties.
   d. Compatibility and performance attributes for indicated application.
   e. Capacity and operating characteristics, where applicable.
   f. Size and configuration to extent required for fit with adjoining and adjacent conditions and within spatial limitations.
   g. Appearance, including exposed dimensions, profile, texture, pattern and color, where visible to personnel in a finished space or from exterior.
6. Contractor is responsible for costs to provide any, dimensional, operational, structural, or utility or other related adjustments to fit an "Optional" manufacturer's product into the Work.

H. Action Submittals: Written and graphic information and physical samples that require Owner's Representative's responsive action. Action submittals are those submittals indicated in individual Specification Sections as "action submittals."

I. Informational Submittals: Written and graphic information and physical samples that do not require Owner's Representative's responsive action. Submittals may be rejected for not complying with requirements. Informational submittals are those submittals indicated in individual Specification Sections as "informational submittals."
1.4 SUBMITTAL SCHEDULE

A. Submittal Schedule: Submit, as an action submittal, a list of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, ordering, manufacturing, fabrication, and delivery when establishing dates. Include additional time required for making corrections or revisions to submittals noted by Owner’s Representative and additional time for handling and reviewing submittals required by those corrections.

1.5 TRANSMITTAL - GENERAL

A. Contractor is responsible for making submissions.
   1. Submit to address indicated.
   2. Submittal shall include items from one specification section only.
   3. Transmit items with Submittal Transmittal form included in this Section or supplied by Owner’s Representative.
   4. Contact Owner’s Representative for copy made for Project.
   5. Submittal Number.
   6. Indicate Project name, description of submitted items or systems and manufacturer.
   7. Indicate approval and sign in appropriate space.

1.6 SUBMITTAL FORMATS

A. Submittal Information: Include the following information in each submittal:
   1. Project name.
   2. Date.
   3. Name of Owner’s Representative.
   4. Name of Contractor.
   5. Name of firm or entity that prepared submittal.
   6. Names of subcontractor, manufacturer, and supplier.
   7. Unique submittal number, including revision identifier.
      a. Identify each submittal using applicable 6 digit specification Section number.
      b. After Section number indicate sequence number, e.g., first submittal of Section 033450 series would be numbered “033450-1”, next would be “033450-2”, etc.
      c. If returned for re-submission, add a designation character, e.g., second submission would be “03450-1-2”, third would be “03450-1-3”.
   8. Category and type of submittal.
   10. Number and title of Specification Section, with paragraph number and generic name for each of multiple items.
   11. Drawing number and detail references, as appropriate.
   12. Indication of full or partial submittal.
   13. Location(s) where product is to be installed, as appropriate.
   14. Other necessary identification.
   15. Remarks.
   16. Signature of transmitter.

B. Options: Identify options requiring selection by Owner’s Representative.
C. Deviations and Additional Information: On each submittal, clearly indicate deviations from requirements in the Contract Documents, including minor variations and limitations; include relevant additional information and revisions, other than those requested by Owner’s Representative on previous submittals. Indicate by highlighting on each submittal or noting on attached separate sheet.

D. Paper Submittals:

1. Place a permanent label or title block on each submittal item for identification; include name of firm or entity that prepared submittal.
2. Provide a space approximately 6 by 8 inches on label or beside title block to record Contractor's review and approval markings and action taken by Owner’s Representative.
3. Action Submittals: Submit one paper copy of each submittal unless otherwise indicated. Owner’s Representative will return one copy.
4. Informational Submittals: Submit one paper copies of each submittal unless otherwise indicated. Owner’s Representative will not return copies.

E. PDF Submittals: Prepare submittals as PDF package, incorporating complete information into each PDF file. Name PDF file with submittal number.

1.7 SUBMITTAL PROCEDURES

A. Provide information required for complete review of each item in one submittal.

B. Do not highlight pertinent information with markings that turn opaque or will not scan or reproduce on electrostatic copies.

C. Do not submit information on a portion of a submittal.

D. Prepare and submit submittals required by individual Specification Sections. Types of submittals are indicated in individual Specification Sections.

E. Email: Prepare submittals as PDF package, and transmit to Owner’s Representative by sending via email. Include PDF transmittal form. Include the following information in email subject line.
   a. Project Name and Number
   b. Number and title of Specification Section
2. Paper: Prepare submittals in paper form, and deliver to Owner’s Representative.

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

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Submit all submittal items required for each Specification Section concurrently unless partial submittals for portions of the Work are indicated on approved submittal schedule.
3. Submit action submittals and informational submittals required by the same Specification Section as separate packages under separate transmittals.

G. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Owner’s Representative's receipt of submittal. No extension
of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.

1. Initial Review: Allow 15 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Owner's Representative will advise Contractor when a submittal being processed must be delayed for coordination.

2. Resubmittal Review: Allow 15 days for review of each resubmittal.

H. Resubmittals: Make resubmittals in same form and number of copies as initial submittal.

I. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities. Show distribution on transmittal forms.

J. Use for Construction: Retain complete copies of submittals on Project site. Use only final action submittals that are marked with approval notation from Owner's Representative's action stamp.

1.8 SUBMITTAL REQUIREMENTS

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

1. If information must be specially prepared for submittal because standard published data are unsuitable for use, submit as Shop Drawings, not as Product Data.

2. Mark each copy of each submittal to show which products and options are applicable.

3. Include the following information, as applicable:
   a. Manufacturer's catalog cuts.
   b. Manufacturer's product specifications.
   c. Standard color charts.
   d. Statement of compliance with specified referenced standards.
   e. Testing by recognized testing agency.
   f. Application of testing agency labels and seals.
   g. Notation of coordination requirements.
   h. Availability and delivery time information.

4. For equipment, include the following in addition to the above, as applicable:
   a. Wiring diagrams that show factory-installed wiring.
   b. Printed performance curves.
   c. Operational range diagrams.
   d. Clearances required to other construction, if not indicated on accompanying Shop Drawings.

5. Submit Product Data before Shop Drawings, and before or concurrent with Samples.

B. Shop Drawings: Prepare Project-specific information, drawn accurately to scale. Do not base Shop Drawings on reproductions of the Contract Documents or standard printed data unless submittal based on Owner's Representative's digital data drawing files is otherwise permitted.

1. Preparation: Fully illustrate requirements in the Contract Documents. Include the following information, as applicable:
   a. Title block indicating: Project name, Project number, drawing number, and name of entity preparing submittal.
b. Allow clear space, approximately 40 SQ IN, for Contractor's approval stamp and Owner's Representative action stamp on right hand side.

c. Comply with Owner's requirements and office policy.

d. Identification of products.

e. Schedules.

f. Compliance with specified standards.

g. Notation of coordination requirements.

h. Notation of dimensions established by field measurement.

i. Relationship and attachment to adjoining construction clearly indicated.

j. Seal and signature of professional engineer if specified.

k. Sheet Size: Except for templates, patterns, and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches, but no larger than 22 by 34 inches.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for a check of these characteristics with other materials.

1. Transmit Samples that contain multiple, related components such as accessories together in one submittal package.

2. Identification: Permanently attach label on unexposed side of Samples that includes the following:

   a. Project name and submittal number.

   b. Generic description of Sample.

   c. Product name and name of manufacturer.

   d. Sample source.

   e. Number and title of applicable Specification Section.

   f. Specification paragraph number and generic name of each item.

3. Email Transmittal: Provide PDF transmittal. Include digital image file illustrating Sample characteristics, and identification information for record.

4. Paper Transmittal: Include paper transmittal with the sample including complete submittal information indicated.

5. Disposition: Maintain sets of approved Samples at Project site, available for quality-control comparisons throughout the course of construction activity. Sample sets may be used to determine final acceptance of construction associated with each set.

   a. Samples that may be incorporated into the Work are indicated in individual Specification Sections. Such Samples must be in an undamaged condition at time of use.

   b. Samples not incorporated into the Work, or otherwise designated as Owner's property, are the property of Contractor.

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

   a. Printed colors and color copies are only acceptable to selecting a range of actual samples to be submit for selection.

   b. Printed colors and color copies are not acceptable for final selection.

   c. Number of Samples: Submit one full set or selected range of available choices where color, pattern, texture, or similar characteristics are required to be selected from manufacturer's product line.

   d. Owner's Representative will return the PDF submittal with options selected. The samples will only be return when requested by Contractor. If samples are requested to be return by
the Contractor the samples will only be returned after the project record sample has been received.
e. Once the sample has been selected submit 3 sets of the selected Sample(s) as a project record Samples. The Owner’s Representative will retain one Sample sets; remainder will be returned.

7. Samples for Verification: Submit full-size units or Samples of size indicated, prepared from same material to be used for the Work, cured and finished in manner specified, and physically identical with material or product proposed for use, and that show full range of color and texture variations expected. Samples include, but are not limited to, the following: partial sections of manufactured or fabricated components; small cuts or containers of materials; complete units of repetitively used materials; swatches showing color, texture, and pattern; color range sets; and components used for independent testing and inspection.

a. Number of Samples: Submit three sets of Samples. Owner’s Representative will retain one Sample sets; remainder will be returned. Mark up and retain one returned Sample set as a project record Sample.

   1) Submit a single Sample where assembly details, workmanship, fabrication techniques, connections, operation, and other similar characteristics are to be demonstrated.
   2) If variation in color, pattern, texture, or other characteristic is inherent in material or product represented by a Sample, submit at least three sets of paired units that show approximate limits of variations.

D. Product Schedule: As required in individual Specification Sections, prepare a written summary indicating types of products required for the Work and their intended location. Include the following information in tabular form:

E. Qualification Data: Prepare written information that demonstrates capabilities and experience of firm or person. Include lists of completed projects with project names and addresses, contact information of architects and owners, and other information specified.

F. Design Data: Prepare and submit written and graphic information indicating compliance with indicated performance and design criteria in individual Specification Sections. Include list of assumptions and summary of loads. Include load diagrams if applicable. Provide name and version of software, if any, used for calculations. Number each page of submittal.

G. Certificates:
   1. Provide Certificates Provide Test Reports if indicated in individual Specification.
   2. Certificates and Certifications Submittals: Submit a statement that includes signature of entity responsible for preparing certification. Certificates and certifications shall be signed by an officer or other individual authorized to sign documents on behalf of that entity. Provide a notarized signature where indicated.
   3. Installer Certificates: Submit written statements on manufacturer's letterhead certifying that Installer complies with requirements in the Contract Documents and, where required, is authorized by manufacturer for this specific Project.
   4. Manufacturer Certificates: Submit written statements on manufacturer's letterhead certifying that manufacturer complies with requirements in the Contract Documents. Include evidence of manufacturing experience where required.
5. Material Certificates: Submit written statements on manufacturer's letterhead certifying that material complies with requirements in the Contract Documents.

6. Product Certificates: Submit written statements on manufacturer's letterhead certifying that product complies with requirements in the Contract Documents.


H. Test and Research Reports:
   1. Provide Test Reports if indicated in individual Specification.
   2. Compatibility Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of compatibility tests performed before installation of product. Include written recommendations for primers and substrate preparation needed for adhesion.
   3. Field Test Reports: Submit written reports indicating and interpreting results of field tests performed either during installation of product or after product is installed in its final location, for compliance with requirements in the Contract Documents.
   4. Material Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting test results of material for compliance with requirements in the Contract Documents.
   5. Preconstruction Test Reports: Submit reports written by a qualified testing agency, on testing agency's standard form, indicating and interpreting results of tests performed before installation of product, for compliance with performance requirements in the Contract Documents.
   6. Product Test Reports: Submit written reports indicating that current product produced by manufacturer complies with requirements in the Contract Documents. Base reports on evaluation of tests performed by manufacturer and witnessed by a qualified testing agency, or on comprehensive tests performed by a qualified testing agency.
   7. Research Reports: Submit written evidence, from a model code organization acceptable to authorities having jurisdiction, that product complies with building code in effect for Project. Include the following information:
      a. Name of evaluation organization.
      b. Date of evaluation.
      c. Time period when report is in effect.
      d. Product and manufacturers' names.
      e. Description of product.
      f. Test procedures and results.
      g. Limitations of use.

1.9 DELEGATED-DESIGN SERVICES

A. Performance and Design Criteria: Where professional design services or certifications by a design professional are specifically required of Contractor by the Contract Documents, provide products and systems complying with specific performance and design criteria indicated.

1. If criteria indicated are insufficient to perform services or certification required, submit a written request for additional information to Owner’s Representative.
B. Delegated-Design Services Certification: In addition to Shop Drawings, Product Data, and other required submittals, submit digitally signed PDF file paper copies of certificate, signed and sealed by the responsible design professional, for each product and system specifically assigned to Contractor to be designed or certified by a design professional.

1. Indicate that products and systems comply with performance and design criteria in the Contract Documents. Include list of codes, loads, and other factors used in performing these services.

1.10 PROJECT INFORMATION AND CONTRACT CLOSEOUT INFORMATION

A. Project Information submittals are required as called for by specification section submittal paragraph.

B. Submit three (3) original or high quality, high contrast copy of each submittal, unless quantity is indicated elsewhere.
1. Include pertinent data.
2. Submit in envelope.
3. Do not fold.
4. Submit 8-1/2 x 11 IN or 8-1/2 x 14 IN maximum copy.

C. Project Information:
1. Owner’s Representative may review submittal at its sole discretion, for general compliance with Contract Documents only.
2. Review will not constitute a detailed check of submitted design calculations.
3. Appropriateness and accuracy of calculations is responsibility of Contractor (and Contractor’s professional engineer when such calculations are required to be professionally sealed).
4. When professional or other certification of performance criteria of materials, systems or equipment is required by Contract Documents, Owner’s Representative shall be entitled to rely upon accuracy and completeness of such calculations and certifications.

D. Contract Closeout Information:
1. Owner’s Representative may review submittal at its sole discretion, for general compliance with Contract Documents only.

1.11 CONTRACTOR AND SUBCONTRACTOR REVIEW / ACTION

A. Action Submittals and Informational Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Owner’s Representative.

B. Contractor’s Approval: Indicate Contractor’s approval for each submittal with a uniform approval stamp. Include name of reviewer, date of Contractor’s approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

1. Owner’s Representative will not review submittals received from Contractor that do not have Contractor’s review and approval.
C. Direct specific attention, in writing or on Shop Drawings, Product Data, Samples or similar submittals, to deviations from requirements of Contract Documents.
   1. Contractor shall not be relieved of responsibility for any deviation from requirements of Contract Documents by Owner Representative’s approval of Shop Drawings, Product Data, Samples or similar submittal unless Contractor has specifically informed Owner’s Representative in writing of such deviation at time of submission and (1) Owner’s Representative has given written approval to specific deviation as a minor change in Work, or (2) a Change Order or Construction Change Directive has authorized the deviation.
   2. Completed work shall match appearance of approved samples and mock-ups.

D. Contractor represents and warrants that submittals shall be prepared by persons and entities possessing expertise and experience in the trade for which the submittal is prepared and, if required by Owner’s Representative or applicable law, by a licensed professional engineer.

E. Contractor is responsible for confirmation and correlation of dimensions at job site; for information that pertains solely to fabrication processes or to techniques of construction; and for coordination of work of trades.

F. Contractor and Subcontractor review for compliance with Contract Documents, approve and submit submittal required by Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in activities of Owner or of separate contractors.

G. Each submittal shall bear Contractor’s approval stamp, indicating “(contractor’s name) REVIEWED FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND APPROVED”, and validated with signature of a Contractor’s authorized representative.

H. Submittal transmittal to Owner’s Representative indicates Contractor, Subcontractor and subcontractor represents that they have:
   1. Reviewed for compliance with the Contract Documents.
   2. Determined and verified materials, field measurements and quantities related thereto.
   3. Determined and verified field construction criteria, materials, performance criteria, installation requirements, catalog numbers and similar data related thereto.
   4. Checked, determined, verified and coordinated information contained within such submittals with requirements of Work, Contract Documents and other submittals.
   5. Certified that submittal is in compliance with Contract Documents.
   6. Approved submittal.

I. Resubmit items stamped "Revise and Resubmit" or "Not Approved" until approval is received.
   1. Direct specific attention, in writing, on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by Owner’s Representative on previous submittals.

J. Contractor reproduce and distribute submittals after Owner’s Representative’s review:
   1. Subcontractor/vendor.
   2. Other Contractors, Subcontractors or vendors as may be required for coordination purposes.

K. Contractor shall not be relieved from responsibility for coordination with other submittals or for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by Owner’s Representative’s approval thereof.
L. Where a submittal is required by the Specifications, any related Work performed prior to Owner’s Representative’s review and approval of the pertinent submission will be the sole expense and responsibility of Contractor.

1.12 OWNER’S REPRESENTATIVE’S REVIEW: SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Action Submittals: Owner’s Representative will review each submittal, indicate corrections or revisions required, and return it.

1. PDF Submittals: Owner’s Representative will indicate, via markup on each submittal, the appropriate action.

2. Paper Submittals: Owner’s Representative will stamp each submittal with an action stamp and will mark stamp appropriately to indicate action.

B. Informational Submittals: Owner’s Representative will review each submittal and will not return it, or will return it if it does not comply with requirements. Owner’s Representative will forward each submittal to appropriate party.

C. Partial submittals prepared for a portion of the Work will be reviewed when use of partial submittals has received prior approval from Owner’s Representative.

D. Incomplete submittals are unacceptable, will be considered nonresponsive, and will be returned for resubmittal without review.

E. Owner’s Representative will return without review submittals received from sources other than Contractor.

F. Review is only for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

G. Such review and action is limited to only those submittals identified in Contract Documents.

H. Owner’s Representative’s review of such submittals is not conducted for purpose of determining accuracy and completeness of other details such as dimensions, quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor.

I. Owner’s Representative will stamp required submittals indicating action taken.

J. Owner’s Representative’s review or approval shall not constitute a review of safety or health precautions or, of any construction means, methods, techniques, sequences or procedures.

K. Owner’s Representative’s review or approval of a specific item shall not indicate approval of an assembly of which item is a component.

L. Owner’s Representative’s obligation to review or approve submittals and to return them with reasonable promptness are conditional upon prior review and approval of submittals by Contractor and Contractor's transmittal of submittals in accordance with Contract Documents and approved Schedule of Submittals.
M. Items not submitted in accordance with provisions of this section may be returned, without action.

N. Submittals which are not required by Contract Documents, or submittals which have not been approved and signed by Contractor may be returned by Owner’s Representative without review or action.

O. If a submittal must be delayed for coordination with other submittals not yet submitted, the Owner’s Representative may at his option either return the submittal with no action or notify the Contractor of the other submittals which must be received before the submittal can be reviewed.

P. Owner’s Representative will return original copy of submittal indicating comments and action for Contractor’s use and distribution. Additional submitted copies may not be returned.

Q. The Submittals may returned by email or regular mail.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 014000
QUALITY REQUIREMENTS
(TEST AND INSPECTIONS)

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for quality assurance and quality control.

B. Testing and inspection services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with the Contract Document requirements.

1. Specified tests, inspections, and related actions do not limit Contractor's other quality-assurance and quality-control procedures that facilitate compliance with the Contract Document requirements.

2. Requirements for Contractor to provide quality-assurance and quality-control services required by Owner's Representative, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

1.2 DEFINITIONS

A. Experienced: When used with an entity or individual, "experienced" unless otherwise further described means having successfully completed a minimum of five previous projects similar in nature, size, and extent to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction.

B. Field Quality-Control Tests: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

C. Installer/Applicator/Erector: Contractor or another entity engaged by Contractor as an employee, Subcontractor, or Sub-subcontractor, to perform a particular construction operation, including installation, erection, application, assembly, and similar operations.

1. Use of trade-specific terminology in referring to a trade or entity does not require that certain construction activities be performed by accredited or unionized individuals, or that requirements specified apply exclusively to specific trade(s).

D. Preconstruction Testing: Tests and inspections performed specifically for Project before products and materials are incorporated into the Work, to verify performance or compliance with specified criteria.

E. Product Tests: Tests and inspections that are performed by a nationally recognized testing laboratory (NRTL) according to 29 CFR 1910.7, by a testing agency accredited according to NIST's National Voluntary Laboratory Accreditation Program (NVLAP), or by a testing agency
qualified to conduct product testing and acceptable to authorities having jurisdiction, to establish product performance and compliance with specified requirements.

F. Source Quality-Control Tests: Tests and inspections that are performed at the source; for example, plant, mill, factory, or shop.

G. Testing Agency: An entity engaged to perform specific tests, inspections, or both. Testing laboratory shall mean the same as testing agency.

H. Quality-Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

I. Quality-Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Contractor's quality-control services do not include contract administration activities performed by Owner’s Representative.

1.3 CONFLICTING REQUIREMENTS

A. Conflicting Standards and Other Requirements: If compliance with two or more standards or requirements are specified and the standards or requirements establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer conflicting requirements that are different, but apparently equal, to Owner’s Representative for direction before proceeding.

B. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer uncertainties to Owner’s Representative for a decision before proceeding.

1.4 INFORMATIONAL SUBMITTALS

A. Contractor's Statement of Responsibility: When required by authorities having jurisdiction, submit copy of written statement of responsibility submitted to authorities having jurisdiction before starting work on the following systems:

1. Seismic-force-resisting system, designated seismic system, or component listed in the Statement of Special Inspections.
2. Main wind-force-resisting system or a wind-resisting component listed in the Statement of Special Inspections.

B. Testing Agency Qualifications: For testing agencies specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.
C. Permits, Licenses, and Certificates: For Owner's record, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents established for compliance with standards and regulations bearing on performance of the Work.

1.5 REPORTS AND DOCUMENTS

A. Test and Inspection Reports: Prepare and submit certified written reports specified in other Sections. Include the following:

1. Date of issue.
2. Project title and number.
3. Name, address, telephone number, and email address of testing agency.
4. Dates and locations of samples and tests or inspections.
5. Names of individuals making tests and inspections.
6. Description of the Work and test and inspection method.
8. Complete test or inspection data.
9. Test and inspection results and an interpretation of test results.
10. Record of temperature and weather conditions at time of sample taking and testing and inspection.
11. Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.
12. Name and signature of laboratory inspector.
13. Recommendations on retesting and reinspecting.

B. Manufacturer's Technical Representative's Field Reports: Prepare written information documenting manufacturer's technical representative's tests and inspections specified in other Sections. Include the following:

2. Statement that products at Project site comply with requirements.
3. Summary of installation procedures being followed, whether they comply with requirements and, if not, what corrective action was taken.
4. Results of operational and other tests and a statement of whether observed performance complies with requirements.
5. Other required items indicated in individual Specification Sections.

C. Factory-Authorized Service Representative's Reports: Prepare written information documenting manufacturer's factory-authorized service representative's tests and inspections specified in other Sections. Include the following:

1. Statement that equipment complies with requirements.
2. Results of operational and other tests and a statement of whether observed performance complies with requirements.
3. Other required items indicated in individual Specification Sections.
1.6 QUALITY ASSURANCE

A. General: Qualifications paragraphs in this article establish the minimum qualification levels required; individual Specification Sections specify additional requirements.

B. Qualifications of independent testing agencies:
   4. Owner approval of Testing agency is required.

C. Testing equipment calibration: By accredited calibration agency, at maximum 12 month intervals, by devices of accuracy traceable to either:
   1. National Institute of Standards and Technology.
   2. Accepted values of natural physical constants.

D. Manufacturer Qualifications:
   1. A firm experienced in manufacturing products or systems similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units. As applicable, procure products from manufacturers able to meet qualification requirements, warranty requirements, and technical or factory-authorized service representative requirements.

E. Fabricator Qualifications:
   1. A firm experienced in producing products similar to those indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units.

F. Installer Qualifications:
   1. A firm or individual experienced in installing, erecting, applying, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance.
   2. Installer trained and approved by manufacturer, acceptable to manufacturer, or an authorized representative of manufacturer for both installation and maintenance. If other design professionals are indicated in Specification Sections, insert qualifications here.

G. Professional Engineer Qualifications:
   1. A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of the system, assembly, or product that are similar in material, design, and extent to those indicated for this Project.

H. Specialists:
   1. Certain Specification Sections require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.
2. Requirements of authorities having jurisdiction shall supersede requirements for specialists.

I. Testing Agency Qualifications:
   1. An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspection indicated, as documented according to ASTM E 329; and with additional qualifications specified in individual Sections; and, where required by authorities having jurisdiction, that is acceptable to authorities.

J. Manufacturer's Technical Representative Qualifications:
   1. An authorized representative of manufacturer who is trained and approved by manufacturer to observe and inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

K. Factory-Authorized Service Representative Qualifications:
   1. An authorized representative of manufacturer who is trained and approved by manufacturer to inspect installation of manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

L. Preconstruction Testing:
   1. Where testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

   2. Contractor responsibilities include the following:

   a. Provide test specimens representative of proposed products and construction.
   b. Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.
   c. Build laboratory mockups at testing facility using personnel, products, and methods of construction indicated for the completed Work.
   d. When testing is complete, remove test specimens and test assemblies, and mockups, and laboratory mockups; do not reuse products on Project.

   3. Testing Agency Responsibilities:
      a. Submit a certified written report of each test, inspection, and similar quality-assurance service to Owner's Representative, with copy to Contractor. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents.

1.7 QUALITY CONTROL

A. Owner Responsibilities: Where quality-control services are indicated as Owner's responsibility, Owner will engage a qualified testing agency to perform these services.

   1. Owner will furnish Contractor with names, addresses, and telephone numbers of testing agencies engaged and a description of types of testing and inspection they are engaged to perform.
   2. Testing will be paid for by owner except as noted under Contractor Responsibilities.
B. Contractor Responsibilities:
1. Provide for any additional inspection and testing required by public authorities having jurisdiction.
2. Employment of independent testing agency approved by Owner does not relieve the Contractor's obligation to comply with Contract Documents.
3. Cooperate with testing agency personnel; provide access to the work and to manufacturer's operations.
4. Provide preliminary representative samples of materials to be tested, in required quantities.
5. Furnish labor and facilities:
   a. To provide access to work to be tested.
   b. To obtain and handle samples at site.
   c. To facilitate inspections and tests.
6. Storage and curing facilities for testing agency's exclusive use.
7. Tests and inspections not explicitly assigned to Owner are Contractor's responsibility. Perform additional quality-control activities, whether specified or not, to verify and document that the Work complies with requirements.
8. Contractor will arrange and pay for following testing and inspections:
   a. Re-testing of any required tests.
   b. Testing of non-conforming work.
   c. Costs for retesting and reinspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents.
9. Engage a qualified testing agency to perform quality-control services.
   a. Contractor shall not employ same entity engaged by Owner, unless agreed to in writing by Owner.
10. Notify testing agencies at least 24 hours in advance of time when Work that requires testing or inspection will be performed.
11. Where quality-control services are indicated as Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.
12. Testing and inspection requested by Contractor and not required by the Contract Documents are Contractor's responsibility.
13. Submit additional copies of each written report directly to authorities having jurisdiction, when they so direct.

C. Retesting/Reinspecting:
1. Regardless of whether original tests or inspections were Contractor's responsibility, provide quality-control services, including retesting and reinspecting, for construction that replaced Work that failed to comply with the Contract Documents.

D. Testing Agency Responsibilities:
1. Provide qualified personnel promptly on notice.
2. Cooperate with Owner's Representative and Contractor in performance of duties. Provide qualified personnel to perform required tests and inspections.
3. Notify Owner's Representative and Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.
4. Determine the locations from which test samples will be taken and in which in-situ tests are conducted.
5. Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.
6. Submit a certified written report, in duplicate, of each test, inspection, and similar quality-control service through Contractor.
7. Testing agency is not authorized to:
   a. Release, revoke, alter, or increase the Contract Document requirements.
   b. Approve or accept any portion of the Work.
   c. Perform duties of Contractor.

E. Manufacturer's Field Services:
   1. Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections.

F. Manufacturer's Technical Services:
   1. Where indicated, engage a manufacturer's technical representative to observe and inspect the Work. Manufacturer's technical representative's services include participation in preinstallation conferences, examination of substrates and conditions, verification of materials, observation of Installer activities, inspection of completed portions of the Work, and submittal of written reports.

G. Associated Contractor Services:
   1. Cooperate with agencies and representatives performing required tests, inspections, and similar quality-control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:
      3. Incidental labor and facilities necessary to facilitate tests and inspections.
      4. Adequate quantities of representative samples of materials that require testing and inspection. Assist agency in obtaining samples.
      5. Facilities for storage and field curing of test samples.
      6. Preliminary design mix proposed for use for material mixes that require control by testing agency.
      7. Security and protection for samples and for testing and inspection equipment at Project site.

H. Coordination:
   1. Coordinate sequence of activities to accommodate required quality-assurance and quality-control services with a minimum of delay and to avoid necessity of removing and replacing construction to accommodate testing and inspection.
   2. Schedule times for tests, inspections, obtaining samples, and similar activities.
PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 TEST AND INSPECTION LOG

3.2 PERFORMANCE

A. Perform indicated inspections, sampling and testing of materials and methods of construction.

B. Use test/inspection/sampling methods conforming with methods indicated.

C. Report each test/inspection/sampling as indicated.

D. Report results called for by test method, in form specified.

E. Retest failed products and systems.

3.3 REPORTS

A. Submit reports and logs promptly to Owner’s Representative.
   1. Reports shall be in both paper and electronic format.

B. Include for test/inspection reports:
   1. Project name and number.
   2. Project location.
   3. Product and specification section applicable.
   4. Type of test/inspection.
   5. Name of testing agency (if used).
   6. Name of testing/inspecting personnel.
   7. Date of test/inspection.
   8. Record of field conditions encountered (temperature, weather).
   9. Test location.
   10. Observations regarding compliance.
   11. Test method used.
   12. Results of test.
   13. Date of report.
   14. Signature of testing/inspecting personnel.
   15. Date test or inspection results were transmitted to Owner’s Representative.

C. Maintain log of tests which have failed:
   1. Type of test/inspection.
   2. Date of test/inspection.
   3. Test/inspection number.
   5. Date of retest/inspection.
   6. Results of retest.
   7. Method of retest.
D. Maintain log at Project site. Post changes and revisions as they occur. Provide access to test and inspection log for Owner’s Representative's reference during normal working hours.

1. Submit log at Project closeout as part of Project Record Documents.

END OF SECTION
SECTION 015000
TEMPORARY FACILITIES AND CONTROLS
(CONSTRUCTION FACILITIES, TEMPORARY CONTROLS AND UTILITIES)

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes requirements for temporary utilities, support facilities, and security and protection facilities.

1.2 USE CHARGES

A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise indicated. Allow other entities engaged in the Project to use temporary services and facilities without cost, including, but not limited to, Owner's construction forces, Owner's Representative, testing agencies, and authorities having jurisdiction. Contractor shall be responsible for providing connection and extensions.

1.3 INFORMATIONAL SUBMITTALS

A. Site Utilization Plan: Show temporary facilities, temporary utility lines and connections, staging areas, construction site entrances, vehicle circulation, and parking areas for construction personnel. Contractor shall be responsible for providing connection and extensions.

B. Project Identification and Temporary Signs: Show fabrication and installation details, including plans, elevations, details, layouts, typestyles, graphic elements, and message content.

C. Fire-Safety Program: Show compliance with requirements of NFPA 241 and authorities having jurisdiction. Indicate Contractor personnel responsible for management of fire-prevention program.

D. Moisture-and Mold-Protection Plan: Describe procedures and controls for protecting materials and construction from water absorption and damage and mold.

1.4 QUALITY ASSURANCE

A. Electric Service: Comply with NECA, NEMA, and UL standards and regulations for temporary electric service. Install service to comply with NFPA 70.

B. Tests and Inspections: Arrange for authorities having jurisdiction to test and inspect each temporary utility before use. Obtain required certifications and permits.

D. Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to following:
   1. Building code requirements.
   2. Health and safety regulations.
   3. Utility company regulations.
   4. Police, fire department, and rescue squad rules.
   5. Environmental protection regulations.
   6. Local agencies requirements and regulations.

E. Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Contractor shall obtain required certifications and permits for temporary utilities, and shall include in his base bid all fees, labor and materials for necessary services.

F. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of Work. Relocate and modify facilities as required.

1.5 PROJECT CONDITIONS

A. Temporary Use of Permanent Facilities: Engage Installer of each permanent service to assume responsibility for operation, maintenance, and protection of each permanent service during its use as a construction facility before Owner's acceptance, regardless of previously assigned responsibilities.

PART 2 - PRODUCTS

2.1 TEMPORARY FACILITIES

A. Field Offices, General: Prefabricated or mobile units with serviceable finishes, temperature controls, and foundations adequate for normal loading.

2.2 EQUIPMENT

A. Fire Extinguishers: Portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.1 TEMPORARY FACILITIES, GENERAL

A. Conservation: Coordinate construction and use of temporary facilities with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.
B. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. See other Sections for disposition of salvaged materials that are designated as Owner's property.

3.2 INSTALLATION, GENERAL

A. Locate facilities where they will serve Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required by progress of the Work.

B. Provide each facility ready for use when needed to avoid delay. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

3.3 TEMPORARY UTILITY

A. General
   1. All fees, labor, and materials, including temporary equipment and connection thereof, required to provide temporary utility services necessary for maintaining existing services and for execution of work, and tests required in various sections of specifications shall be furnished by contractor at contractor's expense, except where otherwise specified.
   2. Maintain and keep temporary services and facilities clean and neat in appearance, including those provided by owner for contractor's use. Operate in a safe and efficient manner. Coordinate with City of Tulsa representative to relocate temporary services and facilities as work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.
   3. Prepare a schedule indicating dates for implementation, shut downs, tie-ins and termination of each temporary utility and coordinate with City of Tulsa representative. At earliest feasible time, when acceptable to City of Tulsa representative, change over from use of temporary service to use of permanent service.
   4. Remove all temporary equipment and connections, and leave premises and existing permanent apparatus in an equivalent condition as existed prior to making temporary connections.

B. Temporary Electrical And Lighting
   1. General: install temporary service or connect to existing service.
   2. Arrange with utility company, owner, and existing users for time when service can be interrupted, if necessary, to make connections for temporary services.
   3. Electric power service:
      a. Provide electric power service and distribution system of sufficient size, capacity, and power characteristics required for construction operations.
      b. Install electric power service overhead unless otherwise indicated.
      c. Make arrangements for and install all equipment, poles, meter, wiring, switches, outlets, etc., to provide 480v, 3 phase power and necessary step down transformers for 208v and 120v power for all lighting and power requirements for construction purposes.
      d. Temporary electrical power used will be paid for by contractor.
e. Remove all temporary electrical equipment, when no longer needed.

4. Lighting:
   a. Provide temporary lighting with local switching that provides adequate illumination for construction operations, observations, inspections, and traffic conditions.
   b. Install and operate temporary lighting that fulfills security and protection requirements without operating entire system.
   c. Provide adequate lighting with local switching for safe access and egress, security, and for providing adequate illumination for construction operations.

5. At completion of work, remove and replace all damaged parts of permanent systems.
6. Extend warranty or guarantee period on permanent systems used during construction period so they commence on date of substantial completion.
7. Each contractor provide his own extension cords.
8. Each contractor provide any additional electrical power required for his operation, exceeding available power.

C. Sewers And Drainage:
   1. Provide temporary utilities to remove effluent lawfully.

   2. Connect temporary sewers to municipal system as directed by authorities having jurisdiction.

D. Sanitary Facilities:
   1. Provide temporary toilets, wash facilities, and drinking water for use of construction personnel.

   2. Comply with requirements of authorities having jurisdiction for type, number, location, operation, and maintenance of fixtures and facilities.

   3. Maintain and service in clean, sanitary condition.

   4. Provide adequate supplies of toilet paper, cleaning and other required items.

E. Isolation of work areas in occupied facilities:
   1. Prevent dust, fumes, and odors from entering occupied areas.

3.4 TEMPORARY STORAGE AND STAGING AREAS

A. Prior to start of work, Contractor shall meet with all Subcontractors to arrange and prepare plot plan defining staging, storage, field office and traffic areas.

B. Obtain City of Tulsa representative approval of plan.

C. Except as specifically provided, working and storing outside these areas will not be permitted.

D. Arrange and locate temporary structures and storage to avoid interfering with construction.

E. Within area designated for his use, Contractor and Subcontractors provide suitable and sufficient enclosed and covered spaces, with raised flooring, to protect materials and equipment from damage by weather or construction work.

F. Maintain storage and working areas in clean and orderly condition.
3.5 SUPPORT FACILITIES INSTALLATION

A. General: Comply with the following:
   1. Maintain support facilities until Owner's Representative schedules Substantial Completion
      inspection. Remove before Substantial Completion. Personnel remaining after Substantial
      Completion will be permitted to use permanent facilities, under conditions acceptable to
      Owner.

B. Traffic Controls:
   1. Comply with requirements of authorities having jurisdiction.
   2. Protect existing site improvements to remain including curbs, pavement, and utilities.
   3. Maintain access for fire-fighting equipment and access to fire hydrants.

C. Parking:
   1. Contractor shall provide parking areas for construction personnel within the area designated
      "Staging" on drawings.

D. Dewatering Facilities and Drains:
   1. Comply with requirements of authorities having jurisdiction. Maintain Project site,
      excavations, and construction free of water.
   2. Dispose of rainwater in a lawful manner that will not result in flooding Project or adjoining
      properties or endanger permanent Work or temporary facilities.
   3. Remove snow and ice as required to minimize accumulations.

E. Waste Disposal Facilities:
   Provide waste-collection containers in sizes adequate to handle waste from construction
   operations. Comply with requirements of authorities having jurisdiction.

F. Lifts and Hoists:
   1. Provide facilities necessary for hoisting materials and personnel.

   2. Truck cranes and similar devices used for hoisting materials are considered "tools and
      equipment" and not temporary facilities.

3.6 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Temporary access
   1. Contractor's access to construction area will be permitted only through designated approaches
      in such a manner that traffic will not interfere with owner's activities.

B. Temporary protection
   1. Protect work in progress and adjoining materials in place, during handling and installation.
   2. Supervise construction operation to assure that work, completed or in progress, is not subject
      to harmful, dangerous, damaging or otherwise deleterious exposure throughout
      construction period.
   3. Apply protective covering to assure protection of work from damage or deterioration.
      Remove coverings at substantial completion.
   4. Adjust, lubricate and maintain operable components to assure operability without damaging
      effects throughout construction period.
C. Temporary access roads
   1. Clean up all debris, materials, etc., that fall from vehicles en route to and from site.
   2. Do not block access to adjacent facilities.

D. Traffic control
   1. Provide any traffic control deemed necessary to effect smooth owner operations.
   2. Provide and maintain adequate traffic control and flagmen's services at all points where
      transporting of equipment and materials engaged on work enters and exits from project
      site and on site.

E. Protection of existing facilities:
   1. Protect existing vegetation, equipment, structures, utilities, and other improvements at project
      site and on adjacent properties, except those indicated to be removed or altered. Repair
      damage to existing facilities.
   2. Where access to adjacent properties is required in order to affect protection of existing
      facilities, obtain written permission from adjacent property owner to access property for
      that purpose.

F. Environmental protection:
   1. Provide protection, operate temporary facilities, and conduct construction as required to
      comply with environmental regulations and that minimize possible air, waterway, and
      subsoil contamination or pollution or other undesirable effects.

G. Temporary erosion and sedimentation control:
   1. Provide measures to prevent soil erosion and discharge of soil-bearing water runoff and
      airborne dust to undisturbed areas and to adjacent properties and walkways, according to
      requirements of EPA construction general permit or authorities having jurisdiction, whichever
      is more stringent.
   2. Verify that flows of water redirected from construction areas or generated by construction
      activity do not enter or cross tree- or plant-protection zones.
   3. Inspect, repair, and maintain erosion- and sedimentation-control measures during
      construction until permanent vegetation has been established.
   4. Clean, repair, and restore adjoining properties and roads affected by erosion and
      sedimentation from project site during the course of project.
   5. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during
      removal.

H. Stormwater control:
   1. Comply with requirements of authorities having jurisdiction. Provide barriers in and around
      excavations and subgrade construction to prevent flooding by runoff of stormwater from
      heavy rains.

I. Tree and plant protection:
   1. Protect vegetation from damage from construction operations. Protect tree root systems from
      damage, flooding, and erosion.

J. Temporary fences and barricades:
   1. Prior to commencing earthwork, furnish and install site enclosure fence in a manner that will
      prevent people from easily entering site except by entrance gates.
2. Contractor furnish, install and maintain all necessary sound temporary fences, barricades, trench and hole covers, warning lights and all other safety devices necessary to prevent injury to persons and damage to property and trees.

3. Contractor is responsible to design all construction barricades and fences with proper sizes of members and with adequate supports to protect public from injuries or accidents, arising from construction work.

4. Extent of fence: as required to enclose portion of work determined sufficient to accommodate construction operations.

5. Maintain security by limiting number of keys and restricting distribution to authorized personnel. Furnish one set of keys to owner.

6. Warning signs, and lights:
   a. Comply with requirements of authorities having jurisdiction for erecting structurally adequate barricades, including warning signs and lighting.

K. Temporary enclosures:
   1. Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities. Provide temporary weathertight enclosure for building exterior.
   2. Where heating or cooling is needed and permanent enclosure is incomplete, insulate temporary enclosures.

L. Temporary fire protection:
   1. Install and maintain temporary fire-protection facilities of types needed to protect against reasonably predictable and controllable fire losses. Comply with NFPA 241; manage fire-prevention program.
   2. Prohibit smoking in construction areas. Comply with additional limits on smoking specified in other sections.
   3. Supervise welding operations, combustion-type temporary heating units, and similar sources of fire ignition according to requirements of authorities having jurisdiction.
   4. Develop and supervise an overall fire-prevention and -protection program for personnel at project site. Review needs with local fire department and establish procedures to be followed. Instruct personnel in methods and procedures. Post warnings and information.

3.7 MOISTURE AND MOLD CONTROL

A. Contractor's Moisture-Protection Plan: Describe delivery, handling, storage, installation, and protection provisions for materials subject to water absorption or water damage.

1. Indicate procedures for discarding water-damaged materials, protocols for mitigating water intrusion into completed Work, and replacing water-damaged Work.
2. Indicate sequencing of work that requires water, such as sprayed fire-resistive materials, plastering, and terrazzo grinding, and describe plans for dealing with water from these operations. Show procedures for verifying that wet construction has dried sufficiently to permit installation of finish materials.
3. Indicate methods to be used to avoid trapping water in finished work.

B. Exposed Construction Period: Before installation of weather barriers, when materials are subject to wetting and exposure and to airborne mold spores, protect as follows:

1. Protect porous materials from water damage.
2. Protect stored and installed material from flowing or standing water.
3. Keep porous and organic materials from coming into prolonged contact with concrete.
4. Remove standing water from decks.
5. Keep deck openings covered or dammed.

C. Partially Enclosed Construction Period: After installation of weather barriers but before full enclosure and conditioning of building, when installed materials are still subject to infiltration of moisture and ambient mold spores, protect as follows:

1. Do not load or install drywall or other porous materials or components, or items with high organic content, into partially enclosed building.
2. Keep interior spaces reasonably clean and protected from water damage.
3. Periodically collect and remove waste containing cellulose or other organic matter.
4. Discard or replace water-damaged material.
5. Do not install material that is wet.
6. Discard and replace stored or installed material that begins to grow mold.
7. Perform work in a sequence that allows wet materials adequate time to dry before enclosing the material in gypsum board or other interior finishes.

D. Controlled Construction Period: After completing and sealing of the building enclosure but prior to the full operation of permanent HVAC systems, maintain as follows:

1. Control moisture and humidity inside building by maintaining effective dry-in conditions.
2. Use temporary or permanent HVAC system to control humidity within ranges specified for installed and stored materials.
3. Comply with manufacturer's written instructions for temperature, relative humidity, and exposure to water limits.

3.8 OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. To minimize waste and abuse, limit availability of temporary facilities to essential and intended uses.

B. Maintenance: Maintain facilities in good operating condition until removal.

1. Maintain operation of temporary enclosures, heating, cooling, humidity control, ventilation, and similar facilities on a 24-hour basis where required to achieve indicated results and to avoid possibility of damage.

C. Termination and Removal: Remove each temporary facility when need for its service has ended, when it has been replaced by authorized use of a permanent facility, or no later than Substantial Completion. Complete or, if necessary, restore permanent construction that may have been delayed because of interference with temporary facility. Repair damaged Work, clean exposed surfaces, and replace construction that cannot be satisfactorily repaired.

END OF SECTION
SECTION 016000
PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and comparable products.

1.2 DEFINITIONS

A. Products: Items obtained for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

1. Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.

2. New Products: Items that have not previously been incorporated into another project or facility. Salvaged items or items reused from other projects are not considered new products. Items that are manufactured or fabricated to include recycled content materials are considered new products, unless indicated otherwise.

3. Comparable Product: Product by named manufacturer that is demonstrated and approved through the comparable product submittal process described in Part 2 "Comparable Products" Article, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.

B. Basis-of-Design Product Specification: A specification in which a single manufacturer's product is named and accompanied by the words "basis-of-design product," including make or model number or other designation. Published attributes and characteristics of basis-of-design product establish salient characteristics of products.

1. Evaluation of Comparable Products: In addition to the basis-of-design product description, product attributes and characteristics may be listed to establish the significant qualities related to type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other special features and requirements for purposes of evaluating comparable products of additional manufacturers named in the specification.

C. Subject to Compliance with Requirements: Where the phrase "Subject to compliance with requirements" introduces a product selection procedure in an individual Specification Section, provide products qualified under the specified product procedure. In the event that a named product or product by a named manufacturer does not meet the other requirements of the specifications, select another named product or product from another named manufacturer that...
does meet the requirements of the specifications; submit a comparable product request or substitution request, if applicable.

D. Comparable Product Request Submittal: An action submittal requesting consideration of a comparable product, including the following information:

1. Identification of basis-of-design product or fabrication or installation method to be replaced, including Specification Section number and title and Drawing numbers and titles.
2. Data indicating compliance with the requirements specified in Part 2 "Comparable Products" Article.

1.3 QUALITY ASSURANCE

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

1.4 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products, using means and methods that will prevent damage, deterioration, and loss, including theft and vandalism. Comply with manufacturer's written instructions.

1.5 PRODUCT WARRANTIES

A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.

1. Manufacturer's Warranty: Written standard warranty form furnished by individual manufacturer for a particular product and issued in the name of the Owner or endorsed by manufacturer to Owner.
2. Special Warranty: Written warranty required by the Contract Documents to provide specific rights for Owner and issued in the name of the Owner or endorsed by manufacturer to Owner.

B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.

1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
2. Specified Form: When specified forms are included in the Project Manual, prepare a written document, using indicated form properly executed.
3. See other Sections for specific content requirements and particular requirements for submitting special warranties.
PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

A. General Product Requirements: Provide products that comply with the Contract Documents, are undamaged and, unless otherwise indicated, are new at time of installation.

1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
3. Owner reserves the right to limit selection to products with warranties meeting requirements of the Contract Documents.
4. Where products are accompanied by the term "as selected," Architect will make selection.

B. Product Selection Procedures:

1. Limited List of Products: Where Specifications include a list of names of both manufacturers and products, provide one of the products listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

a. Limited list of products may be indicated by the phrase "Subject to compliance with requirements, provide one of the following."

2. Non-Limited List of Products: Where Specifications include a list of names of both available manufacturers and products, provide one of the products listed.

3. Limited List of Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements. Comparable products or substitutions for Contractor's convenience will not be considered unless otherwise indicated.

a. Limited list of manufacturers is indicated by the phrase "Subject to compliance with requirements, provide products by one of the following."

C. Visual Matching Specification: Where Specifications require the phrase "match Architect's sample," provide a product that complies with requirements and matches Architect's sample. Architect's decision will be final on whether a proposed product matches.

D. Visual Selection Specification: Where Specifications include the phrase "as selected by Architect from manufacturer's full range" or a similar phrase, select a product that complies with requirements. Architect will select color, gloss, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.
2.2 COMPARABLE PRODUCTS

A. Conditions for Consideration of Comparable Products: Architect will consider Contractor's request for comparable product when the following conditions are satisfied. If the following conditions are not satisfied, Architect may return requests without action, except to record noncompliance with the following requirements:

1. Evidence that proposed product does not require revisions to the Contract Documents, is consistent with the Contract Documents, will produce the indicated results, and is compatible with other portions of the Work.
2. Detailed comparison of significant qualities of proposed product with those of the named basis-of-design product. Significant product qualities include attributes, such as type, function, in-service performance and physical properties, weight, dimension, durability, visual characteristics, and other specific features and requirements.
3. Evidence that proposed product provides specified warranty.
4. List of similar installations for completed projects, with project names and addresses and names and addresses of architects and owners, if requested.
5. Samples, if requested.

B. Architect's Action on Comparable Products Submittal: If necessary, Architect will request additional information or documentation for evaluation.

C. Submittal Requirements, Two-Step Process: Approval by the Architect of Contractor's request for use of comparable product is not intended to satisfy other submittal requirements. Comply with specified submittal requirements.

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 017300

EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes general administrative and procedural requirements governing execution of the Work, including, but not limited to, the following:

2. Field engineering and surveying.
3. Installation of the Work.
4. Cutting and patching.
5. Coordination of Owner's portion of the Work.
6. Coordination of Owner-installed products.
7. Progress cleaning.
8. Starting and adjusting.
10. Correction of the Work.

1.2 DEFINITIONS

A. Cutting: Removal of in-place construction necessary to permit installation or performance of subsequent work.

B. Patching: Fitting and repair work required to restore construction to original conditions after installation of subsequent work.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Comply with requirements specified in other Sections.

B. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to Architect for the visual and functional performance of in-place materials. Use materials that are not considered hazardous.

C. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.
PART 3 - EXECUTION

3.1 EXAMINATION

A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.

1. Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.
2. Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.
3. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

C. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 PREPARATION

A. Existing Utility Information: Furnish information to local utility and Owner that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with authorities having jurisdiction.

B. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

C. Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.


3.3 CONSTRUCTION LAYOUT

A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks and existing conditions.
B. Engage a land surveyor experienced in laying out the Work, using the following accepted surveying practices:

1. Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of Project.
2. Establish limits on use of Project site.
3. Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.
4. Inform installers of lines and levels to which they must comply.
5. Check the location, level and plumb, of every major element as the Work progresses.
6. Close site surveys with an error of closure equal to or less than the standard established by authorities having jurisdiction.

C. Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and rim and invert elevations.

D. Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

3.4 FIELD ENGINEERING

A. Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

1. Do not change or relocate existing benchmarks or control points. Report lost or destroyed permanent benchmarks or control points promptly.
2. Replace lost or destroyed permanent benchmarks and control points promptly. Base replacements on the original survey control points.

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

3.5 INSTALLATION

A. Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.

1. Make vertical work plumb, and make horizontal work level.
2. Where space is limited, install components to maximize space available for maintenance and ease of removal for replacement.
3. Conceal pipes, ducts, and wiring in finished areas unless otherwise indicated.

B. Comply with manufacturer's written instructions and recommendations for installing products in applications indicated.
C. Install products at the time and under conditions that will ensure satisfactory results as judged by 
Architect. Maintain conditions required for product performance until Substantial Completion.

D. Conduct construction operations, so no part of the Work is subjected to damaging operations or 
loading in excess of that expected during normal conditions of occupancy of type expected for 
Project.

E. Sequence the Work and allow adequate clearances to accommodate movement of construction 
items on-site and placement in permanent locations.

F. Tools and Equipment: Select tools or equipment that minimize production of excessive noise 
levels.

G. Templates: Obtain and distribute to the parties involved templates for Work specified to be 
factory prepared and field installed. Check Shop Drawings of other portions of the Work to 
confirm that adequate provisions are made for locating and installing products to comply with 
indicated requirements.

H. Attachment: Provide blocking and attachment plates and anchors and fasteners of adequate size 
and number to securely anchor each component in place, accurately located and aligned with 
other portions of the Work. Where size and type of attachments are not indicated, verify size and 
type required for load conditions with manufacturer.

1. Mounting Heights: Where mounting heights are not indicated, mount components at heights 
directed by Architect.

2. Allow for building movement, including thermal expansion and contraction.

3. Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for 
installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with 
integral anchors, that are to be embedded in concrete or masonry. Deliver such items to 
Project site in time for installation.

I. Joints: Make joints of uniform width. Where joint locations in exposed Work are not indicated, 
arrange joints for the best visual effect, as judged by Architect. Fit exposed connections together 
to form hairline joints.

3.6 CUTTING AND PATCHING

A. General: Employ skilled workers to perform cutting and patching. Proceed with cutting and 
patching at the earliest feasible time, and complete without delay.

1. Cut in-place construction to provide for installation of other components or performance of 
other construction, and subsequently patch as required to restore surfaces to their original 
condition.

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

C. Temporary Support: Provide temporary support of Work to be cut.
D. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

E. Adjacent Occupied Areas: Where interference with use of adjoining areas or interruption of free passage to adjoining areas is unavoidable, coordinate cutting and patching with Owner.

F. Existing Utility Services and Mechanical/Electrical Systems: Where existing services/systems are required to be removed, relocated, or abandoned, bypass such services/systems before cutting to prevent interruption to occupied areas.

G. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
2. Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.
3. Concrete and Masonry: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
4. Excavating and Backfilling: Comply with requirements in applicable Sections where required by cutting and patching operations.
5. Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.
6. Proceed with patching after construction operations requiring cutting are complete.

H. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as practicable, as judged by Architect. Provide materials and comply with installation requirements specified in other Sections, where applicable.

1. Inspection: Where feasible, test and inspect patched areas after completion to demonstrate physical integrity of installation.
2. Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   a. Clean piping, conduit, and similar features before applying paint or other finishing materials.
   b. Restore damaged pipe covering to its original condition.
3. Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
   a. Where patching occurs in a painted surface, prepare substrate and apply primer and intermediate paint coats appropriate for substrate over the patch, and apply final paint.
coat over entire unbroken surface containing the patch, corner to corner of wall and edge
to edge of ceiling. Provide additional coats until patch blends with adjacent surfaces.

4. Ceilings: Patch, repair, or rehang in-place ceilings as necessary to provide an even-plane
   surface of uniform appearance.
5. Exterior Building Enclosure: Patch components in a manner that restores enclosure to a
   weathertight condition and ensures thermal and moisture integrity of building enclosure.

I. Cleaning: Clean areas and spaces where cutting and patching are performed. Remove paint,
mortar, oils, putty, and similar materials from adjacent finished surfaces.

3.7 PROGRESS CLEANING

A. Clean Project site and work areas daily, including common areas. Enforce requirements strictly.
   Dispose of materials lawfully.

   1. Comply with requirements in NFPA 241 for removal of combustible waste materials and
      debris.
   2. Do not hold waste materials more than seven days during normal weather or three days if the
      temperature is expected to rise above 80 deg F.
   3. Containerize hazardous and unsanitary waste materials separately from other waste. Mark
      containers appropriately and dispose of legally, according to regulations.

      a. Use containers intended for holding waste materials of type to be stored.

B. Site: Maintain Project site free of waste materials and debris.

C. Work Areas: Clean areas where Work is in progress to the level of cleanliness necessary for
   proper execution of the Work.

   1. Remove liquid spills promptly.
   2. Where dust would impair proper execution of the Work, broom-clean or vacuum the entire
      work area, as appropriate.

D. Installed Work: Keep installed work clean. Clean installed surfaces according to written
   instructions of manufacturer or fabricator of product installed, using only cleaning materials
   specifically recommended. If specific cleaning materials are not recommended, use cleaning
   materials that are not hazardous to health or property and that will not damage exposed surfaces.

E. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

F. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from
damage and deterioration at time of Substantial Completion.

G. Waste Disposal: Do not bury or burn waste materials on-site. Do not wash waste materials down
   sewers or into waterways.

H. During handling and installation, clean and protect construction in progress and adjoining
   materials already in place. Apply protective covering where required to ensure protection from
damage or deterioration at Substantial Completion.
1. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

J. Limiting Exposures: Supervise construction operations to ensure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period.

3.8 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safety. Replace damaged and malfunctioning controls and equipment.

3.9 PROTECTION OF INSTALLED CONSTRUCTION

A. Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Substantial Completion.

B. Protection of Existing Items: Provide protection and ensure that existing items to remain undisturbed by construction are maintained in condition that existed at commencement of the Work.

C. Comply with manufacturer's written instructions for temperature and relative humidity.

3.10 CORRECTION OF THE WORK

A. Repair or remove and replace damaged, defective, or nonconforming Work. Restore damaged substrates and finishes.

1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

B. Repair Work previously completed and subsequently damaged during construction period. Repair to like-new condition.

C. Restore permanent facilities used during construction to their specified condition.

D. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

E. Repair components that do not operate properly. Remove and replace operating components that cannot be repaired.
F. Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION
SECTION 017419
CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for the following:
   1. Salvaging nonhazardous demolition and construction waste.
   2. Disposing of nonhazardous demolition and construction waste.

1.2 DEFINITIONS

A. Construction Waste: Building, structure, and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

B. Demolition Waste: Building, structure, and site improvement materials resulting from demolition operations.

C. Disposal: Removal of demolition or construction waste and subsequent salvage, sale, recycling, or deposit in landfill, incinerator acceptable to authorities having jurisdiction, or designated spoil areas on Owner's property.

D. Salvage: Recovery of demolition or construction waste and subsequent sale or reuse in another facility.

1.3 INFORMATIONAL SUBMITTALS

A. Landfill and Incinerator Disposal Records: Indicate receipt and acceptance of waste by landfills and incinerator facilities licensed to accept them. Include manifests, weight tickets, receipts, and invoices.

1.4 WASTE MANAGEMENT PLAN

1. Disposed Materials: Indicate how and where materials will be disposed of. Include name, address, and telephone number of each landfill and incinerator facility.
PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 PLAN IMPLEMENTATION

A. General: Implement approved waste management plan. Provide handling, containers, storage, signage, transportation, and other items as required to implement waste management plan during the entire duration of the Contract.

B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
   1. Comply with Section 015000 "Temporary Facilities and Controls" for controlling dust and dirt, environmental protection, and noise control.

3.2 DISPOSAL OF WASTE

A. General: Except for items or materials to be salvaged or recycled, remove waste materials from Project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
   1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
   2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

B. General: Except for items or materials to be salvaged, remove waste materials and legally dispose of them.

C. Burning: Do not burn waste materials.

END OF SECTION
SECTION 017700
CLOSEOUT PROCEDURES
(CONTRACT CLOSEOUT AND CLEANING)

PART 1 - GENERAL

1.1 SUMMARY

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

1. Substantial Completion procedures.
2. Final completion procedures.
3. Warranties.
4. Final cleaning.
5. Repair of the Work.
6. Final walkthrough and punch list.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of cleaning agent.

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

C. Certified List of Incomplete Items: Final submittal at final completion.

D. Final walkthrough and punch list.

1.3 CLOSEOUT SUBMITTALS

A. Certificates of Release: From authorities having jurisdiction.

B. Certificate of Insurance: For continuing coverage.

1.4 SUBMITTALS

A. Contract closeout information for substantial completion:
   1. Comprehensive list of all items to be completed or corrected.
   2. Contractor's Notice of Substantial Completion.
   3. Certificates of governing authorities.
   4. Submittals required by other Sections.

B. Contract closeout information for final completion:
   1. Contractor's Certificate of Completion.
   2. Evidence of payments and release or waiver of liens in triplicate.
      b. Contractor's Affidavit of Release of Liens: AIA Document G706A.
c. Contractor's release or waiver of liens.
d. Separate releases or waivers of liens for subcontractors, suppliers, and others with lien rights against Owner, together with list of all such parties.
e. If required by Owner, other data establishing payment or satisfaction of obligations arising out of Contract.

4. Certificates evidencing that insurance to remain enforce.
5. Final application for payment.
6. Initiated list(s) of items to be completed or corrected verifying completion of each items.
7. List of Subcontractors and equipment suppliers. Include:
   a. Name.
   b. Address.
   c. Telephone number.
   d. Representative.
   e. Closeout submittals required by other Sections.

1.5 SUBSTANTIAL COMPLETION PROCEDURES

A. Substantial Completion is the stage in the progress of Work when the Work or designated portion thereof is sufficiently complete in general accordance with Contract Documents so Owner can occupy or utilize Work for its intended use.

1. Work will not be considered for Substantial Completion until all systems and equipment are operational; all designated or required governing agency inspections and certifications have been made and posted, instruction of designated Owner's personnel in operation of systems and equipment has been completed, operation and maintenance data has been satisfactorily turned over to Owner, and finishes are in place. In general, the only remaining Work shall be minor in nature, such that Owner may occupy or utilize Work or designated portion there of, and completion or correction of Work by Contractor would not materially interfere or hamper Owner's intended business use or operation.

2. Contractor shall certify that all remaining Work will be completed within 30 consecutive calendar days following date of Substantial Completion, or as agreed to in writing, and failure to do so shall automatically reinstate provisions for damages due Owner as contained elsewhere in Contract Document or as provided by law for such period of time as may be required by Contractor to fully complete Work whether Owner has occupied Work or not.

B. Obtain evidence of compliance with requirements of governing authorities:

1. Certificates of inspection of:
   a. Mechanical.
   b. Electrical.
   c. Plumbing.
   d. Etc.


C. When Contractor considers that Work, or a portion thereof which Owner agrees to accept separately, is substantially complete, Contractor shall thoroughly inspect Work, and prepare and submit to Field Engineer a comprehensive list of items to be corrected or completed, and Contractor's Notice of Substantial Completion (utilize form at end of this Section).

D. Contractor certify that:
1. Work performed under this Contract has been thoroughly inspected and considered to be sufficiently complete, in accordance with Contract Documents, so Owner can occupy or utilize Work for its intended use.

E. Failure of Contractor to include an item on such list(s) does not alter responsibility of Contractor to complete all Work in accordance with Contract Documents.

F. Contractor shall proceed promptly to complete and correct the items on list.

G. After receipt of Contractor's comprehensive list of items to be corrected or completed, and Contractor's Notice of Substantial Completion, Field Engineer will, within reasonable period after notification, review list of items to be completed or corrected, or inspect Work, or designated portion thereof, to determine whether Work is Substantially Complete.

H. If Owner's review or inspection discloses any item, whether or not included on Contractor's list, which is not sufficiently complete in general accordance with Contract Documents so Owner can occupy or utilize Work or designated portion thereof for its intended use:
   1. Contractor will be notified stating reasons.
   2. Contractor shall substantially complete or correct Work.
   3. Contractor shall thoroughly re-inspect Work.
   4. Contractor shall submit another Contractor's Notice of Substantial Completion, a revised list of items to be completed or corrected, and a request for another review and inspection.
   5. Field Engineer will again review list of items to be completed or corrected and Work.

I. When Work or designated portion thereof is considered Substantially Complete, Field Engineer will prepare a Certificate of Substantial Completion.
   1. The Certificate of Substantial Completion shall establish date of Substantial Completion, shall establish responsibilities of Owner and Contractor for security, maintenance, heat, utilities, damage to Work and insurance, and shall fix time within which Contractor shall complete and correct Work.
   2. Warranties required by Contract Documents shall commence on date of Substantial Completion of Work or designated portion thereof unless otherwise provided in Certificate of Substantial Completion.
   3. The Certificate of Substantial Completion shall be submitted to Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

J. Owner may occupy Project, or designated portion thereof, under provisions agreed to in Certificate of Substantial Completion, and if required, a certificate of occupancy has been issued by governing authorities.
   1. If Owner is going to occupy Project, or designated portion thereof, Contractor shall perform final cleaning immediately.
   2. If Field Engineer discovers any Work which is not complete and/or is not in conformance with Contract Documents, during or after occupying or utilizes Work, whether included on a list or not, Owner shall notify Contractor to complete or correct item(s) identified.

K. Contractor shall proceed expeditiously with adequate forces to complete or correct Work, and to complete all Project closeout requirements within designated time.

L. Contractor's List of Incomplete Items: Prepare and submit a list of items to be completed and corrected (Contractor's punch list), indicating the value of each item on the list and reasons why the Work is incomplete.
M. Submittals Prior to Substantial Completion: Complete the following a minimum of 10 days prior to requesting inspection for determining date of Substantial Completion. List items below that are incomplete at time of request.

1. Certificates of Release: Obtain and submit releases from authorities having jurisdiction permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
2. Submit closeout submittals specified in other Division 01 Sections, including project record documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
3. Submit closeout submittals specified in individual Sections, including specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
4. Submit maintenance material submittals specified in individual Sections, including tools, spare parts, extra materials, and similar items, and deliver to location designated by City of Tulsa Representative. Label with manufacturer's name and model number.
5. Submit testing, adjusting, and balancing records.
6. Submit sustainable design submittals not previously submitted.
7. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.

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

1. Advise Owner of pending insurance changeover requirements.
2. Make final changeover of permanent locks and deliver keys to Owner. Advise Owner's personnel of changeover in security provisions.
3. Complete startup and testing of systems and equipment.
4. Perform preventive maintenance on equipment used prior to Substantial Completion.
5. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
6. Advise Owner of changeover in utility services.
7. Participate with Owner in conducting inspection and walkthrough with local emergency responders.
8. Terminate and remove temporary facilities from Project site, along with mockups, construction tools, and similar elements.
9. Complete final cleaning requirements.
10. Touch up paint and otherwise repair and restore marred exposed finishes to eliminate visual defects.

O. Inspection: Submit a written request for inspection to determine Substantial Completion a minimum of 10 days prior to date the Work will be completed and ready for final inspection and tests. On receipt of request, City of Tulsa Representative will either proceed with inspection or notify Contractor of unfulfilled requirements. Owner’s Representative will prepare the Certificate of Substantial Completion after inspection or will notify Contractor of items, either on Contractor's list or additional items identified by City of Tulsa Representative, that must be completed or corrected before certificate will be issued.
1.6 FINAL COMPLETION PROCEDURES

A. After Contractor has completed all Work, and has thoroughly inspect Work to determine that it is complete, is in accordance with Contract Documents and Contract is fully performed, Contractor shall submit Contractor's Certificate of Completion to Field Engineer, and the list(s) of items to be completed or corrected initialed to indicate Contractor has verified completion of each item. Utilize form at end of this section. Certify that:
   1. Work has been thoroughly inspected by Contractor for compliance with Contract Documents.
   2. Work has been completed in accordance with Contract Documents.
   3. Equipment and systems have been tested and are operating satisfactorily.
   4. Contract closeout requirements have been completed satisfactorily and submitted.
   5. Contractor knows of no reason that insurance will not be renewable to cover period required by Contract Documents.
   6. Work is ready for final inspection and acceptance.

B. Submit final closeout submittals required by this and other Sections.

C. Field Engineer will make final walk through within a reasonable time after receipt of Contractor's Certificate of Completion and final Application for Payment.

D. Contractor shall remedy any remaining deficiencies or incomplete Work, at Contractor's expense.

E. When Field Engineer finds Work acceptable under Contract Documents and Contract satisfactorily performed, Field Engineer will promptly issue a final Certificate for Payment.

F. Neither final payment nor any remaining retained percentage shall become due until Contractor submits to Field Engineer;
   1. An affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with Work for which Owner or Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied (AIA Documents G706 and G706A),
   2. A certificate evidencing that insurance required by Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least 30 days' prior written notice has been given to Owner,
   3. A written statement that Contractor knows of no substantial reason that insurance will not be renewable to cover period required by Contract Documents,
   4. Consent of surety, if any, to final payment (AIA Document G707),
   5. Contractor's release or waiver of liens,
   6. If required by Owner, other data establishing payment or satisfaction of obligations, such as receipts, releases and waivers of liens, claims, security interests or encumbrances arising out of Contract, to extent and in such form as may be designated by Owner, for Owner's review.
   7. If a Subcontractor refuses to furnish a release or waiver required by Owner, Contractor may furnish a bond satisfactory to Owner to indemnify Owner against such lien. If such lien remains unsatisfied after payments are made, the Contractor shall refund to Owner all money that Owner may be compelled to pay in discharging such lien, including all costs and reasonable attorneys' fees.

G. Submittals Prior to Final Completion: Before requesting final inspection for determining final completion, complete the following:
   1. Submit a final Application for Payment.
2. Certified List of Incomplete Items: Submit certified copy of City of Tulsa Representative's Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by City of Tulsa Representative. Certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance.

3. Certificate of Insurance: Submit evidence of final, continuing insurance coverage complying with insurance requirements.

4. Submit pest-control final inspection report.

H. Inspection: Submit a written request for final inspection to determine acceptance a minimum of 10 days prior to date the work will be completed and ready for final inspection and tests. On receipt of request, City of Tulsa Representative will either proceed with inspection or notify Contractor of unfulfilled requirements. City of Tulsa Representative will prepare a final Certificate for Payment after inspection or will notify Contractor of construction that must be completed or corrected before certificate will be issued.

1.7 LIST OF INCOMPLETE ITEMS (PUNCH LIST)

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

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

   a. MS Excel electronic file and one (1) paper copy. City of Tulsa Representative will return annotated file.

1.8 SUBMITTAL OF PROJECT WARRANTIES

A. Time of Submittal: Submit written warranties on request of City of Tulsa Representative for designated portions of the Work where warranties are indicated to commence on dates other than date of Substantial Completion, or when delay in submittal of warranties might limit Owner's rights under warranty.

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

C. Warranty Electronic File: Provide warranties and bonds in PDF format. Assemble complete warranty and bond submittal package into a single electronic PDF file with bookmarks enabling navigation to each item. Provide bookmarked table of contents at beginning of document.

1. Submit on digital media acceptable to City of Tulsa Representative.

D. Warranties in Paper Form:

1. Bind warranties and bonds in heavy-duty, three-ring, vinyl-covered, loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch paper.
E. Provide additional copies of each warranty to include in operation and maintenance manuals.

PART 2 - PRODUCTS

2.1 MATERIALS

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

B. Fire Protection
   1. Store volatile waste in covered metal containers.
   2. Remove from premises daily.

C. Pollution Control
   1. Conduct cleanup and disposal operations to comply with codes, rules, regulations, ordinances, and anti-pollution laws.
   2. Do not burn or bury rubbish and waste on site.
   3. Do not discharge volatile, harmful, or dangerous materials into drainage systems.

PART 3 - EXECUTION

3.1 FINAL CLEANING

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

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

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project or for a designated portion of Project:
   a. Clean all items installed under this Contract.
   b. Clean Project site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
   c. Clean exposed exterior and interior hard-surfaces finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
   d. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
   e. Sweep concrete floors broom clean in unoccupied spaces.
f. Vacuum carpet and similar soft surfaces, removing debris and excess nap; clean according to manufacturer's recommendations if visible soil or stains remain.
g. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
h. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
i. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency.
j. Leave Project clean and ready for occupancy.
k. Leave free of stains, dirt, dust, damage, or defects.
l. Include washing, sweeping, polishing of wall surfaces, floors, windows, hardware, mirrors, lighting fixtures, equipment, etc.

C. Pest Control: Comply with pest control requirements in Section 015000 "Temporary Facilities and Controls." Prepare written report.

3.2 DURING CONSTRUCTION

A. Provide on-site containers for the collection of waste materials, debris, and rubbish.

B. Clean up all waste materials, rubbish, and debris from site and access daily.

C. Dispose of off site once a week.

D. Wet down dusty materials and rubbish to prevent blowing dust during entire construction period.

E. If use of water is prohibited by law, Contractor shall seek an alternate method to prevent blowing dust.

F. Perform cleaning operations as required during construction to prevent accumulations of dust, soil, and debris.

G. Clean and protect Work in progress and adjoining materials in place, during handling and installation.

H. Clean and provide maintenance on completed Work as frequently as necessary throughout construction period.

I. Clean lunch/break area after each use.

J. Maintain site and building so no condition provides a fire hazard.

3.3 FINAL CLEANING

A. At Substantial Completion, perform final cleaning of Work and existing areas wherever any area are left less than clean by construction operations.

B. Complete cleaning operations before requesting review for Substantial Completion.

C. Use experienced workmen or professional cleaners for final cleaning.
D. Repair and touch-up marred areas.

E. Broom clean and remove stains from paved surfaces; rake clean other surfaces of grounds.

F. Remove grease, dust, dirt, stains, labels, fingerprints, mastic, adhesive, and other foreign materials from interior and exterior surfaces, and fixtures, hardware, and equipment.

G. Remove temporary protection and facilities installed for protection of the Work during construction.

H. Prior to Owner occupancy, Contractor and Owner shall conduct an inspection of all Work areas to verify that the Project is clean to the Owner's satisfaction.

3.4 REPAIR OF THE WORK

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

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

END OF SECTION
CONTRACTOR'S NOTICE OF SUBSTANTIAL COMPLETION

PROJECT: ____________________________________________

ARCH PROJ. NO.: ____________________________ CONTRACT DATE: ____________________________
CONTRACT FOR: ____________________________

WORK OR DESIGNATED PORTION SHALL INCLUDE: ____________________________________________

PART 4 - Work performed under this Contract has been thoroughly inspected and is considered to be sufficiently complete, in accordance with Contract Documents, so Owner can occupy or utilize Work or designated portion thereof for its intended use.

☐ Certificates of inspections indicating compliance with requirements of governing authorities, are attached here-to.

☐ Certificate of Occupancy have been obtained from governing authorities, are attached hereto.

☐ A comprehensive list of items to be completed or corrected, prepared by Contractor is attached, hereto. Failure to include any items on such list does not alter responsibility of Contractor to complete all Work in accordance with Contract Documents.

Contractor will complete or correct Work by: ____________________________
CONTRACTOR: ____________________________________________
BY: ____________________________ DATE: ____________________________

OWNER (agrees) (does not agree) to accept portion designated above separately from rest of Project.

Owner intends to utilize, occupy or take use on: ____________________________
OWNER: ____________________________________________ DATE: ____________________________
BY: ____________________________________________

The Work designated above, has been determined to be:

☐ Substantially Complete and a Certificate of Substantial Completion will be issued.

☐ Not substantially complete for following reasons:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

OWNER’S REPRESENTATIVE: ____________________________
BKL, Inc.
BY: ____________________________ DATE: ____________________________

DISTRIBUTION:  ☐ OWNER  ☐ OWNER’S REPRESENTATIVE  ☐ CONTRACTOR

CONTRACTOR'S NOTICE OF SUBSTANTIAL COMPLETION

SP 22-7 TULSA POLICE DEPARTMENT HELIPORT
BKL Project No. 811
APRIL 26, 2023
017700 - 10
CONTRACTOR'S CERTIFICATE OF COMPLETION

PROJECT: ______________________________
ARCH. PROJECT NUMBER: ______________________________
CONTRACT FOR: ______________________________
CONTRACT DATE: ______________________________

This is to certify that I am an authorized official of, and have been properly authorized by said firm or corporation to certify following:
I know of my own personal knowledge, and do hereby certify on behalf of Contractor, that Work has been reviewed and thoroughly inspected for compliance with Contract Documents, that Work has been completed, in accordance with Contract Documents and Contract is fully performed, that all equipment and systems have been tested and are operating satisfactorily, that all Contract closeout requirements have been completed satisfactorily and submitted, know of no substantial reason that insurance will not be renewable to cover period required by Contract Documents, and Work is ready for final inspection and acceptance.

Attached are three (3) copies of following documents, which are required prior to final payment:
☐ Final Application for Payment.
☐ Contractor's Affidavit of Release of Liens: AIA Document G706A.
☐ Consent of Surety (if any) to Final Payment: AIA Document G707.
☐ Certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect and will not be canceled or allowed to expire until at least thirty (30) days' prior written notice has been given to Owner.
☐ The list(s) of if items which were to be completed and corrected, with each item initialed to indicate Contractor has verified completion or correction of each.
☐ List of subcontractors and equipment suppliers.
☐ If required by Owner, other data establishing payment or satisfaction of obligations arising out of Contract.
☐ Transmittal indicating Owner has received Project Record Documents.
☐ Transmittal indicating Owner has received Operations and Maintenance Manuals
☐ Transmittals indicating that owner has received Spare Parts, Warranties and Guaranties.

I understand that acceptance of final payment by Contractor, a Subcontractor or material supplier shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at time of final Application for Payment.

CONTRACTOR: ______________________________
TITLE: ______________________________
BY: ______________________________
DATE: ______________________________

Subscribed and sworn to me this ______ day of __________________________

NOTARY PUBLIC: ______________________________

My commission expires: ______________________________

DISTRIBUTION: ☐ OWNER ☐ OWNER'S REPRESENTATIVE

SP 22-7 TULSA POLICE DEPARTMENT HELIPORT
BKL Project No. 811
APRIL 26, 2023
017700 - 11
PART 1 - GENERAL

1.1 OPERATION AND MAINTENANCE DATA AND MANUALS

A. Adequate operation and maintenance information shall be supplied for all equipment requiring maintenance or other attention. The equipment Supplier shall prepare a project specific operation and maintenance manual for each type of equipment indicated in the individual equipment sections or the equipment schedule.

B. Parts lists and operating and maintenance instructions shall be furnished for other equipment not listed in the individual equipment sections or the equipment schedule.

C. Operation and maintenance manuals shall include the following:

1. Equipment function, normal operating characteristics, and limiting conditions.
2. Assembly, installation, alignment, adjustment, and checking instructions.
3. Operating instructions for startup, routine and normal operation, regulation and control, startup, and emergency conditions.
4. Lubrication and maintenance instructions.
5. Guide to troubleshooting.
6. Parts lists and predicted life of parts subject to wear.
7. Outline, cross section, and assembly drawings; engineering data; and wiring diagrams.
8. Test data and performance curves, where applicable.

D. The operation and maintenance manuals shall be in addition to any instructions or parts lists packed with or attached to the equipment when delivered, or which may be required by Contractor.

E. Three hard copies of each manual shall be submitted to Engineer prior to the date of shipment of the equipment. When the O&M manuals are returned with the review status "RETURNED FOR CORRECTION", the corrections shall be made as instructed by the Engineer, and two copies of the corrected portion(s) and one complete corrected copy of the O&M manual returned to the Engineer. After review by Engineer, is complete one hard copy and one electronic copy of each operation and maintenance manual shall be prepared and delivered to Engineer not later than 30 days prior to placing the equipment in operation. The electronic copy will be reviewed for content and organization and assigned a review status by the Engineer. When corrections are required, a corrected version of the electronic copy shall be resubmitted. Procedures for submission of the electronic copy will be provided after award of the Contract. When review of the electronic copy by the Engineer is complete, three copies of each electronic O&M manual shall be delivered on a Thumb Drive/Flash Drive to the Engineer. Each Drive shall contain only one copy of one manual.

F. The "O&M and Nameplate Information for Equipment ID" Form must be included with each O&M Manual for each piece of equipment valued at more than $1,000. The Equipment ID Form shall be submitted by the Contractor for all equipment provided with a value more than $1,000 irrespective of whether an O&M manual is provided; that requires preventative maintenance to be
performed; any valve 8 inches or larger; and all motorized valves that are smaller than 8 inches that require preventative maintenance.

G. Contractor shall complete the Project Close-Out Checklist spreadsheet as required for each item with an Antero form. An electronic version of the spreadsheet will be provided by Owner after contract is awarded.

H. All material shall be marked with project identification, and inapplicable information shall be marked out or deleted.

I. Shipment of equipment will not be considered complete until all required manuals and data have been received.

1.2 HARD COPY OPERATION AND MAINTENANCE MANUALS
A. Hard copies submitted for review shall be temporarily bound in heavy paper covers bearing suitable identification. All manuals and other data shall be printed on heavy, first quality 8-1/2 x 11 inch paper, with standard three-hole punching. Drawings and diagrams shall be reduced to 8-1/2 x 11 inches or 11 x 17 inches. Where reduction is not practicable, larger drawings shall be folded separately and placed in envelopes, which are bound into the manuals. Each envelope shall be suitably identified on the outside. Each volume containing data for three or more items of equipment shall include a table of contents and index tabs. The final hard copy of each manual shall be prepared and delivered in substantial, permanent, three-ring or three-post binders with a table of contents and suitable index tabs.

1.3 ELECTRONIC OPERATION AND MAINTENANCE MANUALS.
A. Electronic manuals shall be in Adobe Acrobat's Portable Document Format (PDF) and shall be prepared at a resolution between 300 and 600 dots per inch (dpi), depending on document type. Optical Character Recognition (OCR) capture shall be performed on these documents. OCR settings shall be performed with the "original image with hidden text" option in Adobe Acrobat Exchange.

B. File size shall be limited to 10 MB. When multiple files are required the least number of files possible shall be created. File names shall be in the format OMXXXXX-YZZZ-V.pdf, where XXXXX is the five-digit number corresponding to the specification section, YYYY is a three-digit O&M manual number, e.g. 001, Z is the letter signifying a resubmittal, A, B, C, etc, and V is a number used only when more than one 10 MB file is required for an O&M manual.

C. Documents prepared in PDF format shall be processed as follows:
1. Pages shall be searchable (processed for optical character recognition) and indexed when multiple files are required.
2. Pages shall be rotated for viewing in proper orientation.
3. A bookmark shall be provided in the navigation frame for each entry in the Table of Contents.
4. Embedded thumbnails shall be generated for each completed PDF file.
5. The opening view for PDF files shall be as follows:
6. Initial View: Bookmarks and Page
7. Page Number: Title Page (usually Page 1) Magnification: Set to Fit in Window
9. Where the bookmark structure is longer than one page the bookmarks shall be collapsed to show the chapter headings only.
10. When multiple files are required the first file of the series (the parent file) shall list every major topic in the Table of Contents. The parent file shall also include minor headings bookmarked based on the Table of Contents. Major headings, whose content is contained in subsequent files (children) shall be linked to be called from the parent to the specific location in the child file. The child file shall contain bookmark entries for both major and minor headings contained in the child file. The first bookmark of any child file shall link back to the parent file and shall read as follows: "Return to the Equipment Name Table of Contents", e.g., Return to the Polymer Feed System Table of Contents.
11. Drawings shall be bookmarked individually.
12. Files shall be delivered without security settings to permit editing, insertion, and deletion of material to update the manual provided by the manufacturer.

1.4 LABELING
A. As a minimum, the following information shall be included on all final O&M manual materials, including CD-ROM disks, jewel cases, and hard copy manuals:
   1. Equipment name and/or O&M title spelled out in complete words. Project Name.
   2. City Project/Contract Number.
   3. Specification Section Number. Example: “Section 23002” Manufacturer’s name.
   4. File Name and Date.

B. For example:
   1. Pump Mixing System Systems Operation and Maintenance Manual Somewhere Plant Expansion
   2. Project/Contract No. Specification Section 230002 Manufacturer
   3. OM11331-001.pdf, 5/05/18

PART 2 - PRODUCTS

2.1 EQUIPMENT ID TAGS

2.2 General Requirements:
A. The following items will require equipment ID number tags to be permanently installed.
   1. Any equipment valued over $1,000
   2. All Valves greater than 8"
   3. All relief and motorized valves that are smaller than 8"
   4. Any equipment that requires preventive maintenance
   5. Any equipment that is critical to the process of the plant
   6. Any equipment that is considered a Safety item
      a. Emergency Eyewash/Showers
      b. Fire Extinguishers
      c. All Ladders
      d. Hoists
      e. Detectors
      f. Overhead Doors
      g. Fire Alarms/Sprinklers
      h. Emergency Lights
2.3 **Tag material:**
   A. Phenolic plastic tags
   B. Blue with White Engraving
   C. U/V stable
   D. Engraved to a depth of 0.08mm

2.4 **Rectangle tags for Equipment:**
   A. Plastic 3.5"x .75" tag 1/16" thick.
   B. 1 line of text, capitalized block letters, centered on tag - “TFD-XXX-XXXXX”
   C. (Must follow equipment ID numbering scheme).
   D. Lettering - .25" high
   E. Tags shall be attached to equipment with adhesive.

   ![ABJ-XXX-XXXXX](Image)

2.5 **Round tags for Valves:**
   A. Plastic 1.5" tags 1/16" thick
   B. 3 lines of text, capitalized block letters, centered on tag,
   C. (Must follow equipment ID numbering scheme).
   D. Lettering – 3/16" high
   E. Tags shall be attached to equipment with stainless steel permanent ties.

![O ABJ-XXX-XXXXX](Image)

**PART 3 - EXECUTION**

**3.1 DATA REQUIRED FOR FINISH MATERIALS**
   A. Maintenance data:
      1. Precautions necessary.
      2. Manufacturer's instructions and recommendations.
      3. Maintenance materials and tools required.
      4. Repair and/or replacement instructions.
      5. Name and address of manufacturer.
      6. Name and address of local supplier of materials.

**END OF SECTION**
SECTION 017839

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for project record documents, including the following:

1. Record Drawings.
2. Record Specifications.
3. Record Product Data.
4. Record Samples.

1.2 CLOSEOUT SUBMITTALS

A. Record Drawings: Comply with the following:
   1. Submit one paper-copy set of marked-up record prints.
   2. Submit PDF electronic files of scanned record.
      1) Print each drawing, whether or not changes and additional information were recorded.

B. Record Specifications: Submit one paper copy and annotated PDF electronic files of Project's Specifications, including addenda and contract modifications.

C. Record Product Data: Submit one paper copy and annotated PDF electronic files and directories of each submittal.

1. Where record Product Data are required as part of operation and maintenance manuals, submit duplicate marked-up Product Data as a component of manual.

1.3 RECORD DRAWINGS

A. Record Prints: Maintain one set of marked-up paper copies of the Contract Drawings and Shop Drawings, incorporating new and revised drawings as modifications are issued.

1. Preparation: Mark record prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is Installer, subcontractor, or similar entity, to provide information for preparation of corresponding marked-up record prints.

   a. Give particular attention to information on concealed elements that would be difficult to identify or measure and record later.
   b. Accurately record information in an acceptable drawing technique.
   c. Record data as soon as possible after obtaining it.
d. Record and check the markup before enclosing concealed installations.
e. Cross-reference record prints to corresponding photographic documentation.

2. Content: Types of items requiring marking include, but are not limited to, the following:
   a. Dimensional changes to Drawings.
   b. Revisions to details shown on Drawings.
   c. Depths of foundations.
   d. Locations and depths of underground utilities.
   e. Revisions to routing of piping and conduits.
   f. Revisions to electrical circuitry.
   g. Actual equipment locations.
   h. Duct size and routing.
   i. Locations of concealed internal utilities.
   j. Changes made by Change Order or Change Directive.
   k. Changes made following Owner's Representative's written orders.
   l. Details not on the original Contract Drawings.
   m. Field records for variable and concealed conditions.
   n. Record information on the Work that is shown only schematically.

3. Mark the Contract Drawings and Shop Drawings completely and accurately. Use personnel proficient at recording graphic information in production of marked-up record prints.

4. Mark record sets with erasable, red-colored pencil. Use other colors to distinguish between changes for different categories of the Work at same location.

5. Mark important additional information that was either shown schematically or omitted from original Drawings.

6. Note Construction Change Directive numbers, alternate numbers, Change Order numbers, and similar identification, where applicable.

B. Format: Identify and date each record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

1. Record Prints: Organize record prints into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.
2. Identification: As follows:
   a. Project name.
   b. Date.
   c. Designation "PROJECT RECORD DRAWINGS."
   d. Name of Owner's Representative
   e. Name of Contractor.

1.4 RECORD SPECIFICATIONS

A. Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Specifications, addenda, and contract modifications.

1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
2. Mark copy with the proprietary name and model number of products, materials, and equipment furnished, including substitutions and product options selected.
3. Record the name of manufacturer, supplier, Installer, and other information necessary to provide a record of selections made.
4. For each principal product, indicate whether record Product Data has been submitted in operation and maintenance manuals instead of submitted as record Product Data.
5. Note related Change Orders, record Product Data, and record Drawings where applicable.

B. Format: Submit record Specifications as paper copy and scanned PDF electronic file(s) of marked-up paper copy of Specifications.

1.5 RECORD PRODUCT DATA

A. Recording: Maintain one copy of each submittal during the construction period for project record document purposes. Post changes and revisions to project record documents as they occur; do not wait until end of Project.

B. Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.
   1. Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.
   2. Include significant changes in the product delivered to Project site and changes in manufacturer's written instructions for installation.
   3. Note related Change Orders, record Specifications, and record Drawings where applicable.

C. Format: Submit record Product Data as paper copy and scanned PDF electronic file(s) of marked-up paper copy of Product Data.
   1. Include record Product Data directory organized by Specification Section number and title.

1.6 RECORD SAMPLES

A. Recording: Maintain one copy of each submittal sample during the construction period for project for record document purposes.

B. Preparation:
   1. Submit manageable samples in a 3 ring binder.
   2. When possible, cut samples to 8 x 10 size to fit binder.
   3. Include color copies of samples that are too heavy or too large for binder.

C. Format:
   1. Insert manageable samples in a plastic sleeve.
   2. Included on a 8 ½ x 11 card stock, with the following:
      a. Indicate the product and installation location.
      b. Note Specification Section and Title and submittal number.
      c. Note related Change Orders where applicable.
      d. Note related Change Orders, record Specifications, and record Drawings where applicable.
Note Specification Section and Title and submittal number with each sample.
3. Organize binder by Specification Section number and title.

1.7 MAINTENANCE OF RECORD DOCUMENTS

A. Maintenance of Record Documents: Store record documents in the field office apart from the Contract Documents used for construction. Do not use project record documents for construction purposes. Maintain record documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to project record documents for Owner's Representative's reference during normal working hours.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION
SECTION 033000
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture. Include the following:
   1. Mixture identification.
   2. Minimum 28-day compressive strength.
   3. Maximum w/cm.
   4. Slump limit.
   5. Air content.
   7. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
   8. Intended placement method.
   9. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement.

D. Construction Joint Layout: Indicate proposed construction joints required to construct the structure. Location of construction joints is subject to approval of the Architect.

1.3 INFORMATIONAL SUBMITTALS

A. Material certificates.
B. Material test reports.

C. Field quality-control reports

1.4 QUALITY ASSURANCE

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

   1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1.5 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94/C94M and ACI 301.

1.7 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1.

B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

   1. ACI 301.

   2. ACI 117.
2.2 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.3 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.

B. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, plain, fabricated from as-drawn steel wire into flat sheets.


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

2.4 CONCRETE MATERIALS

A. Cementitious Materials:

1. Portland Cement: ASTM C 150/C 150M, Type I Type II.

B. Normal-Weight Aggregates: ASTM C 33/C 33M, graded. Aggregate shall be obtained from a source approved by the state highway department for use in concrete for state bridges.


2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

3. Alkali-Silica Reaction: Comply with one of the following:

   a. Expansion Result of Aggregate: Not more than 0.04 percent at one-year when tested in accordance with ASTM C1293.

   b. Expansion Results of Aggregate and Cementitious Materials in Combination: Not more than 0.10 percent at an age of 16 days when tested in accordance with ASTM C1567.

   c. Alkali Content in Concrete: Not more than 4 lb./cu. yd. for moderately reactive aggregate or 3 lb./cu. yd. for highly reactive aggregate, when tested in accordance with ASTM C1293 and categorized in accordance with ASTM C1778, based on alkali content being calculated in accordance with ACI 301.

C. Air-Entraining Admixture: ASTM C 260/C 260M.

D. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.
E. Water: ASTM C 94/C 94M and potable.

2.5 FIBER REINFORCEMENT

A. Synthetic Micro-Fiber: Fibrillated polypropylene micro-fibers engineered and designed for use in concrete, complying with ASTM C 1116/C 1116M, Type III.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. Euclid Chemical Company (The); an RPM company.
   b. Nycon, Inc.
   c. Propex Operating Company, LLC.
   d. Buckeye Technologies, Inc.

2.6 VAPOR RETARDERS

A. Sheet Vapor Retarder: ASTM E 1745, Class A. Include manufacturer’s recommended adhesive or pressure-sensitive tape.

2.7 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

1. Color:
   a. Ambient Temperature Below 50 deg F: Black.
   b. Ambient Temperature between 50 deg F and 85 deg F: Any color.
   c. Ambient Temperature Above 85 deg F: White.

D. Water: Potable.
2.8 RELATED MATERIALS

A. C Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber or ASTM D1752, cork or self-expanding cork.

2.9 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.

B. Admixtures: Use admixtures according to manufacturer's written instructions.
   1. Use water-reducing high-range water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
   2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
   3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

2.10 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Normal-Weight Concrete:
   1. Minimum Compressive Strength: 4000 psi at 28 days.
   2. Maximum W/C Ratio: 0.40.
   3. Slump Limit: 4 inches, plus or minus 1 inch.
   4. Air Content: 5.5 percent, plus or minus 1.5 percent at point of delivery for 1-1/2-inch nominal maximum aggregate size.
   5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.
   6. Synthetic Micro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than a rate of 1.5 lb/cu. yd..

B. Suspended Slabs: Lightweight concrete.
   1. Minimum Compressive Strength: 4000 psi at 28 days.
   2. Calculated Equilibrium Unit Weight: 115 lb/cu. ft. 110 lb/cu. ft. 105 lb/cu. ft., plus or minus 3 lb/cu. ft. as determined by ASTM C 567/C 567M.
   3. Slump Limit: 4 inches, plus or minus 1 inch.
4. Air Content: 6 percent, plus or minus 2 percent at point of delivery for nominal maximum aggregate size greater than 3/8 inch.

5. Air Content: Do not allow air content of trowel-finished floors to exceed 3 percent.

6. Synthetic Micro-Fiber: Uniformly disperse in concrete mixture at manufacturer's recommended rate, but not less than a rate of 1.5 lb/cu. yd..

2.11 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.12 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.

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

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete in accordance with ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.

   1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than five minutes after ingredients are in mixer, before any part of batch is released.

   2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..

   3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Chamfer exterior corners and edges of permanently exposed concrete.
3.2 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.3 VAPORETARDER INSTALLATION

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder according to ASTM E 1643 and manufacturer’s written instructions.

1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
2. Face laps away from exposed direction of concrete pour.
3. Lap vapor retarder over footings and grade beams not less than 6 inches, sealing vapor retarder to concrete.
4. Lap joints 6 inches and seal with manufacturer’s recommended tape.
5. Terminate vapor retarder at the top of floor slabs, grade beams, and pile caps, sealing entire perimeter to floor slabs, grade beams, foundation walls, or pile caps.
6. Seal penetrations in accordance with vapor retarder manufacturer’s instructions.
7. Protect vapor retarder during placement of reinforcement and concrete.
   a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches on all sides, and sealing to vapor retarder.

3.4 STEEL REINFORCEMENT INSTALLATION

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

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.
3.5 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.

2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.

D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.

2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface, where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.

3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints:

1. Install dowel bars and support assemblies at joints where indicated on Drawings.

2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.

3.6 WATERSTOP INSTALLATION

A. Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions.

3.7 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.
1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.

2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.

B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.

1. If a section cannot be placed continuously, provide construction joints as indicated.

2. Deposit concrete to avoid segregation.

3. Consolidate placed concrete with mechanical vibrating equipment according to ACI 301.

3.8 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view.

C. Rubbed Finish: Apply the following to smooth-formed-finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix 1 part portland cement to 1-1/2 parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.

3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix 1 part portland cement and 1 part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent
formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.9 FINISHING FLOORS AND SLABS

A. General: Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.

1. Apply a trowel finish to surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin-film-finish coating system.

2. Finish and measure surface, so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.-long straightedge resting on two high spots and placed anywhere on the surface does not exceed 3/16 inch.

C. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps and approach slabs and elsewhere as indicated.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.10 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling In:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to blend with in-place construction.
3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 6 inches high unless otherwise indicated on Drawings, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4000 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices.
   a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   b. Cast anchor-bolt insert into bases.
   c. Install anchor bolts to elevations required for proper attachment to supported equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items.
   1. Cast-in inserts and accessories, as shown on Drawings.
   2. Screed, tamp, and trowel finish concrete surfaces.

3.11 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-weather protection during curing.

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

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

   1) Recoin areas subject to heavy rainfall within three hours after initial application.
   2) Maintain continuity of coating and repair damage during curing period.
B. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recojat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.
   a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recojat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.12 TOLERANCES

A. Conform to ACI 117.

3.13 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Architect. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

END OF SECTION
PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Brick.
   3. Ties and anchors.
   4. Embedded flashing.
   5. Accessories.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Samples: For each type and color of brick.

C. Sustainable Design Submittals:

1.3 INFORMATIONAL SUBMITTALS

A. Material Certificates: For each type and size of product.

1.4 FIELD CONDITIONS

A. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in TMS 602.

B. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602.
PART 2 - PRODUCTS

2.1 UNIT MASONRY, GENERAL

A. Masonry Standard: Comply with TMS 602, except as modified by requirements in the Contract Documents.

B. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to contain chips, cracks, or other defects exceeding limits stated. Do not use units where such defects will be exposed in the completed Work.

2.2 BRICK

A. General: Provide shapes indicated and as follows, with exposed surfaces matching finish and color of exposed faces of adjacent units.

1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.

B. Clay Face Brick: Facing brick complying with ASTM C216, Grade SW, Type FBS.

1. Initial Rate of Absorption: Less than 30 g/30 sq. in. per minute when tested in accordance with ASTM C67/C67M.
3. ACME Brick: Allentown, Modular, velour texture, TUP008, 866922.

2.3 MORTAR MATERIALS

A. Portland Cement: ASTM C150/C150M, Type I or II, except Type III may be used for cold-weather construction. Provide white cement as required to produce color indicated.

B. Hydrated Lime: ASTM C207, Type S.

C. Portland Cement-Lime Mix: Packaged blend of portland cement and hydrated lime containing no other ingredients.

D. Masonry Cement: ASTM C91/C91M.

E. Preblended Dry Mortar Mix: Packaged blend made from portland cement and hydrated lime or masonry cement, sand, water repellents, and admixtures and complying with ASTM C1714/C1714M.

F. Aggregate for Mortar: ASTM C144.

G. Cold-Weather Admixture: Nonchloride, noncorrosive, accelerating admixture complying with ASTM C494/C494M, Type C ASTM C1384, and recommended by manufacturer for use in masonry mortar of composition indicated.

H. Water: Potable.
1. Color: match mortar color to selected brick color.

2.4 TIES AND ANCHORS

A. General: Ties and anchors extend at least 1-1/2 inches into veneer but with at least a 5/8-inch cover on outside face.

B. Materials: Provide ties and anchors specified in this article that are made from materials that comply with the following unless otherwise indicated:


C. Adjustable Masonry-Veneer Anchors:

1. General: Provide anchors that allow vertical adjustment but resist a 100 lbf load in both tension and compression perpendicular to plane of wall without deforming or developing play in excess of 1/16 inch.
2. Fabricate sheet metal anchor sections and other sheet metal parts from 0.1084-inch-thick steel sheet, galvanized after fabrication.
3. Fabricate wire ties from 0.25-inch- diameter, hot-dip galvanized steel wire unless otherwise indicated.
4. Masonry-Veneer Anchors; Slotted Plate: Sheet metal anchor section, with screw holes at top and bottom; and raised rib-stiffened strap, stamped into center to provide a slot between strap and base for wire tie. Use self-adhering tape to seal penetration behind anchor plate.
5. Polymer-Coated, Steel Drill Screws for Steel Studs: ASTM C954 except manufactured with hex washer head and neoprene or EPDM washer, No. 10 diameter by length required to penetrate steel stud flange with not less than three exposed threads, and with organic polymer coating with salt-spray resistance to red rust of more than 800 hours in accordance with ASTM B117.

2.5 EMBEDDED FLASHING

A. Drainage Plane Flashing: Fabricate from rubberized asphalt and drainage membrane to shapes indicated, including weep tabs, termination bar and drip edge. Provide flashing materials as follows:
1. Stainless Steel Drip Edge: ASTM A240/A240M or ASTM A666, Type 304, 0.016 inch thick.
2. Rubberized Asphalt: 60 mils thick.
3. Fabricate continuous flashings in sections 60 inches long, minimum.

B. Solder and Sealants for Sheet Metal Flashings: As specified in Section 076200 "Sheet Metal Flashing and Trim."
C. Adhesives, Primers, and Seam Tapes for Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

D. Termination Bars for Flexible Flashing: Stainless steel steel bars 1/8 inch by 1 inch.

2.6 ACCESSORIES

A. Compressible Filler: Premolded filler strips complying with ASTM D1056, Grade 2A1; compressible up to 35 percent; of width and thickness indicated; formulated from neoprene urethane or PVC.

B. Weep/Vent Products: Use the following unless otherwise indicated:
   1. Cellular Plastic Weep/Vent: One-piece, flexible extrusion made from UV-resistant polypropylene copolymer, full height and width of head joint and depth 1/8 inch less than depth of outer wythe, in color selected from manufacturer's standard.

C. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.
   1. Mortar Deflector: Strips, full depth of cavity and 10 inches high, with dovetail-shaped notches that prevent clogging with mortar droppings.

D. Proprietary Acidic Masonry Cleaner: Manufacturer's standard-strength cleaner designed for removing mortar/grout stains, efflorescence, and other new construction stains from new masonry without discoloring or damaging masonry surfaces. Use product expressly approved for intended use by cleaner manufacturer and manufacturer of masonry units being cleaned.

2.7 MORTAR MIXES

A. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures unless otherwise indicated.
   1. Do not use calcium chloride in mortar or grout.
   2. Use portland cement-lime or masonry cement mortar unless otherwise indicated.
   3. Add cold-weather admixture (if used) at same rate for all mortar that will be exposed to view, regardless of weather conditions, to ensure that mortar color is consistent.

B. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.

C. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification. Use Type N unless another type is indicated.

D. Pigmented Mortar: Use colored cement product.
   1. Pigments do not exceed 10 percent of portland cement by weight.
   2. Pigments do not exceed 5 percent of masonry cement by weight.
3. Application: Use pigmented mortar for exposed mortar joints.

**PART 3 - EXECUTION**

**3.1 INSTALLATION, GENERAL**

A. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

B. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures. Mix units from several pallets or cubes as they are placed.

C. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested in accordance with ASTM C67/C67M. Allow units to absorb water so they are damp but not wet at time of laying.

**3.2 TOLERANCES**

A. Dimensions and Locations of Elements:

1. For dimensions in cross section or elevation, do not vary by more than plus 1/2 inch or minus 1/4 inch.
2. For location of elements in plan, do not vary from that indicated by more than plus or minus 1/4 inch.
3. For location of elements in elevation, do not vary from that indicated by more than plus or minus 1/4 inch in a story height.

B. Lines and Levels:

1. For bed joints and top surfaces of bearing walls, do not vary from level by more than 1/4 inch in 10 ft., or 1/2-inch maximum.
2. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2-inch maximum.
3. For vertical lines and surfaces, do not vary from plumb by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2-inch maximum.
4. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10 ft., 1/4 inch in 20 ft., or 1/2-inch maximum.
5. For lines and surfaces, do not vary from straight by more than 1/4 inch in 10 ft., 3/8 inch in 20 ft., or 1/2-inch maximum.

C. Joints:

1. For bed joints, do not vary from thickness indicated by more than plus or minus 1/8 inch, with a maximum thickness limited to 1/2 inch.
2. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8 inch.

3.3 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.

B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less-than-nominal 4-inch horizontal face dimensions at corners or jambs.

3.4 MORTAR BEDDING AND JOINTING

A. Lay masonry units with completely filled bed and head joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.

B. Tool exposed joints slightly concave when thumbprint hard, using a jointer larger than joint thickness unless otherwise indicated.

3.5 ANCHORED MASONRY VENEERS

A. Anchor masonry veneers to wall framing with masonry-veneer anchors to comply with the following requirements:

   1. Fasten screw-attached anchors through sheathing to wall framing with metal fasteners of type indicated. Use two fasteners unless anchor design only uses one fastener.
   2. Embed tie sections in masonry joints.
   3. Locate anchor sections to allow maximum vertical differential movement of ties up and down.
   4. Space anchors as indicated, but not more than 18 inches o.c. vertically and 24 inches o.c. horizontally, with not less than one anchor for each 2 sq. ft. of wall area. Install additional anchors within 12 inches of openings and at intervals, not exceeding 8 inches, around perimeter.

B. Provide not less than 2 inches of airspace between back of masonry veneer and face of sheathing.

3.6 FLASHING, WEEP HOLES, AND VENTS

A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

B. Install flashing as follows unless otherwise indicated:

   1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of
mortar and cover with mortar. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.

2. Extend flashing through veneer, across airspace behind veneer, and up face of sheathing at least 8 inches; with upper edge tucked under water-resistive barrier, lapping at least 4 inches.

3. At lintels and shelf angles, extend flashing 6 inches minimum, to edge of next full unit at each end. At heads and sills, extend flashing 6 inches minimum, to edge of next full unit and turn ends up not less than 2 inches to form end dams.

4. Install metal drip edges beneath flexible flashing at exterior face of wall. Stop flexible flashing 1/2 inch back from outside face of wall, and adhere flexible flashing to top of metal drip edge.

C. Install weep holes in veneers in head joints of first course of masonry immediately above embedded flashing.

   1. Use specified weep/cavity vent products to form weep holes.
   2. Space weep holes 24 inches o.c. unless otherwise indicated.

D. Place cavity drainage material in airspace behind veneers to comply with configuration requirements for cavity drainage material in "Accessories" Article.

E. Install vents in head joints in exterior wythes at spacing indicated. Use specified weep/cavity vent products to form vents.

   1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.7 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections. Allow inspectors access to scaffolding and work areas as needed to perform tests and inspections. Retesting of materials that fail to comply with specified requirements will be at Contractor's expense.

B. Testing Prior to Construction: One set of tests.

C. Clay Masonry Unit Test: For each type of unit provided, in accordance with ASTM C67/C67M for compressive strength.

D. Mortar Aggregate Ratio Test (Proportion Specification): For each mix provided, in accordance with ASTM C780.

3.8 CLEANING

A. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.

B. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
1. Test cleaning methods on sample wall panel; leave one-half of panel uncleansed for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
2. Protect adjacent stone and nonmasonry surfaces from contact with cleaner by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape.
3. Wet wall surfaces with water before applying cleaners; remove cleaners promptly by rinsing surfaces thoroughly with clear water.

3.9 MASONRY WASTE DISPOSAL

A. Waste Disposal as Fill Material: Dispose of clean masonry waste, including excess or soil-contaminated sand, waste mortar, and broken masonry units, by crushing and mixing with fill material as fill is placed.

1. Do not dispose of masonry waste as fill within 18 inches of finished grade.

B. Excess Masonry Waste: Remove excess clean masonry waste that cannot be used as fill, as described above or recycled, and other masonry waste, and legally dispose of off Owner's property.

END OF SECTION
SECTION 051200
STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Structural steel.
   2. Grout.

B. Related Requirements:

1.2 DEFINITIONS

A. Structural Steel: Elements of the structural frame indicated on Drawings and as described in AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Show fabrication of structural-steel components.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer fabricator.

B. Welding certificates.

C. Mill test reports for structural steel, including chemical and physical properties.

D. Source quality-control reports.

E. Field quality-control reports.

1.5 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, or is accredited by the IAS Fabricator Inspection Program for Structural Steel (AC 172).
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."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Connections: Provide details of simple shear connections required by the Contract Documents to be selected or completed by structural-steel fabricator to withstand loads indicated and comply with other information and restrictions indicated.

1. Select and complete connections using schematic details indicated and AISC 360.
2. Use Load and Resistance Factor Design; data are given at factored-load level.

B. Moment Connections: Type FR, fully restrained.

C. Comply with applicable provisions of the following specifications and documents:

1. AISC 303.
2. AISC 360.
3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

2.2 STRUCTURAL-STEEL MATERIALS

A. W-Shapes: ASTM A 572/A 572M, Grade 50.

B. Channels, Angles, M, S-Shapes: ASTM A 36/A 36M.

C. Plate and Bar: ASTM A 36/A 36M.

D. Cold-Formed Hollow Structural Sections: ASTM A 500/A 500M, Grade B, structural tubing.

E. Steel Pipe: ASTM A 53/A 53M, Type E or Type S, Grade B.

F. Welding Electrodes: Comply with AWS requirements.

2.3 BOLTS, CONNECTORS, AND ANCHORS

A. High-Strength Bolts, Nuts, and Washers: ASTM A 325, Type 1, heavy-hex steel structural bolts; ASTM A 563, Grade C, heavy-hex carbon-steel nuts; and ASTM F 436, Type 1, hardened carbon-steel washers; all with plain finish.

1. Direct-Tension Indicators: ASTM F 959, Type 325, compressible-washer type with plain finish.
B. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

C. Anchor Rods: ASTM F 1554, Grade 55, weldable.
   2. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C or as indicated on drawings.

D. Threaded Rods: ASTM A 36/A 36M.
   1. Finish: Hot-dip zinc coating, ASTM A 153/A 153M, Class C or as indicated on drawings.


2.4 PRIMER

A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

2.5 SHRINKAGE RESISTANT GROUT

A. Metallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, metallic aggregate grout, mixed with water to consistency suitable for application and a 30-minute working time.

B. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107/C 1107M, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.6 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC 303, "Code of Standard Practice for Steel Buildings and Bridges," and in accordance with ANSI/AISC 303 and to ANSI/AISC 360.

B. Shear Connectors: Prepare steel surfaces as recommended by manufacturer of shear connectors. Use automatic end welding of headed-stud shear connectors according to AWS D1.1/D1.1M and manufacturer's written instructions.

2.7 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.
   1. Joint Type: Snug tightened.
B. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.8 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel in accordance with ASTM A123/A123M.

1. Fill vent and drain holes that are exposed in the finished Work unless they function as weep holes, by plugging with zinc solder and filing off smooth.

2.9 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar. Extend priming of partially embedded members to a depth of 2 inches.
2. Surfaces to be field welded.
4. Surfaces to receive sprayed fire-resistive materials (applied fireproofing).
5. Galvanized surfaces.

B. 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:

1. SSPC-SP 2, "Hand Tool Cleaning."
2. SSPC-SP 3, "Power Tool Cleaning."
3. SSPC-SP 7/NACE No. 4, "Brush-off Blast Cleaning."

C. Surface Preparation of Galvanized Steel: Prepare galvanized-steel surfaces for shop priming by thoroughly cleaning steel of grease, dirt, oil, flux, and other foreign matter, and treating with etching cleaner.

D. 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. Use priming methods that result in full coverage of joints, corners, edges, and exposed surfaces.

2.10 SOURCE QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform shop tests and inspections.

1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

B. Bolted Connections: Inspect and test shop-bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."
C. Welded Connections: Visually inspect shop-welded connections 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 are not accepted.
4. Radiographic Inspection: ASTM E 94.

D. In addition to visual inspection, test and inspect shop-welded shear stud connectors in accordance with requirements in AWS D1.1/D1.1M.

E. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify, with certified steel erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

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

3.2 ERECTION

A. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.


1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Weld plate washers to top of baseplate.
3. Snug-tighten 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.
4. 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.

C. Maintain erection tolerances of structural steel within AISC 303, "Code of Standard Practice for Steel Buildings and Bridges."
3.3 FIELD CONNECTIONS

A. 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.

1. Joint Type: Snug tightened.

B. Weld Connections: Comply with AWS D1.1/D1.1M and AWS D1.8/D1.8M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

1. Comply with AISC 303 and AISC 360 for bearing, alignment, adequacy of temporary connections, and removal of paint on surfaces adjacent to field welds.
2. Remove backing bars or runoff tabs where indicated, back gouge, and grind steel smooth.

3.4 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:

1. Verify structural-steel materials and inspect steel frame joint details.
2. Verify weld materials and inspect welds.
3. Verify connection materials and inspect high-strength bolted connections.

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

C. Bolted Connections: Inspect and test bolted connections according to RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

D. Welded Connections: Visually inspect field welds according to AWS D1.1/D1.1M.

1. In addition to visual inspection, test and inspect field welds according to AWS D1.1/D1.1M and the following inspection procedures, at testing agency's option:

   a. Liquid Penetrant Inspection: ASTM E 165.
   b. Magnetic Particle Inspection: ASTM E 709; performed on root pass and on finished weld. Cracks or zones of incomplete fusion or penetration are not accepted.
   c. Ultrasonic Inspection: ASTM E 164.
   d. Radiographic Inspection: ASTM E 94.

END OF SECTION
SECTION 055213
PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Steel railings.

1.2 ACTION SUBMITTALS

A. Product Data:
   1. Handrail brackets.
   2. Shop primer.
   3. Intermediate coats and topcoats.
   4. Metal finishes.
   5. Paint products.

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

C. Delegated Design Submittal: For railings, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.3 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel in accordance with the following:
   1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design railings, including attachment to building construction.
2.2 METALS, GENERAL

A. Metal Surfaces, General: Provide materials with smooth surfaces, without seam marks, roller marks, rolled trade names, stains, discolorations, or blemishes.

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

2.3 STEEL RAILINGS

A. Pipe: ASTM A53/A53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.
   1. Provide galvanized finish for exterior installations and where indicated.

B. Plates, Shapes, and Bars: ASTM A36/A36M.

2.4 FASTENERS

A. Fastener Materials:

2.5 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for metal alloy welded.

B. Etching Cleaner for Galvanized Metal: Complying with MPI#25.

C. Galvanizing Repair Paint: High-zinc-dust-content paint, complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

D. Shop Primers: Provide primers that comply with Section 099113 "Exterior Painting".

2.6 FABRICATION

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

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

C. Welded Connections: Cope components at connections to provide close fit, or use fittings designed for this purpose. Weld all around at connections, including at fittings.
1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove flux immediately.
4. At exposed connections, finish exposed welds to comply with NOMMA's "Voluntary Joint Finish Standards" for Finish #2 welds; good appearance, completely sanded joint, some undercutting and pinholes okay.

D. Bend members in jigs to produce uniform curvature for each configuration required. Maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of components.

E. Close exposed ends of hollow railing members with prefabricated cap and end fittings of same metal and finish as railings.

F. Provide wall returns at ends of wall-mounted handrails unless otherwise indicated. Close ends of returns unless clearance between end of rail and wall is 1/4 inch or less.

G. For removable railing posts, fabricate slip-fit sockets from steel pipe whose ID is sized for a close fit with posts; limit movement of post without lateral load, measured at top, to not more than one-fourtieth of post height.
   1. Provide socket covers designed and fabricated to resist being dislodged.
   2. Provide chain with eye, snap hook, and staple across gaps formed by removable railing sections at locations indicated. Fabricate from same metal as railings.

2.7 STEEL AND IRON FINISHES

A. Galvanized Railings:
   1. Hot-dip galvanize steel railings, including hardware, after fabrication.
   2. Comply with ASTM A123/A123M for hot-dip galvanized railings.

B. For galvanized railings, provide hot-dip galvanized fittings, brackets, fasteners, sleeves, and other ferrous components.

C. Preparing Galvanized Railings for Shop Priming: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with etching cleaner and as follows.
   1. Comply with SSPC-SP 16.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Perform cutting, drilling, and fitting required for installing railings.
   1. Fit exposed connections together to form tight, hairline joints.
   2. Install railings level, plumb, square, true to line; without distortion, warp, or rack.
   3. Set railings accurately in location, alignment, and elevation; measured from established lines and levels.
4. Do not weld, cut, or abrade surfaces of railing components that are coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
5. Set posts plumb within a tolerance of 1/16 inch in 3 feet.
6. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet.

B. Control of Corrosion: Prevent galvanic action and other forms of corrosion by insulating metals and other materials from direct contact with incompatible materials.
   1. 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.

3.2 ANCHORING POSTS

A. Install removable railing sections, where indicated on Drawings, in slip-fit stainless steel sockets cast in concrete.

3.3 CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas, and repair galvanizing to comply with ASTM A780/A780M.

END OF SECTION
SECTION 061000
ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Framing with dimension lumber.
2. Rooftop equipment bases and support curbs.
3. Wood blocking, cants, and nailers.
4. Wood furring and grounds.
5. Wood sleepers.
6. Plywood backing panels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

B. Evaluation Reports: For the following, from ICC-ES:

1. Wood-preservative-treated wood.
2. Fire-retardant-treated wood.
3. Engineered wood products.
5. Post-installed anchors.
6. Metal framing anchors.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, comply with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Grade lumber by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. Dress lumber, S4S, unless otherwise indicated.

B. Maximum Moisture Content of Lumber: t 19 percent for 2-inch nominal thickness or less; no limit for more than 2-inch nominal thickness unless otherwise indicated.
2.2 WOOD-PRESERVATIVE-TREATED LUMBER

A. Preservative Treatment by Pressure Process: AWPA U1; Use Category UC2 for interior construction not in contact with ground, Use Category UC3b for exterior construction not in contact with ground, and Use Category UC4a for items in contact with ground.

1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium. Do not use inorganic boron (SBX) for sill plates.

B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.

C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.

D. Application: Treat items indicated on Drawings, and the following:

1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

2.3 FIRE-RETARDANT-TREATED MATERIALS

A. General: Where fire-retardant-treated materials are indicated, materials shall comply with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.

B. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame-spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.

1. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
2. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not indicated.

C. Kiln-dry lumber after treatment to maximum moisture content of 19 percent.

D. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
E. Application: Treat items indicated on Drawings, and the following:

1. Framing for raised platforms.
2. Concealed blocking.
3. Roof construction.
4. Wood cant, nailers, curbs, equipment support bases, blocking, and similar members in connection with roofing.
5. Plywood backing panels.

2.4 DIMENSION LUMBER FRAMING

A. Framing Other Than Non-Load-Bearing Partitions: Construction or No. 2 grade.
   1. Species:
      a. Hem-fir (north); NLGA.
      b. Southern pine; SPIB.
      c. Douglas fir-larch; WCLIB or WWPA.
      d. Southern pine or mixed southern pine; SPIB.
      e. Spruce-pine-fir; NLGA.
      f. Douglas fir-south; WWPA.
      g. Hem-fir; WCLIB or WWPA.
      h. Douglas fir-larch (north); NLGA.
      i. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.

B. Exposed Framing: Hand-select material for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
   1. Species and Grade: As indicated above for load-bearing construction of same type.

2.5 MISCELLANEOUS LUMBER

A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
   1. Blocking.
   2. Nailers.
   3. Rooftop equipment bases and support curbs.
   5. Furring.

B. Dimension Lumber Items: Construction or No. 2 grade lumber of any species.

C. Utility Shelving: Lumber with 19 percent maximum moisture content of eastern white pine, Idaho white, lodgepole, ponderosa, or sugar pine; Premium or No. 2 Common (Sterling) grade; NeLMA, NLGA, WCLIB, or WWPA.

D. Concealed Boards: 19 percent maximum moisture content and any of the following species and grades:
1. Mixed southern pine or southern pine; No. 2 grade; SPIB.
2. Eastern softwoods; No. 2 Common grade; NeLMA.
3. Northern species; No. 2 Common grade; NLGA.
4. Western woods; Construction or No. 2 Common grade; WCLIB or WWPA.

2.6 PLYWOOD BACKING PANELS

A. Equipment Backing Panels: Plywood, DOC PS 1, Exterior, A-C, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness.

2.7 FASTENERS

A. General: Fasteners shall be of size and type indicated and shall comply with requirements specified in this article for material and manufacture.

1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M.

B. Power-Driven Fasteners: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, based on ICC-ES AC70.

C. Post-Installed Anchors: Fastener systems with an evaluation report acceptable to authorities having jurisdiction, as appropriate for the substrate.

2.8 METAL FRAMING ANCHORS

A. Allowable design loads, as published by manufacturer, shall meet or exceed those of basis-of-design products. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency. Framing anchors shall be punched for fasteners adequate to withstand same loads as framing anchors.


1. Use for interior locations unless otherwise indicated.

C. Hot-Dip, Heavy-Galvanized Steel Sheet: ASTM A 653/A 653M; structural steel (SS), high-strength low-alloy steel Type A (HSLAS Type A), or high-strength low-alloy steel Type B (HSLAS Type B); G185 coating designation; and not less than 0.036 inch thick.

1. Use for wood-preservative-treated lumber and where indicated.

2.9 MISCELLANEOUS MATERIALS

A. Sill-Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to suit width of sill members indicated.
B. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Framing Standard: Comply with AF&PA's WCD 1, "Details for Conventional Wood Frame Construction," unless otherwise indicated.

B. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.

C. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry accurately to other construction. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.

D. Do not splice structural members between supports unless otherwise indicated.

E. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.

F. Where wood-preservative-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.

G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:

2. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
3. ICC-ES evaluation report for fastener.

3.2 PROTECTION

A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION
SECTION 061600

SHEATHING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Wall sheathing.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of process and factory-fabricated product.

PART 2 - PRODUCTS

2.1 WALL SHEATHING

A. Glass-Mat Gypsum Sheathing, Walls: ASTM C1177/C1177M.
   1. Type and Thickness: Regular, 1/2 inch thick.
   2. DensGlass by Georgia-Pacific Gypsum, LLC. Or approved equal.

2.2 FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.

   1. For wall sheathing, provide fasteners with hot-dip zinc coating complying with ASTM A153/A153M.

2.3 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIALS

A. Sealant for Glass-Mat Gypsum Sheathing: Silicone emulsion sealant complying with ASTM C834, compatible with sheathing tape and sheathing and recommended by tape and sheathing manufacturers for use with glass-fiber sheathing tape and for covering exposed fasteners.

   1. Sheathing Tape: Self-adhering glass-fiber tape, minimum 2 inches wide, 10 by 10 or 10 by 20 threads/inch, of type recommended by sheathing and tape manufacturers for use with silicone emulsion sealant in sealing joints in glass-mat gypsum sheathing and with a history of successful in-service use.
PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Do not use materials with defects that impair quality of sheathing or pieces that are too small to use with minimum number of joints or optimum joint arrangement. Arrange joints so that pieces do not span between fewer than three support members.

B. Cut panels at penetrations, edges, and other obstructions of work; fit tightly against abutting construction unless otherwise indicated.

C. Securely attach to substrate by fastening as indicated, complying with the following:

1. Table 2304.10.1, "Fastening Schedule," in the ICC's International Building Code.

D. Coordinate wall sheathing installation with flashing and joint-sealant installation so these materials are installed in sequence and manner that prevent exterior moisture from passing through completed assembly.

E. Do not bridge building expansion joints; cut and space edges of panels to match spacing of structural support elements.

END OF SECTION
SECTION 064113

WOOD-VENEER-FACED ARCHITECTURAL CABINETS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Wood cabinets for transparent finish.
   2. Cabinet hardware and accessories.
   3. Wood furring, blocking, shims, and hanging strips for installing architectural cabinets that are not concealed within other construction.
   4. Shop finishing.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include data for fire-retardant treatment from chemical-treatment manufacturer and certification by treating plant that treated materials comply with requirements.

B. Shop Drawings: For architectural cabinets.
   1. Include plans, elevations, sections, and attachment details.
   2. Apply AWI Quality Certification Program label to Shop Drawings.

C. Samples: For each exposed product and for each color and finish specified.

1.3 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and Installer.

1.4 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Employs skilled workers who custom fabricate products similar to those required for this Project and whose products have a record of successful in-service performance.
   1. Manufacturer's Certification: Licensed participant in AWI's Quality Certification Program.

B. Installer Qualifications: Licensed participant in AWI's Quality Certification Program.

1.5 FIELD CONDITIONS

A. Environmental Limitations with Humidity Control: Do not deliver or install cabinets until building is enclosed, wet-work is complete, and HVAC system is operating and maintaining
temperature between 60 and 90 deg F and relative humidity between 25 and 55 percent during the remainder of the construction period.

PART 2 - PRODUCTS

2.1 ARCHITECTURAL CABINET MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following or an approved equal. Refer 012500 Substitutions.
   1. Wood Systems, Inc.
      a. 4615 S. 49th W. Ave.
      b. Tulsa, OK 74107
      c. 918.749.7062
   2. Bearwood Native:
      a. 6202 E 30th ST N
      b. Tulsa, OK 74115
      c. 918-933-6600
      d. bearwoodnative.com
   3. KS Wood Products,
      a. 5461 N State Hwy H
      b. Springfield, MO 65803
      c. 417-833-1058
   4. FADCO, Inc
      a. 5531 E Admiral Pl.
      b. Tulsa, OK 74115
      c. 918-832-1641
   5. Arnold Brothers Cabinets
      a. 3240 N 190 Rd.
      b. Beggs, Oklahoma 74421
      c. 918-267-5100

2.2 CABINETS, GENERAL

A. Quality Standard: Unless otherwise indicated, comply with the Architectural Woodwork Standards for grades of architectural cabinets indicated for construction, finishes, installation, and other requirements.
2.3 WOOD CABINETS FOR TRANSPARENT FINISH

A. Architectural Woodwork Standards Grade: Premium.

B. Type of Construction: Frameless.

C. Door and Drawer-Front Style: Flush overlay.

D. Wood for Exposed Surfaces: As indicated on Drawings.
   1. Species: Red oak.
   2. Cut: Rift cut/rift sawn.
   5. Veneer Matching within Panel Face: Running match.

E. Drawer Construction: Fabricate with exposed fronts fastened to subfront with mounting screws from interior of body.
   1. Join subfronts, backs, and sides with glued rabbeted joints supplemented by mechanical fasteners or glued dovetail joints.

2.4 WOOD MATERIALS

A. Wood Products: Provide materials that comply with requirements of referenced quality standard for each type of architectural cabinet and quality grade specified unless otherwise indicated.
   1. Do not use plain-sawn softwood lumber with exposed, flat surfaces more than 3 inches wide.
   2. Wood Moisture Content: 5 to 10 percent.
   6. Thermally Fused Laminate (TFL) Panels: MDF finished with thermally fused, melamine-impregnated decorative paper and complying with requirements of NEMA LD 3, Grade VGL, for Test Methods 3.3, 3.4, 3.6, 3.8, and 3.10.

2.5 FIRE-RETARDANT-TREATED MATERIALS

A. Fire-Retardant-Treated Materials, General: Where fire-retardant-treated materials are indicated, use materials that are acceptable to authorities having jurisdiction as determined by testing performed on identical products by a qualified testing agency.
   1. Use treated materials that comply with requirements of referenced quality standard. Do not use materials that are warped, discolored, or otherwise defective.
   2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.
   3. Identify fire-retardant-treated materials with appropriate classification marking of qualified testing agency in the form of removable paper label or imprint on surfaces that will be concealed from view after installation.
2.6 CABINET HARDWARE AND ACCESSORIES

A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets.

B. Frameless Concealed Hinges (European Type): ANSI/BHMA A156.9, B01602, 170 degrees of opening, self-closing.

C. Back-Mounted Pulls: ANSI/BHMA A156.9, B02011.

D. Wire Pulls: Back mounted, solid metal, 5 inches long, 2-1/2 inches deep, and 5/16 inch in diameter.

E. Catches: Magnetic catches, ANSI/BHMA A156.9, B03141.

F. Adjustable Shelf Standards and Supports: ANSI/BHMA A156.9, B04071; with shelf rests, B04081

G. Shelf Rests: ANSI/BHMA A156.9, B04013; two-pin plastic with shelf hold-down clip.

H. Drawer Slides: ANSI/BHMA A156.9.
   1. Heavy-Duty (Grade 1HD-100 and Grade 1HD-200): Side mount and extending under bottom edge of drawer.
      a. Type: Full extension.
      b. Material: Epoxy-coated polymer slides.
      c. Motion Feature: Self-closing mechanism.

I. Door Locks: ANSI/BHMA A156.11, E07121.

J. Drawer Locks: ANSI/BHMA A156.11, E07041.

K. Door and Drawer Silencers: ANSI/BHMA A156.16, L03011.

L. Grommets for Cable Passage: 2-inch OD, molded-plastic grommets and matching plastic caps with slot for wire passage.
   1. Color: Best matching the counter top. Submit full range of colors for selection.

M. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with ANSI/BHMA A156.18 for BHMA finish number indicated.

N. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in ANSI/BHMA A156.9.

2.7 MISCELLANEOUS MATERIALS

A. Furring, Blocking, Shims, and Hanging Strips: Fire-retardant-treated softwood lumber, kiln-dried to less than 15 percent moisture content.
B. Anchors: Select material, type, size, and finish required for each substrate for secure anchorage. Provide metal expansion sleeves or expansion bolts for post-installed anchors. Use nonferrous-metal or hot-dip galvanized anchors and inserts at inside face of exterior walls and at floors.

2.8 FABRICATION

A. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.

B. Complete fabrication, including assembly and hardware application, to maximum extent possible before shipment to Project site. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

C. Shop-cut openings to maximum extent possible to receive hardware, appliances, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.

2.9 SHOP FINISHING

A. General: Finish architectural cabinets at manufacturer's shop as specified in this Section. Defer only final touchup, cleaning, and polishing until after installation.

B. Preparation for Finishing: Comply with referenced quality standard for sanding, filling countersunk fasteners, sealing concealed surfaces, and similar preparations for finishing architectural cabinets, as applicable to each unit of work.
    1. Backpriming: Apply one coat of sealer or primer, compatible with finish coats, to concealed surfaces of cabinets.

C. Transparent Finish:
    3. Staining: None required.
    4. Filled Finish for Open-Grain Woods: After staining, apply wash-coat sealer and allow to dry. Apply paste wood filler and wipe off excess. Tint filler to match stained wood.
    5. Sheen: Satin, 31-45 gloss units measured on 60-degree gloss meter per ASTM D523.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Before installation, condition cabinets to humidity conditions in installation areas for not less than 72 hours.

B. Architectural Woodwork Standards Grade: Install cabinets to comply with quality standard grade of item to be installed.
C. Anchor cabinets to anchors or blocking built in or directly attached to substrates. Secure with countersunk, concealed fasteners and blind nailing. Use fine finishing nails or finishing screws for exposed fastening, countersunk and filled flush with cabinet surface.
   1. For shop-finished items, use filler matching finish of items being installed.

D. Install cabinets level, plumb, and true in line to a tolerance of 1/8 inch in 96 inches using concealed shims.
   1. Scribe and cut cabinets to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
   2. Install cabinets without distortion so doors and drawers fit openings and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
   3. Maintain veneer sequence matching of cabinets with transparent finish.
   4. Fasten wall cabinets through back, near top and bottom, and at ends not more than 16 inches o.c. with No. 10 wafer-head screws sized for not less than 1-1/2-inch penetration into wood framing, blocking, or hanging strips.

E. Shop Finishes: Touch up finishing after installation of architectural cabinets. Fill nail holes with matching filler.

END OF SECTION
SECTION 072100
THERMAL INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Extruded polystyrene foam-plastic board insulation.
   2. Glass-fiber blanket insulation.

1.2 ACTION SUBMITTALS

A. Product Data: For the following:
   1. Extruded polystyrene foam-plastic board insulation.
   2. Glass-fiber blanket insulation.

1.3 INFORMATIONAL SUBMITTALS

A. Installer's Certification: Listing type, manufacturer, and R-value of insulation installed in each element of the building thermal envelope.
   1. Sign, date, and post the certification in a conspicuous location on Project site.

B. Product test reports.

C. Research reports.

PART 2 - PRODUCTS

2.1 EXTRUDED POLYSTYRENE FOAM-PLASTIC BOARD INSULATION

A. Extruded Polystyrene Board Insulation, Type X: ASTM C578, Type X, 15-psi minimum compressive strength; unfaced.
   1. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
   2. Smoke-Developed Index: Not more than 450 when tested in accordance with ASTM E84.
   3. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
2.2 GLASS-FIBER BLANKET INSULATION-SOUND ATTENUATION BATTs (SAB)

A. Glass-Fiber Blanket Insulation, SOUND ATTENUATION BATTs (SAB), Unfaced: ASTM C665, Type I; passing ASTM E136 for combustion characteristics.
   1. Flame-Spread Index: Not more than 25 when tested in accordance with ASTM E84.
   2. Smoke-Developed Index: Not more than 50 when tested in accordance with ASTM E84.
   3. Labeling: Provide identification of mark indicating R-value of each piece of insulation 12 inches and wider in width.
   4. Install to full width of wall where shown on drawings.

2.3 ACCESSORIES

A. Insulation for Miscellaneous Voids:
   1. Glass-Fiber Insulation: ASTM C764, Type II, loose fill; with maximum flame-spread and smoke-developed indexes of 5, per ASTM E84.
   2. Spray Polyurethane Foam Insulation: ASTM C1029, Type II, closed cell, with maximum flame-spread and smoke-developed indexes of 75 and 450, respectively, per ASTM E84.

B. Insulation Anchors, Spindles, and Standoffs: As recommended by manufacturer.

C. Adhesive for Bonding Insulation: Product compatible with insulation and air and water barrier materials, and with demonstrated capability to bond insulation securely to substrates without damaging insulation and substrates.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Comply with insulation manufacturer's written instructions applicable to products and applications.

B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.

C. Install insulation with manufacturer's R-value label exposed after insulation is installed.

D. Extend insulation to envelop entire area to be insulated. Fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.

E. Provide sizes to fit applications and selected from manufacturer's standard thicknesses, widths, and lengths. Apply single layer of insulation units unless multiple layers are otherwise shown or required to make up total thickness or to achieve R-value.

3.2 INSTALLATION OF SLAB INSULATION

A. On vertical slab edge and foundation surfaces, set insulation units using manufacturer's recommended adhesive according to manufacturer's written instructions.
1. If not otherwise indicated, extend insulation a minimum of 24 inches below exterior grade line.

B. On horizontal surfaces, loosely lay insulation units according to manufacturer's written instructions. Stagger end joints and tightly abut insulation units.

1. If not otherwise indicated, extend insulation a minimum of 24 inches in from exterior walls.

3.3 INSTALLATION OF INSULATION IN FRAMED CONSTRUCTION

A. Blanket Insulation: Install in cavities formed by framing members according to the following requirements:

1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
3. For metal-framed wall cavities where cavity heights exceed 96 inches, support unfaced blankets mechanically and support faced blankets by taping flanges of insulation to flanges of metal studs.

B. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

1. Glass-Fiber Insulation: Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft.
2. Spray Polyurethane Insulation: Apply according to manufacturer's written instructions.

END OF SECTION
SECTION 072500
WEATHER BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Building wrap.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: ICC-ES.

PART 2 - PRODUCTS

2.1 WATER-RESISTIVE BARRIER

A. Building Wrap: ASTM E1677, Type I air barrier; with flame-spread and smoke-developed indexes of less than 25 and 450, respectively, when tested according to ASTM E84; UV stabilized; and acceptable to authorities having jurisdiction.
   1. Water-Vapor Permeance: Not less than 20 perms per ASTM E96/E96M, Desiccant Method (Procedure A).
   2. Flame Propagation Test: Materials and construction shall be as tested according to NFPA 285.

B. Building-Wrap Tape: Pressure-sensitive plastic tape recommended by building-wrap manufacturer for sealing joints and penetrations in building wrap.

PART 3 - EXECUTION

3.1 WATER-RESISTIVE BARRIER INSTALLATION

A. Cover sheathing with water-resistive barrier as follows:
   1. Cut back barrier 1/2 inch on each side of the break in supporting members at expansion- or control-joint locations.
2. Apply barrier to cover vertical flashing with a minimum 4-inch overlap unless otherwise indicated.

B. Building Wrap: Comply with manufacturer's written instructions and warranty requirements.

1. Seal seams, edges, fasteners, and penetrations with tape.
2. Extend into jambs of openings and seal corners with tape.

END OF SECTION
SECTION 074213.23

METAL COMPOSITE MATERIAL WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes MCM wall panels.

1.3 DEFINITIONS

A. DBVR: Drained and back-ventilated rainscreen system; rainscreen system designed to drain and dry cavity entering water through drainage channels, weeps, and air ventilation.

B. MCM: Metal composite material; cladding material formed by joining two thin metal skins to polyethylene or fire-retardant core and bonded under precise temperature, pressure, and tension.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:
   1. Include fabrication and installation layouts of MCM panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment assembly, trim, flashings, closures, and accessories; and special details.
   2. Accessories: Include details of the flashing, trim and anchorage, at a scale of not less than 1-1/2 inches per 12 inches.

C. Samples for Initial Selection: For each type of MCM panel indicated with factory-applied color finishes.
   1. Include similar Samples of trim and accessories involving color selection.

D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
1. MCM Panels: 12 inches long by actual panel width. Include fasteners, closures, and other MCM panel accessories. Submit custom color samples in paint manufacturer's standard size.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Test Reports: For each product, tests performed by a qualified testing agency.

1. MCM Manufacturer’s Material Test Reports: Certified test reports showing compliance with specific performance or third-party listing documenting compliance to comparable code sections IBC 1407.14 and IBC 1703.5.

2. MCM System Fabricator’s Certified System Tests Reports: Certified system test reports showing system compliance with specific performance or third-party listing documenting compliance code section. Base performance requirements on MCM system type provided.

   a. Wet System: Tested to AAMA 501.
   b. DBVR System: Tested to AAMA 509.
   c. PER System: Tested to AAMA 508.

C. Field quality-control reports.

D. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For MCM panels to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by MCM Fabricator.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, MCM panels, and other manufactured items so as not to be damaged or deformed. Package MCM panels for protection during transportation and handling.

B. Unload, store, and erect MCM panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack MCM panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store MCM panels to ensure dryness, with positive slope for drainage of water. Do not store MCM panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on MCM panels during installation.
1.9 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of MCM panels to be performed in accordance with manufacturers' written instructions and warranty requirements.

1.10 COORDINATION

A. Coordinate MCM panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

1.11 WARRANTY

A. Warranty on Panel Material: Manufacturer's standard form in which manufacturer agrees to replace MCM that fails within specified warranty period.
   1. Warranty Period: Five years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace MCM panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
   1. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Structural Performance: Provide MCM panel systems capable of withstanding the effects of the following loads, based on testing in accordance with ASTM E330:
   1. Wind Loads: As indicated on Drawings.
   2. Other Design Loads: As indicated on Drawings.
   3. Deflection Limits: For wind loads, panel deflection no greater than L/60 of the span.

B. Thermal Movements: Include expansion and contraction points as needed to allow for free and noiseless thermal movements from surface temperature changes.
   1. Temperature Change (Range): minus 20 deg F to 175 deg F, material surfaces.


2.2 MCM WALL PANELS

A. MCM Wall Panel Systems: Provide factory-formed and -assembled, MCM wall panels fabricated from two metal facings that are bonded to a solid, extruded thermoplastic core; formed into
profile for installation method indicated. Include attachment assembly components, panel stiffeners, and accessories.

1. Basis-of-Design Product: Subject to compliance with requirements, provide 3A Composites USA Inc.; ALUCOBOND PLUS or comparable product by one of the following:
   a. Arconic Architectural Products (USA).
   b. Mitsubishi Chemical Composites.
   c. Or approved equal.

B. Aluminum-Faced Composite Wall Panels: Formed with 0.020-inch-thick, coil-coated aluminum sheet facings.

1. Panel Thickness: 0.157 inch.
2. Core: Fire retardant.
3. Exterior Finish: FEVE fluoropolymer with coats and thicknesses that comply with MCM panel manufacturer's performance and warranty requirements.
   a. Color: As selected by Architect from manufacturer's full range.
4. Peel Strength: 22.5 in-lb/in. N x mm/mm) when tested for bond integrity in accordance with ASTM D1781.
5. Fire Performance: Flame spread less than 25 and smoke developed less than 450, in accordance with ASTM E84.

C. Attachment Assembly Components: Formed from extruded aluminum material compatible with panel facing.

2.3 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet ASTM A653/A653M, G90 hot-dip galvanized coating designation or ASTM A792/A792M, Class AZ500 aluminum-zinc-alloy coating designation unless otherwise indicated. Provide Fabricator's standard sections as required for support and alignment of MCM panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of MCM panels unless otherwise indicated.

C. Flashing and Trim: Provide flashing and trim formed from same material as MCM panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent MCM panels.

1. Basis-of-Design Product: Subject to compliance with requirements, provide 3A Composites USA Inc.; ALUCOBOND Axcent Trim or comparable product by one of the following:
   a. Arconic Architectural Products (USA).
b. Mitsubishi Chemical Composites.
c. Or approved equal.

2. Aluminum Trim: Formed with 0.040-inch thick, coil-coated aluminum sheet facings.
3. Color: As selected by Architect from manufacturer's full range.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide exposed fasteners with heads matching color of MCM panels by means of plastic caps or factory-applied coating. Provide EPDM or PVC sealing washers for exposed fasteners.

E. Panel Sealants: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in MCM panels and remain weathertight; and as recommended in writing by MCM panel manufacturer.

2.4 FABRICATION

A. General: Fabricate and finish MCM panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Fabricate MCM panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations or recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
3. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
4. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
5. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
6. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
   a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.5 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a 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 the range of approved Samples. Noticeable variations in 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.

C. Aluminum Panels and Accessories:
   1. FEVE Fluoropolymer: One-coat clear fluoropolymer finish containing 100 percent fluorinated ethylene vinyl ether resin in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, MCM panel supports, and other conditions affecting performance of the Work.

1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by MCM wall panel manufacturer.
2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by MCM wall panel manufacturer.

   a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and assemblies penetrating MCM panels to verify actual locations of penetrations relative to seam locations of MCM panels before installation.

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

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages in accordance with ASTM C754 and MCM panel manufacturer's written recommendations.

3.3 MCM PANEL INSTALLATION

A. General: Install MCM panels in accordance with Fabricator's written instructions in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to supports unless otherwise indicated. Anchor MCM panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Shim or otherwise plumb substrates receiving MCM panels.
2. Flash and seal MCM panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by MCM panels are installed.
3. Install screw fasteners in predrilled holes.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Install flashing and trim as MCM panel work proceeds.
6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
7. Align bottoms of MCM panels and fasten with blind rivets, bolts, or self-tapping screws.
   Fasten flashings and trim around openings and similar elements with self-tapping screws.
8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:

1. Aluminum Panels: Use aluminum or stainless steel fasteners for surfaces exposed to the exterior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by MCM panel manufacturer.

D. Attachment Assembly, General: Install attachment assembly required to support MCM wall panels and to provide a complete weathertight wall system, including subgirt, perimeter extrusions, tracks, drainage channels, panel clips, and anchor channels.

1. Include attachment to supports, panel-to-panel joinery, panel-to-dissimilar-material joinery, and panel-system joint seals.

E. Panel Installation: Attach MCM wall panels to supports at locations, spacings, and with fasteners recommended by Fabricator to achieve performance requirements specified.

1. DBVR System: Install using Fabricator’s standard assembly with vertical channel that provides support and secondary drainage assembly, draining at base of wall. Notch vertical channel to receive support pins. Install vertical channels supported by channel brackets or adjuster angles and at locations, spacings, and with fasteners recommended by Fabricator. Attach MCM wall panels by inserting horizontal support pins into notches in vertical channels and into flanges of panels. Leave horizontal and vertical joints with open reveal.
   a. Track-Support Installation: Install support assembly at locations, spacings, and with fasteners recommended by manufacturer. Use Fabricator’s standard horizontal tracks and vertical tracks drain channels that provide support and secondary drainage assembly, draining to the exterior at horizontal joints through drain tube. Attach MCM wall panels to tracks by interlocking panel edges with Fabricator’s standard "T" clips.
   b. Panel Installation:
      1) Attach routed-and-returned flanges of wall panels to perimeter extrusions with manufacturer’s standard fasteners.
      2) Install wall panels to allow individual panels to "free float" and be installed and removed without disturbing adjacent panels.
   c. Joint Sealing: Seal all joints in accordance with AAMA 509. Do not apply sealants to joints unless otherwise indicated.
F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete MCM panel assembly including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by MCM panel Fabricator; or, if not indicated, provide types recommended in writing by MCM system Fabricator.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, or SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof performance.

2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.4 ERECTION TOLERANCES

A. Site Verifications of Conditions:

1. Verify conditions of substrate previously installed under other Sections are acceptable for the MCM system installation. Provide documentation indicating detrimental conditions to the MCM system performance.

2. Once conditions are verified, MCM system installation tolerances are as follows:

   a. Shim and align MCM wall panel units within installed tolerance of 1/4 inch in 20 feet, non-accumulative, on level, plumb, and location lines as indicated, and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing agency to perform inspections.

B. Fabricator's Field Service: Engage a factory-authorized service representative to inspect completed MCM wall panel installation, including accessories.

C. MCM wall panels will be considered defective if they do not pass inspections.

3.6 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as MCM panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of
MCM panel installation, clean finished surfaces as recommended by MCM panel manufacturer. Maintain in a clean condition during construction.

B. After MCM panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

C. Replace MCM panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION
SECTION 075423
THERMOPLASTIC POLYOLEFIN (TPO) ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Adhered thermoplastic polyolefin (TPO) roofing system.
   2. Vapor retarder.
   3. Roof insulation.

B. Related Documents and Requirements:
   1. Drawings and general provisions of the Contract, including City of Tulsa Bidding Documents, General, Supplementary Conditions, Special Provisions and Division 01 Specification Sections, apply to this Section.
   2. Section 012300 – Alternates, for descriptions of Base Bid vs. Alternate selections.
   3. Section 061000 - Rough Carpentry for wood nailers, curbs, and blocking; and for wood-based, structural-use roof deck panels.
   4. Section 076200 - Sheet Metal Flashing and Trim, for metal roof flashings and counterflashings.
   5. Section 077200 – Roof Accessories: Manufactured curbs, roof hatches, smoke vents, roof pipe & conduit supports.
   6. Section 079200 - Joint Sealants, for joint sealants, joint fillers, and joint preparation.

1.2 DEFINITIONS

A. Roofing Terminology: Definitions in ASTM D 1079 and glossary in NRCA's "The NRCA Roofing and Waterproofing Manual" apply to work of this Section.

1.3 PREINSTALLATION MEETINGS

   1. Meet with Owner, Architect, roofing Installer, roofing system manufacturer's representative, and installers whose work interfaces with or affects roofing, including installers of roof accessories and roof-mounted equipment.
   2. Review methods and procedures related to roofing installation, including manufacturer's written instructions.
   3. Review and finalize construction schedule, and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Review deck substrate requirements for conditions and finishes, including flatness and fastening.
   5. Review structural loading limitations of roof deck during and after roofing.
   6. Review base flashings, special roofing details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that affects roofing system.
   7. Review temporary protection requirements for roofing system during and after installation.
   8. Review roof observation and repair procedures after roofing installation.
1.4 SUBMITTALS

A. Action Submittals:
   1. Product Data: For each type of product.
   2. Shop Drawings: For roofing system. Include plans, elevations, sections, details, and attachments to other work, including:
      a. Base flashings and membrane terminations.
      b. Tapered insulation, including slopes.
      c. Roof plan showing orientation of steel roof deck and orientation of roofing, fastening spacings, and patterns for mechanically fastened roofing.
      d. Insulation fastening patterns for corner, perimeter, and field-of-roof locations.
   3. Samples for Verification: For the following products:
      a. Sheet roofing, of color required.
      b. Walkway pads or rolls, of color required.

B. Informational Submittals:
   1. Qualification Data: For Installer and manufacturer.
   2. Roofing installer’s current Oklahoma Roofer Registration number with Commercial Endorsement from the Oklahoma Construction Industries Board.
   3. Manufacturer Certificates: Signed by roofing manufacturer certifying that roofing system complies with requirements specified in "Performance Requirements" Article. Provide evidence that system manufacturer has reviewed and approved roofing system for compliance with minimum warranty requirements.
   4. Manufacturer’s Thermal Resistance Calculations: Submit manufacturer’s calculations for average R-value for each roof area.
   5. Sample Warranties: For manufacturer's special warranties.

C. Closeout Submittals:
   1. Maintenance Data: For roofing system to include in maintenance manuals.
   2. Manufacturer’s weatherproof sign indicating that this roof is under warranty with phone number to call in case of damage to roof.
   3. Warranties: Submit manufacturer’s and installer’s warranties and lists of circumstances and conditions that would affect validity of warranties. Include Owner’s responsibilities for notification of installer, supplier, and manufacturer to maintain warranties.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer that is UL listed as applicable for roofing system identical to that used for this Project.

B. Installer Qualifications: Company that is approved, authorized, or licensed by roofing system manufacturer to install manufacturer’s product and is eligible to receive manufacturer’s special warranty.
   1. Roofing installer shall be registered with the Oklahoma Construction Industry Board and have active Commercial Endorsement.
1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver roofing materials to Project site in original containers with seals unbroken and labeled with manufacturer's name, product brand name and type, date of manufacture, approval or listing agency markings, and directions for storing and mixing with other components.

B. Store liquid materials in their original undamaged containers in a clean, dry, protected location and within the temperature range required by roofing system manufacturer. Protect stored liquid material from direct sunlight.
   1. Discard and legally dispose of liquid material that cannot be applied within its stated shelf life.

C. Protect roof insulation materials from physical damage and from deterioration by sunlight, moisture, soiling, and other sources. Store in a dry location. Comply with insulation manufacturer's written instructions for handling, storing, and protecting during installation.

D. Handle and store roofing materials, and place equipment in a manner to avoid permanent deflection of deck.

1.7 FIELD CONDITIONS

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

1.8 WARRANTY

A. Roofing Manufacturer’s Warranty: Manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
   1. Manufacturer’s Warranty includes roofing, base flashings, roof insulation, fasteners, cover boards, substrate board, roofing accessories, and other components of roofing system.
   2. Manufacturer’s Warranty shall also include Roofing Specialties specified in Section 077100.
   3. Warranty Period: 20 years from date of Final Completion.

B. 115-mil FleeceBack adhered TPO, with manufacturer’s full system NDL 20-year warranty and 2-inch hail impact resistance warranty with 20 hours per year accidental puncture repair at no additional cost to the Owner, plus covering both labor and material, for 72 mph sustained wind resistance and 90 mph wind gust for 3 seconds per IBC 2018.

C. If Carlisle “Flexible FAST” adhesive is used, full coverage or 4” oc beads, add 1-inch additional hail coverage and 4 extra hours of Accidental Puncture coverage.

D. Installer’s Warranty: Submit roofing Installer's warranty, signed by Installer, covering the Work of this Section, including all components of roofing system such as roofing membrane, base flashing, roof insulation, fasteners, cover boards, substrate boards, vapor retarders and walkway products for the following warranty period:
   1. Warranty Period: Two years (min) from date of Final Completion.

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PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Sure-Weld White TPO membrane roofing system by Carlisle SynTec Incorporated or comparable product by one of the following:

1. Firestone Building Products.
2. GAF
4. Versico Incorporated.

B. Source Limitations: Obtain components including roof insulation, fasteners, adhesives, cleaners, sealants, vapor barriers and other accessories specified in other sections for roofing system from same manufacturer as membrane roofing or manufacturer approved in writing by membrane roofing manufacturer and covered under full warranty as specified.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed roofing and base flashings shall withstand required uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Roofing and base flashings shall remain watertight.

1. Accelerated Weathering: Roofing system shall withstand 2000 hours of exposure when tested according to ASTM G152, ASTM G154, or ASTM G155.
2. Impact Resistance: Roofing system shall resist impact damage when tested according to ASTM D3746 or ASTM D4272.

B. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roofing manufacturer based on testing and field experience.

C. Exterior Fire-Test Exposure: ASTM E108 or UL 790, Class A; for application and roof slopes indicated; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

D. Fire-Resistance Ratings: Comply with fire-resistance-rated assembly designs indicated. Identify products with appropriate markings of applicable testing agency.

2.3 TPO ROOFING MEMBRANE


1. Thickness: 115mils, nominal.
2. Exposed Face Color: White.
2.4 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with roofing.

B. Base Flashing: Manufacturer's standard unreinforced TPO sheet flashing, 80 mils thick, minimum, of same color as TPO sheet.

C. Bonding Adhesive: Flexible FAST Adhesive at Full Spray or 4" o.c. beads.

D. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8-inch thick; with anchors.

E. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roofing to substrate, and acceptable to roofing system manufacturer.

F. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.5 SUBSTRATE BOARDS

A. Substrate Board: ASTM C 1177, glass-mat, water-resistant gypsum substrate, 1/2 inch thick.

1. Products: Subject to compliance with requirements, provide one of the following:
   a. CertainTeed Corporation; GlasRoc Sheathing.
   b. Georgia-Pacific Corporation; Dens Deck.
   c. National Gypsum Company; Gold Bond eXP Extended Exposure Sheathing.
   d. Temple-Inland, Inc; GreenGlass Exterior Sheathing.
   e. USG Corporation; Securock Glass Mat Roof Board.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening substrate board to roof deck.

2.6 VAPOR RETARDER

A. Laminated Sheet: Polyethylene laminate, two layers, reinforced with cord grid, with maximum permeance rating of 0.06 perm.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

2. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
   a. Reef Industries, Inc.
3. Tape: Pressure-sensitive tape of type recommended by vapor-retarder manufacturer for sealing joints and penetrations in vapor retarder.

2.7 ROOF INSULATION

A. General: Preformed roof insulation boards manufactured or approved by TPO roofing manufacturer, selected from manufacturer's standard sizes suitable for application, of thicknesses indicated.

B. Minimum Thermal Resistance: The minimum thermal resistance (R-value) of the insulation installed continuously on the roof assembly shall be R=25 (min).

C. Polyisocyanurate Board Insulation: ASTM C 1289, Type II, Class 1, Grade 2 (20psi) or 3 (25psi), with medium weight glass-fiber mat facer on both major surfaces.


2. Basis-of-Design Product: Subject to compliance with requirements, provide HP-H Polyisocyanurate Board Insulation by Carlisle SynTec Incorporated or comparable product by one of the following, subject to TPO manufacturer's approval:

b. Dyplast Products.
c. Firestone Building Products: ISO 95+ GL
d. Hunter Panels.
e. Insulfoam LLC: a Carlisle company.
g. Rmax, Inc.
h. Versico: VersiCore Polyisocyanurate.

D. Tapered Polyisocyanurate Insulation: Provide factory-tapered polyisocyanurate insulation boards, provided by or acceptable to roof membrane manufacturer, fabricated to slope of 1/4 inch per 12 inches unless otherwise indicated. Minimum thickness: ½ inch.

E. Tapered Crickets at Roof Curbs: 1/2 inch per 12 inches, unless otherwise indicated.

F. Tapered Insulation at Roof Drain Sumps: 1/2 inch per 12 inches.

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

2.8 INSULATION ACCESSORIES

A. General: Roof insulation accessories recommended by insulation manufacturer for intended use and compatibility with roofing system.

B. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Global 4470, designed for fastening roof insulation to substrate, and acceptable to roofing system manufacturer.
C. Insulation Adhesive: Insulation manufacturer's recommended adhesive formulated to attach roof insulation to substrate or to another insulation layer as follows:

1. Bead-applied, low-rise, one-component or multicomponent urethane adhesive.
2. Full-spread spray-applied, low-rise, two-component urethane adhesive.
3. Modified asphaltic, asbestos-free, cold-applied adhesive: NOT ALLOWED.

D. Cover Board: ASTM C 1177, glass-mat, water-resistant gypsum substrate, 1/2 inch thick (min), factory primed, compressive strength 80 psi (min), approved for .

1. Products: Subject to compliance with requirements, provide one of the following, subject to acceptance of roofing membrane manufacturer:

   b. USG Corporation: Securock Glass Mat Roof Board.
   c. USG Corporation: Durock Glass Mat Roof Board.
   d. Carlisle: SecurShield HD, HD Plus or SecurShield HD Composite.
   e. Carlisle: StormBase Composite or EcoStorm VSH

2.9 WALKWAYS AND PADS

A. Flexible Walkways: Factory-formed, nonporous, heavy-duty, slip-resisting, surface-textured walkway pads and rolls, approximately 3/16 inch thick and acceptable to roofing system manufacturer.

1. Walkway to remain flat, without wrinkles and fishmouths after installation.

B. Pipe Support Pads: Same as walkways, size as shown on drawings, adhered underneath pipe supports.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements and other conditions affecting performance of the Work:

1. Verify that roof openings and penetrations are in place, curbs are set and braced, and roof-drain bodies are securely clamped in place.
2. Verify that wood blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.
3. Verify that surface plane flatness and fastening of steel roof deck complies with requirements in Section 053100 - Steel Decking.

B. Proceed with installation only after unsatisfactory conditions have been corrected.
3.2 PREPARATION

A. Clean substrate of dust, debris, moisture, and other substances detrimental to roofing installation according to roofing system manufacturer's written instructions. Substrate must be relatively smooth, free of protrusions, sharp edges and projections, foreign materials, free of accumulated water, ice and snow. Cracks or voids greater than 1/4” shall be filled with material suitable to roofing manufacturer.

B. Prevent materials from entering and clogging roof drains and conductors and from spilling or migrating onto surfaces of other construction. Remove roof-drain plugs when no work is taking place or when rain is forecast.

3.3 ROOFING INSTALLATION, GENERAL

A. Install roofing system according to roofing system manufacturer's written instructions.

B. Complete terminations and base flashings and provide temporary seals to prevent water from entering completed sections of roofing system at the end of the workday or when rain is forecast. Remove and discard temporary seals before beginning work on adjoining roofing.

C. Install roofing and auxiliary materials to tie in to existing roofing to maintain weathertightness of transition and to not void warranty for existing roofing system.

3.4 SUBSTRATE BOARD INSTALLATION

A. Install substrate board with long joints in continuous straight lines, perpendicular to roof slopes with end joints staggered between rows. Tightly butt substrate boards together.

3.5 VAPOR-RETARDER INSTALLATION

A. Laminate Sheet: Loosely lay laminate-sheet vapor retarder in a single layer over area to receive vapor retarder, side and end lapping each sheet a minimum of 2 inches and 6 inches, respectively. Continuously seal side and end laps with tape.

B. Completely seal vapor retarder at terminations, obstructions, and penetrations to prevent air movement into roofing system.

3.6 INSULATION INSTALLATION

A. Coordinate installing roofing system components, so insulation is not exposed to precipitation or left exposed at the end of the workday.

B. Comply with roofing system and insulation manufacturer's written instructions for installing roof insulation.

C. Install tapered insulation under area of roofing to conform to slopes indicated.
D. Install insulation under area of roofing to achieve required thickness. Where overall insulation thickness is 2.7 inches or greater, install two or more layers with joints of each succeeding layer staggered from joints of previous layer a minimum of 6 inches in each direction.

E. Trim surface of insulation where necessary at roof drains so completed surface is flush and does not restrict flow of water.

F. Install insulation with long joints of insulation in a continuous straight line with end joints staggered between rows, abutting edges and ends between boards. Fill gaps exceeding 1/4 inch with insulation.

1. Cut and fit insulation within 1/4 inch of nailers, projections, and penetrations.

G. Mechanically Fastened and Adhered Insulation: Install each layer of insulation to deck using mechanical fasteners specifically designed and sized for fastening specified board-type roof insulation to deck type.

1. Fasten first layer of insulation to resist uplift pressure at corners, perimeter, and field of roof.
2. Set each subsequent layer of insulation in ribbons of bead-applied insulation adhesive, firmly pressing and maintaining insulation in place.
3. Set each subsequent layer of insulation in a uniform coverage of full-spread insulation adhesive, firmly pressing and maintaining insulation in place.

H. Install cover boards over insulation with long joints in continuous straight lines with end joints staggered between rows. Offset joints of insulation below a minimum of 6 inches in each direction. Loosely butt cover boards together and fasten to roof deck.

1. Fasten cover boards to resist uplift pressure at corners, perimeter, and field of roof.

3.7 ADHERED ROOFING INSTALLATION

A. Adhere roofing over area to receive roofing according to roofing system manufacturer's written instructions. Unroll roofing and allow to relax before retaining.

B. Start installation of roofing in presence of roofing system manufacturer's technical personnel per warranty requirements.

C. Accurately align roofing and maintain uniform side and end laps of minimum dimensions required by manufacturer. Stagger end laps.

D. Bonding Adhesive: Apply to substrate and underside of roofing at rate required by manufacturer and allow to partially dry before installing roofing. Do not apply to splice area of roofing.

E. In addition to adhering, mechanically fasten roofing securely at terminations, penetrations, and perimeter of roofing.

F. Apply roofing with side laps shingled with slope of roof deck where possible.

G. Seams: Clean seam areas, overlap roofing, and hot-air weld side and end laps of roofing and sheet flashings according to manufacturer's written instructions, to ensure a watertight seam installation.

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1. Test lap edges with probe to verify seam weld continuity. Apply lap sealant to seal cut edges of sheet.
2. Verify field strength of seams a minimum of twice daily, and repair seam sample areas.
3. Repair tears, voids, and lapped seams in roofing that do not comply with requirements.

H. Spread sealant bed over deck-drain flange at roof drains, and securely seal roofing in place with clamping ring.

3.8 BASE FLASHING INSTALLATION

A. Install sheet flashings and preformed flashing accessories and adhere to substrates according to roofing system manufacturer's written instructions.

B. Apply bonding adhesive to substrate and underside of sheet flashing at required rate and allow to partially dry. Do not apply to seam area of flashing.

C. Flash penetrations and field-formed inside and outside corners with cured or uncured sheet flashing.

D. Clean seam areas, overlap, and firmly roll sheet flashings into the adhesive. Hot-air weld side and end laps to ensure a watertight seam installation.

E. Terminate and seal top of sheet flashings and mechanically anchor to substrate through termination bars and sealant.

3.9 WALKWAY INSTALLATION

A. Flexible Walkways: Install walkway products in locations indicated. Heat weld to substrate or adhere walkway products to substrate with compatible adhesive according to roofing system manufacturer's written instructions.

3.10 FIELD QUALITY CONTROL

A. Final Roof Inspection: Arrange for roofing system manufacturer's technical personnel to inspect roofing installation on completion.

B. Repair or remove and replace components of roofing system where inspections indicate that they do not comply with specified requirements.

C. Additional testing and inspecting, at Contractor's expense, will be performed to determine if replaced or additional work complies with specified requirements.

3.11 PROTECTING AND CLEANING

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from roof area.
B. Protect roofing system from damage and wear during remainder of construction period. When
remaining construction does not affect or endanger roofing, inspect roofing for deterioration and
damage, describing its nature and extent in a written report, with copies to Architect and Owner.

C. Correct deficiencies in or remove roofing system that does not comply with requirements, repair
substrates, and repair or reinstall roofing system to a condition free of damage and deterioration at
time of Project Completion and according to warranty requirements.

D. Clean overspray and spillage from adjacent construction using cleaning agents and procedures
recommended by manufacturer of affected construction.

E. Comply with manufacturer's written instructions for cleaning and protecting roofing membrane.

F. Perform the following operations immediately after completing roofing installation:
   1. Remove adhesive and other blemishes from entire roof surface, surfaces at seams, perimeter
      edges, and adjacent surfaces.
   2. Sweep surfaces thoroughly.
   3. Wash surfaces to remove marks and soil.

G. Protect roofing from mars, marks, indentations, and other damage from construction operations
   and placement of equipment and fixtures during remainder of construction period. Correct
damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by
roofing manufacturer, and leave in a clean and undamaged condition.

H. Leave roof membrane in a clean and pristine condition at Final Completion inspection.

END OF SECTION
SECTION 076200

SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Manufactured reglets with counterflashing.
   2. Formed roof-drainage sheet metal fabrications.

1.2 ACTION SUBMITTALS

A. Product Data: For each of the following
   1. Underlayment materials.
   2. Elastomeric sealant.
   3. Butyl sealant.
   4. Epoxy seam sealer.

B. Shop Drawings: For sheet metal flashing and trim.
   1. Include plans, elevations, sections, and attachment details.
   2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
   3. Include identification of material, thickness, weight, and finish for each item and location in Project.
   4. Include details for forming, including profiles, shapes, seams, and dimensions.
   5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
   6. Include details of termination points and assemblies.
   7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
   8. Include details of roof-penetration flashing.
   9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.
   10. Include details of special conditions.
   11. Include details of connections to adjoining work.

C. Samples: For each exposed product and for each color and texture specified, 12 inches long by actual width.
1.3 INFORMATIONAL SUBMITTALS

A. Product Certificates: For each type of coping and roof edge flashing that is FM Approvals approved.


C. Sample warranty.

1.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Special warranty.

1.5 QUALITY ASSURANCE

A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.

1. For copings and roof edge flashings that are ANSI/SPRI/FM 4435/ES-1 tested and FM Approvals approved, shop is to be listed as able to fabricate required details as tested and approved.

1.6 WARRANTY

A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.

1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:

a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.

b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.

c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.

2. Finish Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, are to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in
construction. Completed sheet metal flashing and trim are not to rattle, leak, or loosen, and are to remain watertight.

B. Sheet Metal Standard for Flashing and Trim: Comply with [NRCA's "The NRCA Roofing Manual: Architectural Metal Flashing, Condensation and Air Leakage Control, and Reroofing"] [and] [SMACNA's "Architectural Sheet Metal Manual"] requirements for dimensions and profiles shown unless more stringent requirements are indicated.

1.

C. FM Approvals Listing: Manufacture and install roof edge flashings that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-90. Identify materials with name of fabricator and design approved by FM Approvals.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

2.2 SHEET METALS

A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.

B. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet in accordance with ASTM A653/A653M, G90 coating designation, prepainted by coil-coating process to comply with ASTM A755/A755M.

1. Exposed Coil-Coated Finish:

   a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2. Color: As selected by Architect from manufacturer’s full range.

3. Concealed Finish: Pretreat with manufacturer’s standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

2.3 UNDERLAYMENT MATERIALS

A. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt; nonperforated.

B. Synthetic Underlayments: Laminated or reinforced, woven polyethylene or polypropylene, synthetic roofing underlayment; bitumen free; slip resistant; suitable for high temperatures over 220 deg F; and complying with physical requirements of ASTM D226/D226M for Type I and Type II felts.
C. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

2.4 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal unless otherwise indicated.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal.

1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
   a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.
   b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
   c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.

2. Fasteners for Zinc-Coated (Galvanized) Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel in accordance with ASTM A153/A153M or ASTM F2329.

C. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.

D. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints.

E. Epoxy Seam Sealer: Two-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior nonmoving joints, including riveted joints.

F. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashings pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and with interlocking counterflashings on exterior face, of same metal as reglet.

1. Material: Galvanized steel, 0.022 inch thick.

2. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.

3. Accessories:
   a. Flexible-Flash Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
   b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.

2.5 FABRICATION, GENERAL

A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.

1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.

B. Fabrication Tolerances:

1. Fabricate sheet metal flashing and trim that is capable of installation to a tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.
2. Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified.

C. Expansion Provisions: Form metal for thermal expansion of exposed flashing and trim.

1. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with butyl sealant concealed within joints.
2. Use lapped expansion joints only where indicated on Drawings.

D. Sealant Joints: Where movable, nonexpansion-type joints are required, form metal in accordance with cited sheet metal standard to provide for proper installation of elastomeric sealant.

E. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal.

2.6 ROOF-DRAINAGE SHEET METAL FABRICATIONS

A. Hanging Gutters: Refer 133419 for gutters.

2.7 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

A. Roof Edge Flashing (Gravel Stop): Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long sections. Furnish with 6-inch-wide, joint cover plates.

1. Fabricate from the following materials:
   a. Galvanized Steel: 0.028 inch thick. Coil coated as above.
PART 3 - EXECUTION

3.1 INSTALLATION OF UNDERLAYMENT

A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim.

1. Install in shingle fashion to shed water.
2. Lap joints not less than 2 inches.

B. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, in accordance with manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.

1. Lap horizontal joints not less than 4 inches.
2. Lap end joints not less than 12 inches.

C. Self-Adhering, High-Temperature Sheet Underlayment:

1. Install self-adhering, high-temperature sheet underlayment; wrinkle free.
2. Prime substrate if recommended by underlayment manufacturer.
3. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures.
4. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses.
5. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller.
6. Roll laps and edges with roller.
7. Cover underlayment within 14 days.

3.2 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches o.c.
6. Space individual cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
7. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
8. Do not field cut sheet metal flashing and trim by torch.
B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.

C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.

1. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
3. Use lapped expansion joints only where indicated on Drawings.

D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.

E. Conform fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.

F. Seal joints as required for watertight construction.

1. Use sealant-filled joints unless otherwise indicated.
   a. Embed hooked flanges of joint members not less than 1 inch into sealant.
   b. Form joints to completely conceal sealant.
   c. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way.
   d. Adjust setting proportionately for installation at higher ambient temperatures.

   1) Do not install sealant-type joints at temperatures below 40 deg F.

2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

G. Rivets: Rivet joints in where necessary for strength.

3.3 INSTALLATION OF ROOF FLASHINGS

A. Install sheet metal flashing and trim to comply with performance requirements and cited sheet metal standard.

1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.

B. Roof Edge Flashing:
1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch centers.
3. Anchor to resist uplift and outward forces in accordance with recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals’ listing for required windstorm classification.

C. Copings:

1. Anchor to resist uplift and outward forces in accordance with recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for specified FM Approvals’ listing for required windstorm classification.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless steel draw band and tighten.

E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.

1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
2. Extend counterflashing 4 inches over base flashing.
3. Lap counterflashing joints minimum of 4 inches.

F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with butyl sealant and clamp flashing to pipes that penetrate roof.

3.4 INSTALLATION TOLERANCES

A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

3.5 CLEANING

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
B. Clean and neutralize flux materials. Clean off excess solder.
C. Clean off excess sealants.

3.6 PROTECTION

A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer’s written installation instructions.
B. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION
SECTION 077200
ROOF ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Roof curbs.
   2. Equipment supports.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of roof accessory.

B. Shop Drawings: For roof accessories.

C. Samples: For each exposed product and for each color and texture specified.

1.3 INFORMATIONAL SUBMITTALS

A. Sample warranties.

1.4 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 ROOF CURBS

A. Roof Curbs: Internally reinforced roof-curb units capable of supporting superimposed live and dead loads, including equipment loads and other construction indicated on Drawings, bearing continuously on roof structure, and capable of meeting performance requirements; with welded or mechanically fastened and sealed corner joints, straight sides, and integrally formed deck-mounting flange at perimeter bottom.

B. Size: Coordinate dimensions with roughing-in information or Shop Drawings of equipment to be supported.

C. Material: steel sheet, 0.079 inch thick.
D. Construction:

1. Curb Profile: Manufacturer's standard compatible with roofing system.
2. On ribbed or fluted metal roofs, form deck-mounting flange at perimeter bottom to conform to roof profile.
3. Fabricate curbs to minimum height of 18 inches.
4. Top Surface: Level top of curb, with roof slope accommodated.
5. Sloping Roofs: Where roof slope exceeds 1:48, fabricate curb with perimeter curb height tapered to accommodate roof slope so that top surface of perimeter curb is level. Equip unit with water diverter or cricket on side that obstructs water flow.
7. Liner: Same material as curb, of manufacturer's standard thickness and finish.
9. Metal Counterflashing: Manufacturer's standard, removable, fabricated of same metal and finish as curb.

2.2 METAL MATERIALS

A.

1. Factory Prime Coating: Where field painting is indicated, apply pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat, with a minimum dry film thickness of 0.2 mil.

2.3 MISCELLANEOUS MATERIALS

A. Provide materials and types of fasteners, protective coatings, sealants, and other miscellaneous items required by manufacturer for a complete installation.

B. Cellulosic-Fiber Board Insulation: ASTM C208, Type II, Grade 1, thickness as indicated.

C. Glass-Fiber Board Insulation: ASTM C726, nominal density of 3 lb/cu. ft., thermal resistivity of 4.3 deg F x h x sq. ft./Btu x in. at 75 deg F, thickness as indicated.

D. Wood Nailers: Softwood lumber, pressure treated with waterborne preservatives for aboveground use, acceptable to authorities having jurisdiction, containing no arsenic or chromium, and complying with AWPA C2; not less than 1-1/2 inches thick.

E. Underlayment:

1. Felt: ASTM D226/D226M, Type II (No. 30), asphalt-saturated organic felt, nonperforated.
3. Slip Sheet: Building paper, 3 lb/100 sq. ft. minimum, rosin sized.
4. Self-Adhering, High-Temperature Sheet: Minimum 30 to 40 mils thick, consisting of slip-resisting polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
F. Fasteners: Roof accessory manufacturer's recommended fasteners suitable for application and metals being fastened. Match finish of exposed fasteners with finish of material being fastened. Provide nonremovable fastener heads to exterior exposed fasteners. Furnish the following unless otherwise indicated:

G. Gaskets: Manufacturer's standard tubular or fingered design of neoprene, EPDM, PVC, or silicone or a flat design of foam rubber, sponge neoprene, or cork.

H. Elastomeric Sealant: ASTM C920, elastomeric polymer sealant as recommended by roof accessory manufacturer for installation indicated; low modulus; of type, grade, class, and use classifications required to seal joints and remain watertight.

I. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for expansion joints with limited movement.


PART 3 - EXECUTION

3.1 INSTALLATION

A. Verify dimensions of roof openings for roof accessories. Install roof accessories according to manufacturer's written instructions.

1. Install roof accessories level; plumb; true to line and elevation; and without warping, jogs in alignment, buckling, or tool marks.
2. Anchor roof accessories securely in place so they are capable of resisting indicated loads.
3. Use fasteners, separators, sealants, and other miscellaneous items as required to complete installation of roof accessories and fit them to substrates.
4. Install roof accessories to resist exposure to weather without failing, rattling, leaking, or loosening of fasteners and seals.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

1. Underlayment: Where installing roof accessories directly on cementitious or wood substrates, install a course of underlayment and cover with manufacturer's recommended slip sheet.

C. Seal joints with elastomeric or butyl sealant as required by roof accessory manufacturer.

3.2 REPAIR AND CLEANING

A. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing according to ASTM A780/A780M.

B. Touch up factory-primed surfaces with compatible primer ready for field painting according to Section 099113 "Exterior Painting."

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C. Clean exposed surfaces according to manufacturer’s written instructions.

D. Replace roof accessories that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION
SECTION 079200
JOINT SEALANTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Silicone joint sealants.
2. Urethane joint sealants.

1.2 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

B. Samples: For each kind and color of joint sealant required.

C. Joint-Sealant Schedule: Include the following information:

1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.

1.3 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Preconstruction laboratory test reports.

C. Preconstruction field-adhesion-test reports.

D. Field-adhesion-test reports.

1.4 WARRANTY

A. Special Installer's Warranty: Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.
B. Special Manufacturer’s Warranty: Manufacturer agrees to furnish joint sealants to repair or replace those joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.

1. Warranty Period: Five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer’s full range.

2.2 SILICONE JOINT SEALANTS

A. Silicone, S, NS, 50, T, NT: Single-component, nonsag, plus 50 percent and minus 50 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 50, Uses T and NT.

1. Products: Subject to compliance with requirements, provide the following:
   a. Dow Corning Corporation
   b. Sika
   c. Tremco

2.3 URETHANE JOINT SEALANTS

A. Urethane, S, P, 35, T, NT: Single-component, pourable, plus 35 percent and minus 35 percent movement capability, traffic- and nontraffic-use, urethane joint sealant; ASTM C 920, Type S, Grade P, Class 35, Uses T and NT.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
   a. Dow Corning Corporation
   b. Sika
   c. Tremco

B. Urethane, M, NS, 50, NT: Multicomponent, nonsag, plus 50 percent and minus 50 percent movement capability nontraffic-use, urethane joint sealant; ASTM C 920, Type M, Grade NS, Class 50, Use NT.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
   a. Dow Corning Corporation
   b. Sika
   c. Tremco
2.4 MILDEW-RESISTANT JOINT SEALANTS

A. Mildew-Resistant Joint Sealants: Formulated for prolonged exposure to humidity with fungicide to prevent mold and mildew growth.

B. Silicone, Mildew Resistant, Acid Curing, S, NS, 25, NT: Mildew-resistant, single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, acid-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT.
   1. Manufacturers: Subject to compliance with requirements, provide products by the following:
      a. Dow Corning Corporation
      b. Sika
      c. Tremco

2.5 JOINT-SEALANT BACKING

A. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

2.6 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
   1. Remove laitance and form-release agents from concrete.
   2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion.
B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces.

3.2 INSTALLATION OF JOINT SEALANTS

A. General: Comply with ASTM C 1193 and joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Install sealant backings of kind 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.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

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

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

1. Provide concave joint profile per Figure 8A in ASTM C 1193 unless otherwise indicated.

3.3 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Joints in horizontal traffic surfaces.

1. Joint Locations:
   a. Isolation and contraction joints in cast-in-place concrete slabs.
   b. Tile control and expansion joints.
   c. Joints between dissimilar materials.
   d. Other joints as indicated on Drawings.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

B. Joint-Sealant Application: Joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:
a. Control and expansion joints in unit masonry.
b. Interior finish materials
c. Where dissimilar material abut.
d. Other joints as indicated on Drawings.

2. Joint Sealant: silicone, nonstaining. S, NS, 50, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

C. Joint-Sealant Application: Mildew-resistant interior joints in vertical surfaces and horizontal nontraffic surfaces.

1. Joint Locations:
   a. Joints between plumbing fixtures and adjoining walls, floors, and counters.
   b. Tile control and expansion joints where indicated.
   c. Other joints as indicated on Drawings.

2. Joint Sealant: Silicone, mildew resistant, acid curing, S, NS, 25, NT.
3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

D. Joint-Sealant Application: Concealed mastics.

1. Joint Locations:
   a. Aluminum thresholds.
   b. Sill plates.
   c. Other joints as indicated on Drawings.

3. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION