PART VI

CONTRACT AGREEMENT

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PART VI

CONTRACT AGREEMENT

THIS AGREEMENT, made on the 19 day of June, 2024, by and between **Lexington-Fayette Urban County Government**, acting herein called "OWNER" and **BMI LLC**, doing business as a partnership located in the City of Georgetown, County of Scott, and State of Kentucky, hereinafter called "CONTRACTOR."

WITNESSETH: That the CONTRACTOR and the OWNER in consideration of two million nine hundred eighty-eight thousand eight hundred eighty-eight Dollars ($2,988,888.00) quoted in the proposal by the CONTRACTOR, dated June 4, 2024, hereby agree to commence and complete the construction described as follows:

1. SCOPE OF WORK

The CONTRACTOR shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, and the Special Conditions of the Contract, the Specifications and Contract Documents therefore as prepared by Tate Hill Jacobs Architect Inc. for the **Police Roll Call West Envelope and HVAC** project.

2. TIME OF COMPLETION

The time estimated and authorized by the OWNER for the proper execution of the Work by the Contract, in full, is hereby fixed as three hundred (300) calendar days to substantial completion and sixty (60) calendar days to final completion. The time shall begin in accordance with the Notice to Proceed provided by OWNER.

3. ISSUANCE OF WORK ORDERS

Notice to begin Work will be given in whole or for part of the Work as determined by the OWNER pending the availability of funds. The order of construction will be as determined after consultation between the CONTRACTOR and the OWNER.

4. THE CONTRACT SUM

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the Contract, as quoted in the proposal, subject to any additions and deductions, as provided therein.

5. PROGRESS PAYMENTS

The OWNER shall make payments on account of the Contract, as provided in accordance with the General Conditions, less the aggregate of previous payments.

6. ACCEPTANCE AND FINAL PAYMENT

Final payment shall be due within ninety (90) days after completion of the Work, provided the Work be then fully completed and the Contract fully accepted.

Before issuance of final certificate, the CONTRACTOR shall submit evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the Work has been paid.

If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the CONTRACTOR, the OWNER shall without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

7. THE CONTRACT DOCUMENTS

The Advertisement for Bids, Information for Bidders, the General Conditions, Performance and Payment Bonds, Contract Agreement, Special Conditions, Technical Specifications, any and all Addenda, and Proposal, Ion Wave Q&A, and Plan Drawings form the Contract, and they are fully a part of the Contract as if hereto attached or herein repeated.

8. EXTRA WORK

The OWNER, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the Work, the Contract Sum being adjusted accordingly. All such Work shall be executed and paid for in accordance with the General Conditions, which is a part of this Contract.

9. **THE FOLLOWING IS AN ENUMERATION OF THE SPECIFICATIONS AND DRAWINGS (CONTRACT DOCUMENTS):**

SPECIFICATIONS

SECTION NO.	TITLE
I	Advertisement for Bids
II	Information for Bidders
III	Form of Proposal
IV	General Conditions
V	Special Conditions
VI	Contract Agreement
VII	Performance and Payment Bonds
VIII	Addenda
IX	Technical Specifications and Drawings

IN WITNESSETH WHEREOF, the parties hereto have executed this Contract as of the date and year above written.

(Seal)

ATTEST:

Clerk of the Urban County Council

(Witness)

(Seal)

(Secretary)*

(Witness)

Lexington-Fayette Urban County Government.
Lexington, Kentucky
(Owner)

BY: Linda Gorton
MAYOR

(Title)

BM1 LLC
(Contractor)

BY:

MANAGING MEMBER
(Title)

156 ROCKY WATERS WAY GEORGETOWN KY 40324
(Address and Zip Code)

IMPORTANT: *Strike out any non-applicable terms.

Secretary of the Owner should attest. If the CONTRACTOR is corporation, Secretary should attest. Give proper title of each person-executing Contract.

AIA® Document A312™ – 2010

Performance Bond

Bond No. 2202220

CONTRACTOR:
(Name, legal status and address)
BMI LLC
156 Rocky Waters Way
Georgetown, KY 40324

SURETY:
(Name, legal status and principal place of business)
FCCI Insurance Company
6300 University Parkway
Sarasota, FL 34240

OWNER:
(Name, legal status and address)
Lexington - Fayette Urban County Government
200 East Main Street
Lexington, KY 40507

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

CONSTRUCTION CONTRACT
Date:

Amount: $2,988,888.00

Two Million Nine Hundred Eighty-eight Thousand Eight Hundred Eighty-eight & 00/100 ($2,988,888.00)
Description:
(Name and location)

Police Roll Call West Envelope and HVAC Project

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $2,988,888.00

Two Million Nine Hundred Eighty-eight Thousand Eight Hundred Eighty-eight & 00/100 ($2,988,888.00)
Modifications to this Bond: ☒ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL
Company: *(Corporate Seal)*
BMI LLC

Signature: _____
Name and Title:

SURETY
Company: *(Corporate Seal)*
FCCI Insurance Company

Signature: _____
Name Rachel L. Blackmore
and Title: Attorney-in-Fact

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**
District Bonding, LLC
525K E. Market St. #308
Leesburg, VA 20176
703-639-4007

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

Init.
/

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§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

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§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

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§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address:		Address:	

Init.

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AIA® Document A312™ – 2010

Payment Bond

Bond No. 2202220

CONTRACTOR:
(Name, legal status and address)

BMI LLC
156 Rocky Waters Way
Georgetown, KY 40324

SURETY:
(Name, legal status and principal place of business)

FCCI Insurance Company
6300 University Parkway
Sarasota, FL 34240

OWNER:
(Name, legal status and address)

Lexington - Fayette Urban County Government
200 East Main Street
Lexington, KY 40507

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

CONSTRUCTION CONTRACT
Date:

Amount: $2,988,888.00
Two Million Nine Hundred Eighty-eight Thousand Eight Hundred Eighty-eight & 00/100 (
Description:
(Name and location)
Police Roll Call West Envelope and HVAC Project

BOND
Date:
(Not earlier than Construction Contract Date)

Amount: $2,988,888.00
Two Million Nine Hundred Eighty-eight Thousand Eight Hundred Eighty-eight & 00/100 ($2,988,888.00)
Modifications to this Bond: ☒ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL
Company: *(Corporate Seal)*
BMI LLC

Signature: _____
Name and Title:

SURETY
Company: *(Corporate Seal)*
FCCI Insurance Company

Signature: _____
Name Rachel L. Blackmore
and Title: Attorney-in-Fact

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or BROKER:
District Bonding, LLC
525K E. Market St. #308
Leesburg, VA 20176
703-639-4007

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

Init.
/

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§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

- **.1** have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
- **.2** have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

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§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- **.1** the name of the Claimant;
- **.2** the name of the person for whom the labor was done, or materials or equipment furnished;
- **.3** a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- **.4** a brief description of the labor, materials or equipment furnished;
- **.5** the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- **.6** the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- **.7** the total amount of previous payments received by the Claimant; and
- **.8** the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

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§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address:		Address:	

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FCCI INSURANCE GROUP

GENERAL POWER OF ATTORNEY

Know all men by these presents: That the FCCI Insurance Company, a Corporation organized and existing under the laws of the State of Florida (the "Corporation") does make, constitute and appoint:

Joshua A. Etemadi; Edin R. Zukanovic; Kimberly D. Rose; Rachel L. Blackmore

Each, its true and lawful Attorney-In-Fact, to make, execute, seal and deliver, for and on its behalf as surety, and as its act and deed in all bonds and undertakings provided that no bond or undertaking or contract of suretyship executed under this authority shall exceed the sum of (not to exceed $20,000,000.00): $20,000,000.00

This Power of Attorney is made and executed by authority of a Resolution adopted by the Board of Directors. That resolution also authorized any further action by the officers of the Company necessary to effect such transaction.

The signatures below and the seal of the Corporation may be affixed by facsimile, and any such facsimile signatures or facsimile seal shall be binding upon the Corporation when so affixed and in the future with regard to any bond, undertaking or contract of surety to which it is attached.

In witness whereof, the FCCI Insurance Company has caused these presents to be signed by its duly authorized officers and its corporate Seal to be hereunto affixed, this 23rd day of July, 2020.

Attest: Christina D. Welch

Christina D. Welch, President
FCCI Insurance Company

FCCI INSURANCE COMPANY CORPORATE SEAL 1941 FLORIDA

Christopher Shoucair,
EVP, CFO, Treasurer, Secretary
FCCI Insurance Company

State of Florida
County of Sarasota

Before me this day personally appeared Christina D. Welch, who is personally known to me and who executed the foregoing document for the purposes expressed therein.

My commission expires: 2/27/2027

NOTARY PUBLIC STATE OF FLORIDA

PEGGY SNOW
Commission # HH 326535
Expires February 27, 2027

Peggy Snow
Notary Public

State of Florida
County of Sarasota

Before me this day personally appeared Christopher Shoucair, who is personally known to me and who executed the foregoing document for the purposes expressed therein.

My commission expires: 2/27/2027

NOTARY PUBLIC STATE OF FLORIDA

PEGGY SNOW
Commission # HH 326535
Expires February 27, 2027

Peggy Snow
Notary Public

CERTIFICATE

I, the undersigned Secretary of FCCI Insurance Company, a Florida Corporation, DO HEREBY CERTIFY that the foregoing Power of Attorney remains in full force and has not been revoked; and furthermore that the February 27, 2020 Resolution of the Board of Directors, referenced in said Power of Attorney, is now in force.

Dated this 21st day of June, 2024

Christopher Shoucair, EVP, CFO, Treasurer, Secretary
FCCI Insurance Company

1-IONA-3592-NA-04, 7/2021

HEAT SENSITIVE SHIELD • FADES WITH HEAT OR TOUCH •

DocuGard #04546 contains a security pantograph, blue background, heat-sensitive ink, coin-reactive watermark, and microtext printing on border.

CONTRACT DOCUMENTS
AND
SPECIFICATIONS

DEPARTMENT OF GENERAL SERVICES

FOR

Police Roll Call West Envelope and HVAC Project

Bid No. 78-2024

Prepared by: Tate Hill Jacobs Architects Inc.

TABLE OF CONTENTS

CONTRACT DOCUMENTS

PART 1

ADVERTISEMENT FOR BIDS

INDEX

PART 1

ADVERTISEMENT FOR BIDS

1. INVITATION

Sealed proposals for the **Police Roll Call West Envelope and HVAC Project** will be received by the Lexington-Fayette Urban County Government (LFUCG) via Ion Wave until 2:00 p.m., local time, **June 6, 2024**, for furnishing all labor and/or materials and performing all work as set forth by this advertisement, Ion Wave Q&A, conditions (general and special), specifications, and/or the drawings prepared by Tate Hill Jacobs Architects Inc. for Lexington-Fayette Urban County Government. Immediately following the scheduled closing time for reception of bids, all proposals which have been submitted in accordance with the above will be opened electronically and a bid tab sheet will be posted via Ion Wave.

LFUCG will only be accepting bids on-line through Ion Wave for this solicitation. Base bid and alternate totals (if required) should be provided on the appropriate line items tab on Ion Wave. Submissions without line item totals (if required) may be rejected and deemed non-responsive. All forms normally provided with bid submission should be downloaded from Ion Wave, filled out and attached with bid submission. A copy of bid bond must be included with submission. THESE INSTRUCTIONS SUPERCEDE ALL OTHER BID SUBMISSION INSTRUCTIONS PROVIDED IN THIS PACKAGE. PLEASE SUBMIT ALL QUESTIONS VIA THE Q&A MODULE ON ION WAVE.

2. DESCRIPTION OF WORK

Consisting of the construction and/or furnishing of items as listed in the Bid Schedule beginning on page P-6, Part III, Form of Proposal, of this document, for the Police Roll Call West Envelope and HVAC Project, Lexington-Fayette County, Kentucky.

Specs and drawings are available on Ion Wave only.

3. OBTAINING PLANS, SPECIFICATIONS, AND BID DOCUMENTS

Plans, Specifications, and Contract Documents shall be obtained from Ion Wave (LFUCG's electronic bidding system). Ion Wave can be accessed at https://lexingtonky.ionwave.net

4. METHOD OF RECEIVING BIDS

Bids will be received from Prime Contracting firms on a **Lump Sum** for total Project. Bidder must include a price for all bid items to be considered. **Bids shall be submitted in the manner and subject to the conditions as set forth and described in the Information for Bidders and Special Conditions.**

Bids/proposals should be submitted online via Ion Wave.

5. METHOD OF AWARD

The Contract, if awarded, will be to the lowest responsive and responsible bidder for the total project whose qualifications indicate the award will be in the best interest of the OWNER and whose bid/proposal complies with all the prescribed requirements. No Notice of Award will be given until the OWNER has concluded such investigation as deemed necessary to establish the responsibility, qualifications and financial ability of Bidders to do the work in accordance with the Contract Documents to the satisfaction of the OWNER within the time prescribed. The OWNER reserves the right to reject the Bid of any Bidder who does not pass such investigation to the OWNER's satisfaction. The OWNER reserves the right to reject the Bid of any Bidder that is deemed to be unbalanced or front loaded. In analyzing Bids, the OWNER may take into consideration alternate and unit prices, if requested by the Bid forms.

6. BID WITHDRAWAL

No bidder may withdraw his bid for a period of ninety (90) calendar days after the closing date for receipt of bids. Errors and omissions will not be cause for withdrawal of bid without forfeit of bid bond.

7. BID SECURITY

If the bid is $50,000 or greater, bid shall be accompanied by a certified check or bid bond payable to the Lexington-Fayette Urban County Government in an amount not less than Five Percent (5%) of the base bid. Bid bond shall be executed by a Surety Company authorized to do business in the Commonwealth of Kentucky and countersigned by a licensed Kentucky Resident Agent, representing the Surety Company. Bid Bonds are not required for bids under $50,000. A cashier's check or irrevocable letter of credit is an acceptable form of bid security.

8. SUBMISSION OF BIDS

CONTRACTORS shall submit their bids via Ion Wave not later than 2:00 p.m. local time, **June 6, 2024**. Bid submittals and bid tab sheet will be immediately available after bid opening.

9. RIGHT TO REJECT

The Lexington-Fayette Urban County Government reserves the right to reject any and all bids and to waive all informalities and/or technicalities where the best interest of the Lexington-Fayette Urban County Government may be served.

10. NOTIFICATION TO THE LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT FOR AFFIRMATIVE ACTION PLAN AND CURRENT WORKFORCE

The successful bidder must submit the following to the Lexington-Fayette Urban County Government:

1. Affirmative Action Plan for his/her firm.
2. Current Workforce Analysis Form

Failure to submit this as required herein may result in disqualification of the Bidder from the award of the contract.

11. NOTICE CONCERNING MWDBE and Veteran Goals

Notice of requirement for Affirmative Action to ensure Equal Employment Opportunities and Disadvantaged Business Enterprises (DBE) Contract participation. Disadvantaged Business Enterprises (DBE) consists of Minority-Owned Business Enterprises (MBE) and Woman-Owned Business Enterprises (WBE).

The Lexington-Fayette Urban County Government has set a goal that not less than ten percent (10%) of the total value of this Contract be subcontracted to Disadvantaged Business Enterprises, which is made up of MBEs and WBEs, and set a goal that not less than three percent (3%) of the total value of this Contract be subcontracted to Veteran-Owned Small Businesses. The goals for the utilization of Disadvantaged Business Enterprises and Veteran-Owned Small Businesses as subcontractors are recommended goals. Contractor(s) who fail to meet such goals will be expected to provide written explanations to the Director of the Division of Purchasing of efforts they have made to accomplish the recommended goal, and the extent to which they are successful in accomplishing the recommended goal will be a consideration in the procurement process. Depending on the funding source, other DBE goals may apply.

For assistance in locating Disadvantaged Business Enterprise and Veteran-Owned Small

Businesses as Subcontractors contact:

Sherita Miller, Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street, 3rd Floor, Room 338
Lexington, Kentucky 40507
859-258-3323
smiller@lexingtonky.gov

12. AMERICAN RESCUE PLAN ACT

AMENDMENT 1 —
CERTIFICATION OF COMPLIANCE FOR EXPENDITURES USING FEDERAL FUNDS, INCLUDING THE AMERICAN RESCUE PLAN ACT

The Lexington-Fayette Urban County Government ("LFUCG") may use Federal funding to pay for the goods and/or services that are the subject matter of this bid. That Federal funding may include funds received by LFUCG under the American Rescue Plan Act of 2021. Expenditures using Federal funds require evidence of the contractor's compliance with Federal law. Therefore, by the signature below of an authorized company representative, you certify that the information below is understood, agreed, and correct. Any misrepresentations may result in the termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims.

The bidder (hereafter "bidder," or "contractor") agrees and understands that in addition to all conditions stated within the attached bid documents, the following conditions will also apply to any Agreement entered between bidder and LFUCG, if LFUCG uses Federal funds, including but not limited to funding received by LFUCG under the American Rescue Plan Act ("ARPA"), toward payment of goods and/or services referenced in this bid. The bidder also agrees and understands that if there is a conflict between the terms included elsewhere in this Request for Proposal and the terms of this Amendment 1, then the terms of Amendment 1 shall control. The bidder further certifies that it can and will comply with these conditions, if this bid is accepted and an Agreement is executed:

1. Any Agreement executed as a result of acceptance of this bid may be governed in accordance with 2 CFR Part 200 and all other applicable Federal law and regulations and guidance issued by the U.S. Department of the Treasury.

2. Pursuant to 24 CFR § 85.43, any Agreement executed as a result of acceptance of this bid can be terminated if the contractor fails to comply with any term of the award. This Agreement may be terminated for convenience in accordance with 24 CFR § 85.44 upon written notice by LFUCG. Either party may terminate this Agreement with thirty (30) days written notice to the other party, in which case the Agreement shall terminate on the thirtieth day. In the event of termination, the contractor shall

be entitled to that portion of total compensation due under this Agreement as the services rendered bears to the services required. However, if LFUCG suspects a breach of the terms of the Agreement and/or that the contractor is violating the terms of any applicable law governing the use of Federal funds, LFUCG may suspend the contractor's ability to receive payment by giving thirty (30) days' advance written notice. Further, either party may terminate this Agreement for cause shown with thirty (30) days written notice, which shall explain the party's cause for the termination. If the parties do not reach a settlement before the end of the 30 days, then the Agreement shall terminate on the thirtieth day. In the event of a breach, LFUCG reserves the right to pursue any and all applicable legal, equitable, and/or administrative remedies against the contractor.

3. The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following:

(1) Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.
(4) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the

administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part, and the contractor may be declared ineligible for further government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance.

Provided, however, that in the event a contractor becomes involved in or is threatened with litigation with a subcontractor or vendor as a result of such direction by the administering agency, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

4. If fulfillment of the contract requires the contractor to employ mechanic's or laborers, the contractor further agrees that it can and will comply with the following:

(1) Overtime requirements: No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such a workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such a workweek.

(2) Violation: liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory) for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of $10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.

(3) Withholding for unpaid wages and liquidated damages. LFUCG shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work

Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

(4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower-tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower-tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section.

5. The contractor shall comply with all applicable standards, orders, or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.

6. The contractor shall report each violation to LFUCG and understands and agrees that LFUCG will, in turn, report each violation as required to assure notification to the Treasury Department and the appropriate Environmental Protection Agency Regional Office.

7. The contractor shall include these requirements in numerical paragraphs 5 and 6 in each subcontract exceeding $100,000 financed in whole or in part with Federal funding.

8. The contractor shall comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. § 1251 et seq.

9. The contractor shall report each violation to LFUCG and understands and agrees that LFUCG will, in turn, report each violation as required to assure notification to the Treasury Department and the appropriate Environmental Protection Agency Regional Office.

10. The contractor shall include these requirements in numerical paragraphs 8 and 9 in each subcontract exceeding $100,000 financed in whole or in part with Federal funds.

11. The contractor shall comply with all applicable standards, orders, or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. § 1251 et seq.

12. The contractor shall report each violation to LFUCG and understands and agrees that LFUCG will, in turn, report each violation as required to assure notification to the Treasury Department and the appropriate Environmental Protection Agency regional office.

13. The contractor shall include these requirements in numerical paragraphs 11 and 12 in each subcontract exceeding $100,000 financed in whole or in part with American Rescue Plan Act funds.

14. The contractor shall include this language in any subcontract it executes to fulfill the terms of this bid: "the sub-grantee, contractor, subcontractor, successor, transferee, and assignee shall comply with Title VI of the Civil Rights Act of 1964, which prohibits recipients of federal financial assistance from excluding from a program or activity, denying benefits of, or otherwise discriminating against a person on the basis of race, color, or national origin (42 U.S.C. § 2000d et seq.), as implemented by

the Department of the Treasury's Title VI regulations, 31 CFR Part 22, which are herein incorporated by reference and made a part of this contract (or agreement). Title VI also includes protection to persons with 'Limited English Proficiency' in any program or activity receiving federal financial assistance, 42 U.S.C. § 2000d et seq., as implemented by the Department of the Treasury's Title VI regulations, 31 CFR Part 22, and herein incorporated by reference and made a part of this contract or agreement."

15. Contractors who apply or bid for an award of $100,000 or more shall file the required certification that it will not and has not used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency. Each tier certifies to the tier above that it will not and has not used federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-federal funds that takes place in connection with obtaining any federal award. Such disclosures are forwarded from tier to tier, up to the recipient. The required certification is included here:

a. The undersigned certifies, to the best of his or her knowledge and belief, that:
   (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
   (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
   (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

b. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

16. The contractor acknowledges and certifies that it has not been debarred or suspended and further acknowledges and agrees that it must comply with regulations regarding debarred or suspended entities in accordance with 24 CFR § 570.489(l). Funds may not be provided to excluded or disqualified persons.

17. The contractor agrees and certifies that to the greatest extent practicable, it will prefer the purchase, acquisition, and use of all applicable goods, products or materials produced in the United States, in conformity with 2 CFR 200.322 and/or section 70914 of Public Law No. 117-58, §§ 70901-52, also known as the Infrastructure Investment and Jobs Act, whichever is applicable.

18. The contractor agrees and certifies that all activities performed pursuant to any Agreement entered as a result of the contractor's bid, and all goods and services procured under that Agreement, shall comply with 2 C.F.R. § 200.216 (Prohibition on certain telecommunications and video surveillance services and equipment) and 2 C.F.R. 200 § 200..323 (Procurement of recovered materials), to the extent either section is applicable.

19. If this bid involves construction work for a project totaling $10 million or more, then the contractor further agrees that all laborers and mechanics, etc., employed in the construction of the public facility project assisted with funds provided under this Agreement, whether employed by contractor, or contractor's contractors, or subcontractors, shall be paid wages complying with the Davis-Bacon Act (40 U.S.C. 3141-3144). Contractor agrees that all of contractor's contractors and subcontractors will pay laborers and mechanics the prevailing wage as determined by the Secretary of Labor and that said laborers and mechanics will be paid not less than once a week. The contractor agrees to comply with the Copeland Anti- Kick Back Act (18 U.S.C. § 874) and its implementing regulations of the U.S. Department of Labor at 29 CFR part 3 and part 5. The contractor further agrees to comply with the applicable provisions of the Contract Work Hours and Safety Standards Act (40 U.S.C. Section 327-333), and the applicable provisions of the Fair Labor Standards Act of 1938, as amended (29 U.S.C. et seq.). Contractor further agrees that it will report all suspected or reported violations of any of the laws identified in this paragraph to LFUCG.

_____ _____

Signature Date

13. PRE-BID CONFERENCE

A pre-bid conference is scheduled for May 23, 2024, 1:00 pm, 1795 Old Frankfort Pike, Lexington, KY.

END OF SECTION

PART II

INFORMATION FOR BIDDERS

INDEX

PART II

INFORMATION FOR BIDDERS

1. RECEIPT AND OPENING OF BIDS

The Lexington-Fayette Urban County Government (herein called the OWNER) invites bids from firms on the project described in the Advertisement for Bids. The OWNER will receive bids via Ion Wave, at the time and in the manner set forth in the Advertisement for Bids, and the Bids. The OWNER may consider informal any bid not prepared and submitted in accordance with the provisions hereof and may waive any informalities or reject any and all bids. Any bid may be withdrawn prior to the scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. No bidder may withdraw a bid within 90 days after the actual time and date of the bid opening, but OWNER may, in its sole discretion, release any bid and return the Bid Security prior to that date.

The Lexington-Fayette Urban County Government assumes no responsibility for bids that are not delivered as indicated above.

2. PREPARATION OF BID

The bid must be submitted with the entire proposal and include all pages. All blank spaces for the bid prices must be filled in, either in ink or typewritten, for both unit prices and extensions. Totals for each bid item must be added to show the total amount of the bid.

3. REQUIRED BONDS

The bonds required for this project are bid bond and performance and payment bond.

4. SUBCONTRACTS

The bidder is specifically advised that any person, firm, or other party to whom it is proposed to award a subcontract under this Contract must be acceptable to the OWNER. All proposed subcontractors must be identified on the Form of Proposal. Prior to the award of Contract, the OWNER or the OWNER'S representative will advise the CONTRACTOR of the acceptance and approval thereof or of any action necessary to be taken. Should any Subcontractor be rejected by the OWNER, the CONTRACTOR shall present a new name and/or firm to the OWNER at no change in the Contract Price.

5. QUALIFICATION OF BIDDER

The OWNER may make such investigations as the OWNER deems necessary to determine the ability of the bidder to perform the Work, and the bidder shall furnish to the OWNER all such information and data for this purpose as the OWNER may request.

The OWNER reserves the right to reject any bid if the evidence submitted by, or investigation of, such bidder fails to satisfy the OWNER that such bidder is properly qualified to carry out the obligations of the Contract and to complete the Work contemplated therein. Conditional bids will not be accepted.

In evaluating Bids, OWNER shall consider the qualifications of the BIDDERS, whether or not the Bids comply with the prescribed requirements, and alternatives and unit prices, as requested. OWNER may consider maintenance requirements, performance data, and disruption or damage to private property. It is OWNER'S intent to accept alternatives by the bid forms, in the order in which they are listed in the Bid Form but OWNER may accept or decline them in order or combination. The contract, if awarded, will be awarded to the lowest responsive and qualified, responsible BIDDER based upon OWNER'S evaluation which indicates that the award will be in the best interest of OWNER and the general public.

In the event there is any question as to the bidder's qualifications and ability to complete the work, a final determination will be made in accordance with a fair evaluation by the Urban County Government of the above listed elements.

A. If the OWNER requires filling out a detailed financial statement, the bidder may provide its current certified financial statement(s) for the required time interval.

B. Corporate firms are required to be registered with the Office of the Secretary of State, Commonwealth of Kentucky.

C. Documents Required of CONTRACTOR - (1) A sworn statement signed by the President or owner of the Company regarding all current work in progress anywhere; (2) A document showing the percent of completion of each project and the total worth of each project; and (3) Documentation showing the percentage of the DBE employment levels on each project of the Bidder's current work force, and DBE participation levels for Subcontractors.

D. Optional OWNER Requirements - The OWNER, at its discretion, may require the BIDDER/CONTRACTOR to provide: (1) A current detailed financial statement for a period including up to 3 prior years. (2) Financial security or insurance in amounts and kinds acceptable to the OWNER to meet the financial responsibility requirements for the CONTRACTOR to indemnify the OWNER. (3) Additional information and/or DBE work force data, as well as DBE participation data.

Each bidder agrees to waive any claim it has or may have against the Owner and their respective employees, arising out of or in connection with the administration, evaluation, or recommendation of any bid.

6. BID SECURITY

A. Each bid must be accompanied by a bid bond prepared on a Form of Bid Bond and attached hereto, duly executed by the bidder as principal and having as surety thereon a surety company approved by the OWNER, in the amount of 5% of the bid. Such bid bond will be returned to the unsuccessful bidder(s) only upon written request to the Director of Procurement within seven (7) days of opening of bids. Bid bond shall be made payable to the Lexington-Fayette Urban County Government. Bid security is not required for projects under $50,000.

B. Bonds shall be placed with an agent licensed in Kentucky with surety authorized to do business within the state. When the premium is paid for such coverage, the full commission payable shall be paid to such local agent who shall not divide such commission with any person other than a duly licensed resident local agent.

7. LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

The successful bidder, upon his failure or refusal to execute and deliver the Contract and bonds required within ten (10) days after he has received notice of the acceptance of his bid, shall forfeit to the OWNER, as liquidated damages for such failure or refusal, the security deposited with his bid.

8. TIME OF COMPLETION AND LIQUIDATED DAMAGES

Bidder must agree to commence work on or before a date to be specified in a written "Notice to Proceed" from the OWNER and to fully complete the Project within the time as specified in the Contract. Bidder must agree also to pay **$500.00** per calendar day thereafter deadline for substantial completion and **$250.00** per calendar day thereafter deadline for final completion.

9. EXAMINATION OF CONTRACT DOCUMENTS AND SITE

A. It is the responsibility of each Bidder before submitting a Bid, to (a) examine the Contract Documents thoroughly, (b) visit the site(s) to become familiar with local conditions that may affect cost, progress, performance or furnishing of the work, (c) consider Federal, State and Local laws and regulations that may affect cost, progress, performance or furnishing of the work, (d) study and carefully correlate Bidder's observations with the Contract Documents, and (e) notify Owner of all conflicts, errors or discrepancies in the Contract Documents.

B. Bidders should examine the requirements of Section 4 of the General Conditions for information pertaining to subsurface conditions, underground structures, underground facilities, and availability of lands, easements, and rights-of-way. The completeness of data, presented in the Contract Documents, pertaining to subsurface conditions, underground structures, and underground facilities for the

purposes of bidding or construction is not assured. The Bidder will, at Bidder's own expense, make or obtain any additional examinations, investigations, explorations, tests and studies and obtain any additional information and data which pertain to the physical conditions (surface and subsurface) which may affect cost, progress, performance or furnishing of the Work and which Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of the Contract Documents. On request in advance, OWNER will provide access to the site to conduct such explorations and tests as each Bidder deems necessary for submission of a bid. Bidder shall fill all holes, clean up and restore the site to its former condition upon completion of such explorations.

C. The submission of a Bid will constitute an incontrovertible representation by the Bidder that Bidder has complied with every requirement of this paragraph; that without exception the Bid is premised upon furnishing and performing the Work required by the Contract Documents and such means, methods, techniques, sequences or procedures of construction as may be indicated in or required by the Contract Documents; and that the Contract Documents are sufficient in scope and detail to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

10. ADDENDA AND INTERPRETATIONS

No interpretation of the meaning of the Contract Documents will be made to any bidder orally. Every request for such interpretation should be in writing addressed to the Director of Procurement, who in turn will have an addendum issued under signature of the Project Manager for the Lexington-Fayette Urban County Government, and to be given consideration must be received at least seven (7) days prior to the date fixed for the opening of bids. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, if issued, will be mailed by certified mail with return receipt requested, faxed or emailed to all prospective bidders. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

11. SECURITY FOR FAITHFUL PERFORMANCE

A. Simultaneously with his delivery of the executed Contracts, the CONTRACTOR shall furnish a surety bond or bonds as security for the faithful performance of this Contract and for payment of all persons performing labor on the Project under this Contract and furnishing materials in connection with this Contract, as specified in the General Conditions. The surety on such bond or bonds shall be a duly authorized surety company satisfactory to the OWNER and authorized to do business in the Commonwealth of Kentucky.

B. All bonds required by this Contract and laws of this State shall be placed with agents licensed in the State of Kentucky. When the premium is paid for such coverages, the full commission shall be paid to such local agent who shall not divide such commission with any person other than a duly licensed resident local agent.

C. **Contractor shall use standard Performance and Payment Bond forms such as documents provided with this contract book or AIA form A312-1984 (or later).**

12. POWER OF ATTORNEY

Attorney-in-fact who signs bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

13. TAXES AND WORKMEN'S COMPENSATION

The CONTRACTOR and subcontractor will be required to accept liability for payment of all payroll taxes, sales and use tax, and all other taxes or deductions required by local, state or federal law. Each shall carry Workmen's Compensation Insurance to the full amounts as required by Statutes and shall include the cost of all foregoing items in the proposal. The CONTRACTOR will not otherwise be reimbursed or compensated for such tax payments. The CONTRACTOR is urged to ascertain at his own risk his actual tax liability in connection with the execution or performance of his Contract.

14. LAWS AND REGULATIONS

The bidder's attention is directed to the fact that all applicable state laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the contract, the same as though herein written out in full.

15. EROSION AND SEDIMENT CONTROL AND PERMITS

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall also comply with all applicable federal, state, and local environmental regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits as described in Part 4 General Conditions Paragraph 5.17.

16. PREVAILING WAGE LAW AND MINIMUM HOURLY RATES

Federal wage rates and regulations, if required for this Project, will be as described in the Special Conditions.

17. AFFIRMATIVE ACTION PLAN

The successful Bidder must submit the entire proposal with their bid, the following items to the Urban County Government:

1. Certification of Bid Proposal/DBE – see Part III
2. KYTC DBE Provisions – see Part III
3. DBE Subcontractor Bidders List – see Part III

A Work Force Analysis Form shall be submitted for each Contract. Failure to submit any of these items as required herein may result in disqualification of the Bidder from award of the Contract.

18. CONTRACT TIME

The number of calendar days within which the Work is to be substantially completed and ready for final payment (the Contract Time) is set forth in the Contract Agreement.

19. SUBSTITUTE OR "APPROVED EQUAL" ITEMS

The Contract, if awarded, will be on the basis of materials and equipment described in the Drawings or specified in the Specifications without consideration of possible substitute or "approved equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "approved equal" item of material or equipment may be furnished or used by the CONTRACTOR if acceptable to the OWNER, application for such acceptance will not be considered by the OWNER until after the effective date of the Agreement. The procedure for submission of any such application by the CONTRACTOR and consideration by the OWNER is set forth in the General Conditions.

20. ALTERNATE BIDS

Bidders shall submit alternate bids/proposals only if and when such alternate bids/proposals have been specifically requested in an Invitation for Bids. If alternate bids/proposals are requested in an Invitation for Bids, the form of submission of such alternate bid and the conditions under which such alternate bids will be considered for award of a contract will be established in the Invitation.

Any Bidder who submits a bid incorporating an alternate proposal when alternate bids/proposals have not been requested in the Invitation for Bids shall have his/her bid rejected as non-responsive.

Any Bidder who submits a bid incorporating two (2) or more prices for an item or groups of items (unless such method of pricing is requested in the Invitation for Bids), or which imposes conditions for acceptance other than those established in the Invitation for Bids, shall have their bid rejected as non-responsive.

21. SIGNING OF AGREEMENT

When OWNER gives a Notice of Award to the successful Bidder, it will be accompanied by the required number of unsigned counterparts of the Agreement with all other written Contract Documents attached. Within ten days thereafter, CONTRACTOR shall sign and deliver the required number of counterparts of the Agreement and attached documents to OWNER with the required Bonds, Certificate of Insurance, and Power of Attorney. The OWNER will deliver one fully signed counterpart to CONTRACTOR at such time as it has been signed by the Mayor.

22. ASSISTANCE TO BE OFFERED TO DISADVANTAGED BUSINESS ENTERPRISE (MWDBE) CONTRACTORS AND VETERAN OWNED SMALL BUSINESSES

A. Outreach for MWDBE(s) and Veteran Owned Small Businesses (VOSB)

The Lexington-Fayette Urban County Government (LFUCG) maintains a database of MWDBE contractors and Veteran Owned Small Businesses. When a LFUCG construction project is advertised for bidding, notices are sent to companies registered at https://lexingtonky.ionwave.net. The notices describe the project and indicate the deadline for submitting bids.

If you wish to be added to the LFUCG MWDBE contractor database, please contact:

Sherita Miller, Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

B. Bid Bond Assistance for MWDBE(s)

For those MWDBE contractors who wish to bid on LFUCG project, bid bond assistance is available. This bid bond assistance is in the form of a "Letter of Certification" which is accepted by the LFUCG's Division of Purchasing, in lieu of a bid bond. The "Letter of Certification" must be included in the bid package when it is submitted to the Division of Purchasing. The "Letter of Certification" will reference the specific project for which the bid is being submitted, and the time and date on which the bid is due. Bid bond assistance must be requested from the Lexington-Fayette Urban County Government's Division of Procurement.

C. Eligibility for Bid Bond Assistance for MWDBE(s)

In order to be eligible for any Bid bonding assistance, a MWDBE construction company must be owned or controlled at the level of 51% or more by a member or members of a minority group or females. Prior to receiving assistance, a statement providing evidence of ownership and control of the company by a member or members of a minority group or females must be signed by the Owner or corporate officer and by an attorney or accountant submitted to:

Sherita Miller, Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

D. MWDBE and Veteran Subcontractors

The LFUCG will, upon request, assist prime contractors in the procurement of eligible DBE subcontractors in an effort to achieve a 10% minimum MWDBE and a 3% minimum Veteran goal.

For a list of eligible subcontractors, please contact:

Sherita Miller, Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street, Room 338
Lexington, Kentucky 40507
smiller@lexingtonky.gov

23. LFUCG NON-APPROPRIATION CLAUSE

Contractor acknowledges that the LFUCG is a governmental entity, and the contract validity is based upon the availability of public funding under the authority of its statutory mandate.

In the event that public funds are unavailable and not appropriated for the performance of the LFUCG's obligations under this contract, then this contract shall automatically expire without penalty to the LFUCG thirty (30) days after written notice to Contractor of the unavailability and non-appropriation of public funds. It is expressly agreed that the LFUCG shall not activate this non-appropriation provision for its convenience or to circumvent the requirements of this contract, but only as an emergency fiscal measure during a substantial fiscal crisis, which affects generally its governmental operations.

In the event of a change in the LFUCG's statutory authority, mandate and mandated functions, by state and federal legislative or regulatory action, which adversely affects the LFUCG's authority to continue its obligations under this contract, then this contract shall automatically terminate without penalty to the LFUCG upon written notice to Contractor of such limitation or change in the LFUCG's legal authority.

END OF SECTION

PART III

FORM OF PROPOSAL

INDEX

PART III

Invitation to Bid No. 78-2024

Police Roll Call West Envelope and HVAC Project

1. FORM OF PROPOSAL

Place: Lexington, Kentucky

Date: _____

The following Form of Proposal shall be followed exactly in submitting a proposal for this Work.

This Proposal Submitted by _____

_____
(Name and Address of Bidding Contractor)

(Hereinafter called "Bidder"), organized and existing under the laws of the State of _____, doing business as _____ "a corporation," "a partnership", or an "individual" as applicable.

To: Lexington-Fayette Urban County Government
(Hereinafter called "OWNER")
Office of the Director of Purchasing
200 East Main Street, 3rd Floor
Lexington, KY 40507

Gentlemen:

The Bidder, in compliance with your Invitation for Bids for the **Police Roll Call West Envelope and HVAC Project** having examined the Plans and Specifications with related documents, having examined the site for proposed Work, and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the Project in accordance with the Contract Documents, within the time set forth therein, and at the lump sum and/or unit prices stated hereinafter. These prices are to cover all expenses incurred in performing the Work required under the Contract Documents, of which this proposal is a part.

The Bidder hereby acknowledges receipt of the following addenda:

Addendum No. _____ Date _____
Addendum No. _____ Date _____
Addendum No. _____ Date _____
Addendum No. _____ Date _____
Addendum No. _____ Date _____
Addendum No. _____ Date _____
Addendum No. _____ Date _____
Addendum No. _____ Date _____

Insert above the number and the date of any Addendum issued and received. If none has been issued and received, the word "NONE" should be inserted.

2. LEGAL STATUS OF BIDDER

Bidder _____

Date _____

* 1. A corporation duly organized and doing business under the laws of the State of _____, for whom _____, bearing the official title of _____, whose signature is affixed to this Bid/Proposal, is duly authorized to execute contracts.

* 2. A Partnership, all of the members of which, with addresses are: (Designate general partners as such)

_____

_____

_____

_____

_____

* 3. An individual, whose signature is affixed to this Bid/Proposal (please print name)

_____

_____

*(The Bidder shall fill out the appropriate form and strike out the other two.)

3. **BIDDERS AFFIDAVIT**

Comes the Affiant, _____, and after being first duly sworn, states under penalty of perjury as follows:

1. His/her name is _____ and he/she is the individual submitting the bid or is the authorized representative of _____, the entity submitting the bid (hereinafter referred to as "Bidder").

2. Bidder will pay all taxes and fees, which are owed to the Lexington-Fayette Urban County Government at the time the bid is submitted, prior to award of the contract and will maintain a "current" status in regard to those taxes and fees during the life of the contract.

3. Bidder will obtain a Lexington-Fayette Urban County Government business license, if applicable, prior to award of the contract.

4. Bidder has authorized the Division of Procurement to verify the above-mentioned information with the Division of Revenue and to disclose to the Urban County Council that taxes and/or fees are delinquent or that a business license has not been obtained.

5. Bidder has not knowingly violated any provision of Chapter 25 of the Lexington-Fayette Urban County Government Code of Ordinances, known as the "Ethics Act."

6. Bidder acknowledges that "knowingly" for purposes of this Affidavit means, with respect to conduct or to circumstances described by a statute or ordinance defining an offense, that a person is aware or should have been aware that his conduct is of that nature or that the circumstance exists.

_____ _____
Signature Printed Name

_____ _____
Title Date

Company Name _____

Address _____

Subscribed and sworn to before me by _____
(Affiant)

_____
(Title)

of _____ this _____ day of _____, 20_____.
(Company Name)

_____
Notary Public
[seal of notary] My commission expires: _____

4. **BID SCHEDULE – SCHEDULE OF VALUES**

The Bidder agrees to perform all the Work described in the Specifications and shown on the Plans for the following proposed lump sum and/or unit prices, if applicable, which shall include the furnishing of all labor, materials, supplies, equipment and/or vehicle usage, services, all items of cost, overhead, taxes (federal, state, local), and profit for the Contractor and any Subcontractor involved, within the time set forth herein. If unit prices are applicable, Bidder must make the extensions and additions showing the total amount of bid.

Form of proposal must include unit bid prices written in words, unit price written in numbers and total amount bid (unit price x quantity) per line item OR bid may be considered non-responsive. In case of price discrepancy, unit bid price written in words will prevail followed by unit price written in numbers then total amount bid per line item.

If a discrepancy between the unit price and the item total exists, the unit price prevails except: If the unit price is illegible, omitted, or the same as the item total, item total prevails and the unit price is the quotient of the item total and the quantity.

If the unit price and the item total are illegible or are omitted, the bid may be determined nonresponsive. If a lump sum total price is illegible or is omitted, the bid may be determined nonresponsive.

For a unit price based bid, the sum of the item totals is the bid amount the Division uses for bid comparison.

The LFUCG's decision on the bid amount is final.

BID ITEM NO.	UNIT DESCRIPTION	UNIT	QTY
1	Police Roll Call West Envelope and HVAC Project, per specifications.	LS	1
2	Add Alternate 1. Provide paint finish system (prep, primer + 2 coats) for all walls in all interior areas, rooms and corridors, per specifications.	LS	1

LIST OF UNIT PRICES

The following List of Unit Prices is required by the Owner to be completely executed and submitted with each Bidder's Proposal. Each unit price shall include the furnishing of all labor, materials, supplies and services, and shall include all items of cost, overhead and profit for the Contractor and any Sub-Contractors involved, and shall be used uniformly, without modification, for either additions or deductions from the Bid. These unit prices as established shall also be used to determine the equitable adjustment of the Contract Price in connection with changes, or extra work performed under the Contract. The "Rules of Measurement" set forth in the Special Conditions shall govern where volume units are concerned.

ITEM DESCRIPTION	UNIT	UNIT PRICE
1. Roof Manufacturer Walk Pads	SF	
2. Corrugated Metal Deck Replacement	SF	
3. Typical Exterior Wall Assembly (metal stud 16" on center w/top and bottom rack)	SF	
4. Typical Gypsum Board Interior Wall (level 5) w/paint finish per specs	SF	
5. Rubber Base to Match Existing	LF	
6. Acoustic Tile Ceiling System	SF	
7. 5/8" Gypsum on Metal Stud Ceiling System	SF	
8. 5/8" Gypsum Board & Cold Form Formed Steel Stud Assembly w/Paint Finish, Level 5	SF	

Submitted by: _____
Firm

_____
Address

_____
City, State & Zip

Bid must be signed:
(original signature) _____
Signature of Authorized Company Representative – Title

_____
Representative/s Name (Typed or Printed)

_____
Area Code – Phone –Fax #

_____
E-Mail Address

OFFICIAL ADDRESS:

_____

_____

_____

_____ (Seal if Bid is by Corporation)

By signing this form you agree to ALL terms, conditions, and associated forms in this bid package

5. STATEMENT OF BIDDER'S QUALIFICATIONS

The following statement of the Bidder's qualifications is required to be filled in, executed, and submitted with the Proposal:

1. Name of Bidder: _____

2. Permanent Place of Business: _____

3. When Organized: _____

4. Where Incorporated: _____

5. Construction Plant and Equipment Available for this Project:

_____

_____

_____

_____

_____

_____

(Attach Separate Sheet If Necessary)

6. Financial Condition:

If specifically requested by the OWNER, the apparent low Bidder is required to submit its latest three (3) years audited financial statements to the OWNER'S Division of Procurement within seven (7) calendar days following the bid opening.

7. In the event the Contract is awarded to the undersigned, surety bonds will be furnished by:

_____(Surety)

Signed: _____(Representative of Surety)

8. The following is a list of similar projects performed by the Bidder: (Attach separate sheet if necessary).

NAME	LOCATION	CONTRACT SUM

9. The Bidder has now under contract and bonded the following projects:

NAME	LOCATION	CONTRACT SUM

10. List Key Bidder Personnel who will work on this Project.

NAME	POSITION DESCRIPTION	NO. OF YEARS WITH BIDDER

11. DBE Participation on current bonded projects under contract:

SUBCONTRACTORS (LIST)	PROJECT (SPECIFIC TYPE)	DBE	% of WORK

(USE ADDITIONAL SHEETS IF NECESSARY)

12. We acknowledge that, if we are the apparent low Bidder, we will submit to the OWNER within 7 calendar days following the Bid Opening, a sworn statement on the OWNER'S form regarding all current work on hand and under contract, and a statement on the OWNER'S form of the experience of our officers, office management and field management personnel. Additionally, if requested by the OWNER, we will within 7 days following the request submit audited financial statements and loss history for insurance claims for the 3 most recent years (or a lesser period stipulated by the OWNER)—all in accordance with the Bid Documents.

Respectfully submitted:

_____
(Name of Contracting Firm)

BY: _____

TITLE: _____

DATE _____

6. LIST OF PROPOSED SUBCONTRACTORS

The following list of proposed subcontractors is required by the OWNER to be executed, completed and submitted with the BIDDER'S FORM OF PROPOSAL. All subcontractors are subject to approval of the Lexington-Fayette Urban County Government. Failure to submit this list completely filled out may be cause for rejection of bid.

BRANCH OF WORK-LIST	DBE Work	% of EACH MAJOR ITEM
Electrical		
Mechanical		
Insulation		
Plumbing		
Sprinkler		
Roof		
Metal Panels		
Windows, Storefront		

LIST OF MATERIALS/ SUPPLIERS

Bidders are hereby advised that this list must be complete and submitted with the Bid. Cut sheets for all mechanical system must be included with bid submittal.

Listing "as per plans and specifications", will not be considered as sufficient identification. Where more than one "Make or Brand" is listed for any one item, the Owner has the right to select the one to be used.

Item	Brand Name, Manufacturer and Supplier
Insulated Metal Panels	
Composite Wall Panels	
Flush Soffit Plan	
Roof System	
Aluminum Storefront	
Windows	
Doors and Frames	
Paint and Coating	
Heat Pumps	
Grilles/Registers/Diffusers	
Light Fixture LF-1	

7. Lexington-Fayette Urban County Government
MWDBE PARTICIPATION GOALS

A. GENERAL

1) The LFUCG request all potential contractors to make a concerted effort to include Minority-Owned (MBE), Woman-Owned (WBE), Disadvantaged (DBE) Business Enterprises and Veteran-Owned Small Businesses (VOSB) as subcontractors or suppliers in their bids.

2) Toward that end, the LFUCG has established 10% of total procurement costs as a Goal for participation of Minority-Owned, Woman-Owned and Disadvantaged Businesses on this contract.

3) **It is therefore a request of each Bidder to include in its bid, the same goal (10%) for MWDBE participation and other requirements as outlined in this section.**

4) The LFUCG has also established a 3% of total procurement costs as a Goal for participation for of Veteran-Owned Businesses.

5) **It is therefore a request of each Bidder to include in its bid, the same goal (3%) for Veteran-Owned participation and other requirements as outlined in this section.**

B. PROCEDURES

1) The successful bidder will be required to report to the LFUCG, the dollar amounts of all payments submitted to Minority-Owned, Woman-Owned or Veteran-Owned subcontractors and suppliers for work done or materials purchased for this contract. (See Subcontractor Monthly Payment Report)

2) Replacement of a Minority-Owned, Woman-Owned or Veteran-Owned subcontractor or supplier listed in the original submittal must be requested in writing and must be accompanied by documentation of Good Faith Efforts to replace the subcontractor / supplier with another MWDBE Firm; this is subject to approval by the LFUCG. (See LFUCG MWDBE Substitution Form)

3) For assistance in identifying qualified, certified businesses to solicit for potential contracting opportunities, bidders may contact:

   a) The Lexington-Fayette Urban County Government, Division of Procurement (859-258-3320)

4) The LFUCG will make every effort to notify interested MWDBE and Veteran-Owned subcontractors and suppliers of each Bid Package, including information on the scope of work, the pre-bid meeting time and location, the bid date, and all other pertinent information regarding the project.

C. DEFINITIONS

1) A Minority-Owned Business Enterprise (MBE) is defined as a business which is certified as being at least 51% owned, managed and controlled by persons of African American, Hispanic, Asian, Pacific Islander, American Indian or Alaskan Native Heritage.

2) A Woman-Owned Business Enterprise (WBE) is defined as a business which is certified as

being at least 51% owned, managed and controlled by one or more women.

3) A Disadvantaged Business (DBE) is defined as a business which is certified as being at least 51% owned, managed and controlled by a person(s) that are economically and socially disadvantaged.

4) A Veteran-Owned Small Business (VOSB) is defined as a business which is certified as being at least 51% owned, managed and controlled by a veteran and/or a service disabled veteran.

5) Good Faith Efforts are efforts that, given all relevant circumstances, a bidder or proposer actively and aggressively seeking to meet the goals, can reasonably be expected to make. In evaluating good faith efforts made toward achieving the goals, whether the bidder or proposer has performed the efforts outlined in the Obligations of Bidder for Good Faith Efforts outlined in this document will be considered, along with any other relevant factors.

D. OBLIGATION OF BIDDER FOR GOOD FAITH EFFORTS

1) **The bidder shall make a Good Faith Effort to achieve the Participation Goal for MWDBE and Veteran-Owned subcontractors/suppliers. The failure to meet the goal shall not necessarily be cause for disqualification of the bidder; however, bidders not meeting the goal are required to furnish with their bids written documentation of their Good Faith Efforts to do so.**

2) Award of Contract shall be conditioned upon satisfaction of the requirements set forth herein.

3) The Form of Proposal includes a section entitled "MWDBE Participation Form". The applicable information must be completed and submitted as outlined below.

4) **Failure to submit this information as requested may be cause for rejection of bid or delay in contract award.**

E. DOCUMENTATION REQUIRED FOR GOOD FAITH EFFORTS

1) Bidders reaching the Goal are required to submit only the MWDBE Participation Form." The form must be fully completed including names and telephone number of participating MWDBE firm(s); type of work to be performed; estimated value of the contract and value expressed as a percentage of the total Lump Sum Bid Price. The form must be signed and dated, and is to be submitted with the bid.

2) Bidders not reaching the Goal must submit the "MWDBE Participation Form", the "Quote Summary Form" and a written statement documenting their Good Faith Effort to do so. If bid includes no MWDBE and/or Veteran participation, bidder shall enter "None" on the subcontractor / supplier form). In addition, the bidder must submit written proof of their Good Faith Efforts to meet the Participation Goal:

   a. Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission

of bids to allow MWDBE firms and Veteran-Owned businesses to participate.

b. Included documentation of advertising in the above publications with the bidders good faith efforts package

c. Attended LFUCG Procurement Economic Inclusion Outreach event

d. Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned businesses of subcontracting opportunities

e. Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses.

f. Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

g. Contacted organizations that work with MWDBE companies for assistance in finding certified MWBDE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.

h. Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs and/or Veteran-Owned businesses soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

i. Followed up initial solicitations by contacting MWDBEs and Veteran-Owned Businesses to determine their level of interest.

j. Provided the interested MWBDE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

k. Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation, even when the prime contractor may otherwise perform these work items with its own workforce

l. Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

m. Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

n. Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

o. Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

p. Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

q. Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE and Veteran participation.

Note: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to review by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.

MINORITY BUSINESS ENTERPRISE PROGRAM

Sherita Miller, MPA
Minority Business Enterprise Liaison
Division of Procurement
Lexington-Fayette Urban County Government
200 East Main Street
Lexington, KY 40507
smiller@lexingtonky.gov
859-258-3323

OUR MISSION: The mission of the Minority Business Enterprise Program is to facilitate the full participation of minority and women owned businesses in the procurement process and to promote economic inclusion as a business imperative essential to the long term economic viability of Lexington-Fayette Urban County Government.

To that end the city council adopted and implemented Resolution 484-2017 – A Certified Minority, Women and Disadvantaged Business Enterprise ten percent (10%) minimum goal and a three (3%) minimum goal for Certified Veteran-Owned Small Businesses and Certified Service Disabled Veteran – Owned Businesses for government contracts.

The resolution states the following definitions shall be used for the purposes of reaching these goals (a full copy is available in Procurement):

Certified Disadvantaged Business Enterprise (DBE) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a person(s) who is socially and economically disadvantaged as define by 49 CFR subpart 26.*

Certified Minority Business Enterprise (MBE) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by an ethnic minority (i.e. African American, Asian American/Pacific Islander, Hispanic Islander, Native American/Native Alaskan Indian) as defined in federal law or regulation as it may be amended from time-to-time.*

Certified Women Business Enterprise (WBE) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a woman.*

Certified Veteran-Owned Small Business (VOSB) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines or Coast Guard.*

Certified Service Disabled Veteran Owned Small Business (SDVOSB) *– a business in which at least fifty-one percent (51%) is owned, managed and controlled by a disabled veteran who served on active duty with the U.S. Army, Air Force, Navy, Marines or Coast Guard.*

The term "Certified" shall mean the business is appropriately certified, licensed, verified, or validated by an organization or entity recognized by the Division of Purchasing as having the appropriate credentials to make a determination as to the status of the business.

To comply with Resolution 484-2017, prime contractors and minority, women and veteran owned businesses must

enroll in the new Diverse Business Management Compliance system, https://lexingtonky.diversitycompliance.com/

We have compiled the list below to help you locate certified DBE, MBE, WBE and VOSB certified businesses. Below is a listing of contacts for LFUCG Certified MWDBEs and Veteran-Owned Small Businesses in (https://lexingtonky.ionwave.net)

Business	Contact	Email Address	Phone
LFUCG	Sherita Miller	smiller@lexingtonky.gov	859-258-3323
Commerce Lexington – Minority Business Development	Tyrone Tyra	ttyra@commercelexington.com	859-226-1625
Tri-State Minority Supplier Diversity Council	Derrick Dowell	ddowell@tsmsdc.net	502-365-9762
Small Business Development Council	Tonya Parsons UK SBDC	tonya.parsons@uky.edu	859-257-7666
Community Ventures Corporation	Devanny King	devanny.king@cvky.org	859-231-0054
KY Transportation Cabinet (KYTC)	Tony Youssefi	tyousefi@ky.gov	502-564-3601
KYTC Pre-Qualification	Shella Eagle	Shella.Eagle@ky.gov	502-782-4815
Ohio River Valley Women's Business Council (WBENC)	Lynnise Smith	lsmith@wbcc-orv.org	513-487-6537
Kentucky MWBE Certification Progra	Singer.Buchanan, Kentucky Finance and Administration Cabinet	Singer.Buchanan@ky.gov	502-564-2874
National Women Business Owner's Council (NWBOC)	www.nwboc.org	info@nwboc.org	800-675-5066
Small Business Administration	Robert Coffey	robertcoffey@sba.gov	502-582-5971

LFUCG MWDBE PARTICIPATION FORM
Bid/RFP/Quote Reference #_____

The MWDBE and/or veteran subcontractors listed have agreed to participate on this Bid/RFP/Quote. If any substitution is made or the total value of the work is changed prior to or after the job is in progress, it is understood that those substitutions must be submitted to Procurement for approval immediately. **Failure to submit a completed form may cause rejection of the bid.**

MWDBE Company, Name, Address, Phone, Email	MBE WBE or DBE	Work to be Performed	Total Dollar Value of the Work	% Value of Total Contract
1.				
2.				
3.				
4.				

The undersigned company representative submits the above list of MWDBE firms to be used in accomplishing the work contained in this Bid/RFP/Quote. Any misrepresentation may result in the termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Company **Company Representative**

Date **Title**

LFUCG MWDBE SUBSTITUTION FORM
Bid/RFP/Quote Reference #_____

The substituted MWDBE and/or veteran subcontractors listed below have agreed to participate on this Bid/RFP/Quote. These substitutions were made prior to or after the job was in progress. These substitutions were made for reasons stated below and are now being submitted to Procurement for approval. By the authorized signature of a representative of our company, we understand that this information will be entered into our file for this project.

SUBSTITUTED MWDBE Company Name, Address, Phone, Email	MWDBE Formally Contracted/ Name, Address, Phone, Email	Work to Be Performed	Reason for the Substitution	Total Dollar Value of the Work	% Value of Total Contract
1.					
2.					
3.					
4.					

The undersigned acknowledges that any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and false claims.

Company **Company Representative**

Date **Title**

MWDBE QUOTE SUMMARY FORM
Bid/RFP/Quote Reference #_____

The undersigned acknowledges that the minority and/or veteran subcontractors listed on this form did submit a quote to participate on this project. Failure to submit this form may cause rejection of the bid.

Company Name	Contact Person
Address/Phone/Email	Bid Package / Bid Date

MWDBE Company Addres	Contact Person	Contact Information (work phone, Email, cell)	Date Contacted	Services to be performed	Method of Communication (email, phone meeting, ad, event etc)	Total dollars $$ Do Not Leave Blank (Attach Documentation)	MBE * AA HA AS NA Female	Veteran

(MBE designation / AA=African American / HA= Hispanic American/AS = Asian American/Pacific Islander/ NA= Native American)

The undersigned acknowledges that all information is accurate. Any misrepresentation may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

Company _____ **Company Representative** _____

Date _____ **Title** _____

LFUCG SUBCONTRACTOR MONTHLY PAYMENT REPORT

The LFUCG has a 10% goal plan adopted by city council to increase the participation of minority and women owned businesses in the procurement process. The LFUCG also has a 3% goal plan adopted by cited council to increase the participation of veteran owned businesses in the procurement process. In order to measure that goal LFUCG will track spending with MWDBE and Veteran contractors on a monthly basis. By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentation may result in termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims. Please submit this form monthly to the Division of Procurement/ 200 East Main Street / Room 338 / Lexington, KY 40507.

Bid/RFP/Quote #_____
Total Contract Amount Awarded to Prime Contractor for this Project_____

Project Name/ Contract #	Work Period/ From: To:
Company Name:	Address:
Federal Tax ID:	Contact Person:

Subcontractor Vendor ID (name, address, phone, email	Description of Work	Total Subcontract Amount	% of Total Contract Awarded to Prime for this Project	Total Amount Paid for this Period	Purchase Order number for subcontractor work (please attach PO)	Scheduled Project Start Date	Scheduled Project End Date

By the signature below of an authorized company representative, you certify that the information is correct, and that each of the representations set forth below is true. Any misrepresentations may result in the termination of the contract and/or prosecution under applicable Federal and State laws concerning false statements and false claims.

Company _____ **Company Representative** _____

Date _____ **Title** _____

LFUCG STATEMENT OF GOOD FAITH EFFORTS
Bid/RFP/Quote #_____

By the signature below of an authorized company representative, we certify that we have utilized the following Good Faith Efforts to obtain the maximum participation by MWDBE and Veteran-Owned business enterprises on the project and can supply the appropriate documentation.

_____ Advertised opportunities to participate in the contract in at least two (2) publications of general circulation media; trade and professional association publications; small and minority business or trade publications; and publications or trades targeting minority, women and disadvantaged businesses not less than fifteen (15) days prior to the deadline for submission of bids to allow MWDBE firms and Veteran-Owned businesses to participate.

_____ Included documentation of advertising in the above publications with the bidders good faith efforts package

_____ Attended LFUCG Procurement Economic Inclusion Outreach event

_____ Attended pre-bid meetings that were scheduled by LFUCG to inform MWDBEs and/or Veteran-Owned Businesses of subcontracting opportunities

_____ Sponsored Economic Inclusion event to provide networking opportunities for prime contractors and MWDBE firms and Veteran-Owned businesses

_____ Requested a list of MWDBE and/or Veteran subcontractors or suppliers from LFUCG and showed evidence of contacting the companies on the list(s).

_____ Contacted organizations that work with MWDBE companies for assistance in finding certified MWBDE firms and Veteran-Owned businesses to work on this project. Those contacted and their responses should be a part of the bidder's good faith efforts documentation.

_____Sent written notices, by certified mail, email or facsimile, to qualified, certified MWDBEs soliciting their participation in the contract not less than seven (7) days prior to the deadline for submission of bids to allow them to participate effectively.

_____ Followed up initial solicitations by contacting MWDBEs and Veteran-Owned businesses to determine their level of interest.

_____ Provided the interested MWBDE firm and/or Veteran-Owned business with adequate and timely information about the plans, specifications, and requirements of the contract.

_____ Selected portions of the work to be performed by MWDBE firms and/or Veteran-Owned businesses in order to increase the likelihood of meeting the contract goals. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate MWDBE and Veteran participation,

even when the prime contractor may otherwise perform these work items with its own workforce

_____ Negotiated in good faith with interested MWDBE firms and Veteran-Owned businesses not rejecting them as unqualified without sound reasons based on a thorough investigation of their capabilities. Any rejection should be so noted in writing with a description as to why an agreement could not be reached.

_____ Included documentation of quotations received from interested MWDBE firms and Veteran-Owned businesses which were not used due to uncompetitive pricing or were rejected as unacceptable and/or copies of responses from firms indicating that they would not be submitting a bid.

_____ Bidder has to submit sound reasons why the quotations were considered unacceptable. The fact that the bidder has the ability and/or desire to perform the contract work with its own forces will not be considered a sound reason for rejecting a MWDBE and/or Veteran-Owned business's quote. Nothing in this provision shall be construed to require the bidder to accept unreasonable quotes in order to satisfy MWDBE and Veteran goals.

_____ Made an effort to offer assistance to or refer interested MWDBE firms and Veteran-Owned businesses to obtain the necessary equipment, supplies, materials, insurance and/or bonding to satisfy the work requirements of the bid proposal

_____Made efforts to expand the search for MWBE firms and Veteran-Owned businesses beyond the usual geographic boundaries.

_____ Other--any other evidence that the bidder submits which may show that the bidder has made reasonable good faith efforts to include MWDBE **and Veteran participation.**

NOTE: Failure to submit any of the documentation requested in this section may be cause for rejection of bid. Bidders may include any other documentation deemed relevant to this requirement which is subject to approval by the MBE Liaison. Documentation of Good Faith Efforts must be submitted with the Bid, if the participation Goal is not met.

The undersigned acknowledges that all information is accurate. Any misrepresentations may result in termination of the contract and/or be subject to applicable Federal and State laws concerning false statements and claims.

Company	**Company Representative**
Date	**Title**

8. AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION, NON-CONFLICT OF INTEREST

I hereby swear (or affirm) under the penalty for false swearing:

1. That I am the Bidder (if the Bidder is an individual), a partner of the Bidder (if the Bidder is a partnership), or an officer or employee of the bidding corporation having authority to sign on its behalf (if the Bidder is a corporation);

2. That the attached bid has been arrived at by the Bidder independently, and has been submitted without collusion with, and without any agreement, understanding or planned common course of action, with any other contractor, vendor of materials, supplies, equipment or services described in the Invitation to Bid, designed to limit independent bidding or competition;

3. That the contents of the bid or bids have not been communicated by the Bidder or its employees or agents to any person not an employee or agent of the Bidder or its surety on any bond furnished, with the bid or bids, and will not be communicated to any such person, prior to the official opening of the bid or bids;

4. That the Bidder is legally entitled to enter into the contracts with the Lexington-Fayette Urban County Government, and is not in violation of any prohibited conflict of interest;

5. (Applicable to corporation only) That as a foreign corporation, we are registered with the Secretary of State, Commonwealth of Kentucky, and authorized to do business in the State _____ or, that as a domestic corporation, we are in good standing with the Secretary of State, Commonwealth of Kentucky _____. Check the statement applicable.

6. This offer is for 60 calendar days from the date this bid is opened. In submitting the above, it is expressly agreed that, upon proper acceptance by the Lexington-Fayette Urban County Government of any or all items bid above, a contract shall thereby be created with respect to the items accepted.

7. That I have fully informed myself regarding the accuracy of the statements made in this statement.

8. That I certify that Subcontractors have not and will not be awarded to any firm(s) that have been debarred from noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 As Amended, Executive Order 11246 As Amended or any other Federal Law.

9. STATEMENT OF EXPERIENCE

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

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_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

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_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

NAME OF INDIVIDUAL: _____

POSITION/TITLE: _____

STATEMENT OF EXPERIENCE: _____

_____

_____

* Include all officers, office management's, Affirmative Action officials, and field management personnel. (Attach separate sheets if necessary.)

10. EQUAL OPPORTUNITY AGREEMENT

Standard Title VI Assurance

The Lexington Fayette-Urban County Government, (hereinafter referred to as the "Recipient") hereby agrees that as a condition to receiving any Federal financial assistance from the U.S. Department of Transportation, it will comply with Title VI of the Civil Rights Act of 1964, 78Stat.252, 42 U.S.C. 2000d-4 (hereinafter referred to as the "Act"), and all requirements imposed by or pursuant to Title 49, Code of Federal Regulations, U.S. Department of Transportation, Subtitle A, Office of the Secretary, (49 CFR, Part 21) Nondiscrimination in Federally Assisted Program of the Department of Transportation – Effectuation of Title VI of the Civil Rights Act of 1964 (hereinafter referred to as the "Regulations") and other pertinent directives, no person in the United States shall, on the grounds of race, color, national origin, sex, age (over 40), religion, sexual orientation, gender identity, veteran status, or disability be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Recipient receives Federal financial assistance from the U.S. Department of Transportation, including the Federal Highway Administration, and hereby gives assurance that will promptly take any necessary measures to effectuate this agreement. This assurance is required by subsection 21.7(a) (1) of the Regulations.

The Law

* Title VII of the Civil Rights Act of 1964 (amended 1972) states that it is unlawful for an employer to discriminate in employment because of race, color, religion, sex, age (40-70 years) or national origin.
* Executive Order No. 11246 on Nondiscrimination under Federal contract prohibits employment discrimination by contractor and subcontractor doing business with the Federal Government or recipients of Federal funds. This order was later amended by Executive Order No. 11375 to prohibit discrimination on the basis of sex.
* Section 503 of the Rehabilitation Act of 1973 States:

  The Contractor will not discriminate against any employee or applicant for employment because of physical or mental handicap.
* Section 2012 of the Vietnam Era Veterans Readjustment Act of 1973 requires Affirmative Action on behalf of disabled veterans and veterans of the Vietnam Era by contractors having Federal Contracts.
* Section 206 (A) of Executive Order 12086, Consolidation of Contract Compliance Functions for Equal Employment Opportunity, states:

  The Secretary of Labor may investigate the employment practices of any Government contractor or sub-contractor to determine whether or not the contractual provisions specified in Section 202 of this order have been violated.

The Lexington-Fayette Urban County Government practices Equal Opportunity in recruiting, hiring and promoting. It is the Government's intent to affirmatively provide employment opportunities for those individuals who have previously not been allowed to enter into the mainstream of society. Because of its importance to the local Government, this policy carries the full endorsement of the Mayor, Commissioners, Directors, and all supervisory personnel. In

following this commitment to Equal Employment Opportunity and because the Government is the benefactor of the Federal funds, it is both against the Urban County Government policy and illegal for the Government to let contracts to companies which knowingly or unknowingly practice discrimination in their employment practices. Violation of the above mentioned ordinances may cause a contract to be canceled and the contractor may be declared ineligible for future consideration.

Please sign this statement in the appropriate space acknowledging that you have read and understand the provisions contained herein. Return this document as part of your application packet.

Bidders

I/We agree to comply with the Civil Rights Laws listed above that govern employment rights of minorities, women, Vietnam veterans, handicapped, and aged persons.

_____ _____

Signature Name of Business

The Entity (regardless of whether construction contractor, non-construction contractor or supplier) agrees to provide equal opportunity in employment for all qualified persons, to prohibit discrimination in employment because of race, color, religion, sex (including pregnancy, sexual orientation or gender identity), national origin, disability, age, genetic information, political affiliation, or veteran status, and to promote equal employment through a positive, continuing program from itself and each of its sub-contracting agents. This program of equal employment opportunity shall apply to every aspect of its employment policies and practices.

The Kentucky equal Employment Opportunity Act of 1978 (KRS 45.560-45.640) requires that any count, city, town, school district, water district, hospital district, or other political subdivision of the state shall include in directly or indirectly publicly funded contracts for supplies, materials, services, or equipment hereinafter entered into the following provisions:

During the performance of this contract, the contractor agrees as follows:

(1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, age or national origin;

(2) The contractor will state in all solicitations or advertisements for employees placed by or on behalf of the contractors that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, age or national origin;

(3) The contract will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the non-discrimination clauses required by this section; and

(4) The contractor will send a notice to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding advising the

labor union or workers' representative of the contractor's commitments under the nondiscrimination clauses.

The Act further provides:

KRS 45.610. Hiring minorities – Information required

(1) For the length of the contract, each contractor shall hire minorities from other sources within the drawing area, should the union with which he has collective bargaining agreements be unwilling to supply sufficient minorities to satisfy the agreed upon goals and timetable.

(2) Each contractor shall, for the length of the contract, furnish such information as required by KRS 45.560 to KRS 45.640 and by such rules, regulations and orders issued pursuant thereto and will permit access to all books and records pertaining to his employment practices and work sites by the contracting agency and the department for purposes of investigation to ascertain compliance with KRS 45.560 to 45.640 and such rules, regulations and orders issued pursuant thereto.

KRS 45.620. Action against contractor – Hiring of minority contractor or subcontractor

(1) If any contractor is found by the department to have engaged in an unlawful practice under this chapter during the course of performing under a contract or subcontract covered under KRS 45.560 to 45.640, the department shall so certify to the contracting agency and such certification shall be binding upon the contracting agency unless it is reversed in the course of judicial review.

(2) If the contractor is found to have committed an unlawful practice under KRS 45.560 to 45.640, the contracting agency may cancel or terminate the contract, conditioned upon a program for future compliance approved by the contracting agency and the department. The contracting agency may declare such a contractor ineligible to bid on further contracts with that agency until such time as the contractor complies in full with the requirements of KRS 45.560 – 45.640.

(3) The equal employment provisions of KRS 45.560 to 45.640 may be met in part by a contractor by subcontracting to a minority contractor or subcontractor. For the provisions of KRS 45.560 to 45.640, a minority contractor or subcontractor shall mean a business that is owned and controlled by one or more persons disadvantaged by racial or ethnic circumstances.

KRS 45.630 Termination of existing employee not required, when

Any provision of KRS 45.560 to 45.640 notwithstanding, no contractor shall be required to terminate an existing employee upon proof that that employee was employed prior to the date of the contract.

KRS 45.640 Minimum skills

Nothing in KRS 45.560 to 45.640 shall require a contractor to hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

It is recommended that all of the provisions quoted above to be included as special conditions in each contract. In the case of a contract exceeding $250,000, the contractor is required to furnish evidence that his work-force in Kentucky is representative of the available work-force in the area from which he draws employees, or to supply an Affirmative Action plan which will achieve such representation during the life of the contract.

11. EQUAL EMPLOYMENT OPPORTUNITY AFFIRMATIVE ACTION POLICY

It is the policy of _____

to assure that all applicants for employment and all employees are treated on a fair and equitable basis without regard to their race, religion, sex, color, handicap, natural origin or age.

Such action shall include employment, promotion, demotion, recruitment or recruitment advertising, layoff or termination, rates of pay and other forms of compensation, and selection for training, whether apprenticeship and/or on-the-job-training.

Furthermore, this company agrees to make special recruitment efforts to hire the protected class whenever feasible. This company also agrees to adhere to all applicable federal, state, and local laws relating to Equal Employment Opportunity for all individuals.

12. WORKFORCE ANALYSIS FORM

Name of Organization: _____

Categories	Total	White (Not Hispanic or Latino)		Hispanic or Latino		Black or African-American (Not Hispanic or Latino		Native Hawaiian and Other Pacific Islander (Not Hispanic or		Asian (Not Hispanic or Latino		American Indian or Alaskan Native (not Hispanic or Latino		Two or more races (Not Hispanic or Latino		Total	
		M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Administrators																	
Professionals																	
Superintendents																	
Supervisors																	
Foremen																	
Technicians																	
Protective Service																	
Para-Professionals																	
Office/Clerical																	
Skilled Craft																	
Service/Maintenance																	
Total:																	

Prepared by: _____ **Date:** ____/____/____

(Name and Title)

Revised 2015-Dec-15

13. EVIDENCE OF INSURABILITY

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT CONSTRUCTION PROJECT
(Use separate form for each Agency or Brokerage agreeing to provide coverage)

Names Insured: _____ Employer ID: _____

Address: _____ Phone: _____

Project to be insured: _____

In lieu of obtaining certificates of insurance at this time, the undersigned agrees to provide the above Named Insured with the minimum coverage listed below. These are outlined in the Insurance and Risk Management of Part V (Special Conditions), including all requirements, and conditions.

Section Items	Coverage	Minimum Limits and Policy Requirements	Limits Provided To Insured	Name of Insurer	A.M. Best's Code	Rating
SC-2 – see provisions	CGL	$1,000,000 per occ. And $2,000,000 aggregate	$			
SC-2 – see provisions	AUTO	$1,000,000/per occ.	$			
SC-2 – see provisions	WC	Statutory w /endorsement as noted	$			
SC-2 – see provisions	EXC	$5,000,000 per occ.	$			

Section 2 includes required provisions, statements regarding insurance requirements, and the undersigned agrees to abide by all provisions for the coverage's checked above unless stated otherwise when submitting.

Agency or Brokerage

Name of Authorized Representative

Street Address

Title

City State Zip

Authorized Signature

Telephone Number

Date

NOTE: Authorized signatures may be the agent's if agent has placed insurance through an agency agreement with the insurer. If insurance is brokered, authorized signature must be that of authorized representative of insurer.

IMPORTANT: Contract may not be awarded if a completed and signed copy of this form for all coverage's listed above is not provided with the bid.

14. DEBARRED FIRMS

PROJECT NAME: _____

BID NUMBER: _____

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
LEXINGTON, KY

All prime Contractors shall certify that Subcontractors have not and will not be awarded to any firms that has been debarred for noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 As Amended, Executive Order 11246 As Amended or any other Federal Law.

All bidders shall complete the attached certification in duplicate and submit both copies to the Owner with the bid proposal. The Owner (grantee) shall transmit one copy to the Lexington-Fayette Urban County Government, Division of Community Development, within fourteen (14) days after bid opening.

The undersigned hereby certifies that the firm of _____ has not and will not award a subcontract, in connection with any contract award to it as the result of this bid, to any firm that has been debarred for noncompliance with the Federal labor Standards, Title VI of the civil Rights Act of 1964, Executive Order 11246 as amended or any Federal Law.

_____
Name of Firm Submitting Bid

_____
Signature of Authorized Official

_____
Title

_____
Date

15. DEBARMENT CERTIFICATION

All contractors/subcontractors shall complete the following certification and submit it with the bid proposal.

The contractor/subcontractor certifies in accordance with Executive Order 12549 (Debarment and Suspension 2/18/86) that to the best of its knowledge and belief, that it and its principals:

1) Are not presently debarred, suspended, proposed for debarment, declared negligible, or voluntarily excluded from covered transactions or contract by any Federal department or agency for noncompliance with the Federal Labor Standards, Title VI of the Civil Rights Act of 1964 as amended, Executive Order 11246 as amended or any other Federal law;

   a) Have not within a three year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

   b) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph (1)(a) of this certification; and

   c) Have not within a three year period preceding this bid has one or more public (Federal, State or local) transactions or contracts terminated for cause or default.

2) Where the contractor is unable to certify to any of the statements in this certification, such prospective contractors shall attach an explanation to this certification form.

Firm Name: _____

Project: _____

Printed Name and Title of Authorized Representative: _____

Signature: _____

Date: _____

END OF SECTION

PART IV

GENERAL CONDITIONS

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DETAILED TABLE OF CONTENTS OF GENERAL CONDITIONS

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END OF SECTION

PART IV

GENERAL CONDITIONS

1. DEFINITIONS

Wherever used in these General Conditions or the other Contract Documents, the following terms have the meanings indicated which are applicable to both the singular and plural thereof.

1.1 Addenda
Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bid Documents or the Contract Documents.

1.2 Agreement
The written agreement between OWNER and CONTRACTOR covering the Work to be performed; other Contract Documents are attached to the Agreement and made a part thereof as provided therein.

1.3 Application for Payment
The form accepted by CONSULTANT which is to be used by CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

1.4 Bid
The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

1.5 Bidder
An individual, partnership, or corporation, who submit a Bid for a prime contract with the OWNER, for the Work described in the proposed Contract Documents.

1.6 Bonds
Bid, performance and payment bonds and other instruments of security.

1.7 Calendar Day
A calendar day of twenty-four hours measured from midnight to the next midnight shall constitute a day.

1.8 Change Order
A document recommended by CONSULTANT, which is signed by CONTRACTOR and OWNER and authorizes an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time, issued on or after the Effective Date of the Agreement.

1.9 Contract Documents
The Advertisement for Bidders, Information for Bidders, Agreement, Addenda (which pertain to the Contract Documents), CONTRACTOR'S Bid (including documentation accompanying the Bid and any post-bid documentation submitted prior to the Notice of Award) when attached as an exhibit to the Agreement, the Bonds, these General Conditions, the Special Conditions, the Specifications and the Drawings as the same are more specifically identified in the Agreement, together with all amendments, modifications and supplements.

1.10 Contract Unit Price
The monies payable by OWNER to CONTRACTOR under the Contract Documents as stated in the Agreement. Unit Prices are to be firm for the term of this Contract.

1.11 Contract Time
The number of consecutive calendar days between the date of issuance of the Notice to Proceed and the contract completion date.

1.12 CONTRACTOR
The person, firm or corporation with whom OWNER has entered into the Agreement.

1.13 Defective
An adjective which when modifying the word Work refers to Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents, or has been damaged prior to CONSULTANT'S recommendation of final payment (unless responsibility for the protection thereof has been assumed by OWNER).

1.14 Drawings
The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by CONSULTANT and are referred to in the Contract Documents.

1.15 Effective Date of the Agreement
The date indicated in the Agreement on which it becomes effective.

1.16 CONSULTANT
The Lexington-Fayette Urban County Government or its authorized representative.

1.17 Field Order
A documented order issued by CONSULTANT which orders minor changes in the Work, but which does not involve a change in the Contract Price or the Contract Time.

1.18 Giving Notice
Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the giver of the notice.

1.19 Laws and Regulations
Laws, rules, regulations, ordinances, codes and/or orders.

1.20 Notice of Award
The written notice by OWNER to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions enumerated therein, within the time specified, OWNER will sign and deliver the Agreement.

1.21 Notice to Proceed
A written notice given by OWNER to CONTRACTOR fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform CONTRACTOR'S obligations under the Contract Documents.

1.22 OWNER
The Lexington-Fayette Urban County Government.

1.23 Partial Utilization
Placing a portion of the Work in service for the purpose for which it is intended (or related purpose) before reaching Completion for all the Work.

1.24 Project
The total construction of which the Work to be provided under the Contract Documents may be the whole, or a part as indicated elsewhere in the Contract Documents.

1.25 Inspector
The authorized representative who is assigned to the site or any part thereof.

1.26 Shop Drawings
All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by CONTRACTOR to illustrate material or equipment for some portion of the Work.

1.27 Specifications
Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and

workmanship as applied to the Work and certain administrative details applicable thereto.

1.28 Standard Specifications
The "Standard Specifications for Road and Bridge Construction", Transportation Cabinet, Department of Highways, Commonwealth of Kentucky, current edition. MUTCD shall refer to the "Manual of Uniform Traffic Control Devices.

1.29 Subcontractor
An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

1.30 Special Conditions
The part of the Contract Documents which amends or supplements these General Conditions.

1.31 Supplier
A manufacturer, fabricator, supplier, distributor, materialman or vendor.

1.32 Underground Facilities
All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been installed underground to furnish any of the following services or materials: electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

1.33 Unit Price Work
An amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

1.34 Work
The entire completed construction or the various separately identifiable parts thereof required to be furnished under the Contract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, all as required by the Contract Documents.

1.35 Time Period
When any period of time is referred to in the Contract Documents by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

2. PRELIMINARY MATTERS

2.1 Delivery of Bonds
When the CONTRACTOR delivers the executed Agreements to OWNER, CONTRACTOR shall also deliver to OWNER, such Bonds, Insurance Certificate, and Power of Attorney as CONTRACTOR may be required to furnish.

2.2 Commencement of Contract Time; Notice to Proceed
The Contract Time will commence to run on the day specified in the Notice to Proceed.

2.3 Starting the Project
CONTRACTOR shall start to perform the Work on the date when the Contract Time commences to run, but no Work shall be done at the site prior to the date on which the Contract Time commences to run.

2.4 Before Starting Construction
Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. CONTRACTOR shall promptly report in writing to CONSULTANT any conflict, error or discrepancy which CONTRACTOR may discover and shall obtain a written interpretation or clarification from CONSULTANT before proceeding with any Work affected thereby; however, CONTRACTOR shall not be liable to OWNER or CONSULTANT for failure to report any conflict, error or discrepancy in the Contract Documents, unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

2.5 Submittal of Schedules
Within ten days after the effective date of the Agreement (unless otherwise specified) CONTRACTOR shall submit to CONSULTANT for review:

2.5.1 an estimated progress schedule indicating the starting and completion dates of the various stages of the Work;

2.5.2 a preliminary schedule of Shop Drawing submissions; and

2.5.3 a preliminary schedule of values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into costs per labor and materials by specification section to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by CONTRACTOR at the time of submission. Schedule of values shall be submitted on AIA G702/703 forms, or approved equal.

2.6 Preconstruction Conference

Before CONTRACTOR starts the Work at the proposed site, a conference attended by CONTRACTOR, CONSULTANT, EEO-Affirmative Action Officer, and other appropriate parties will be held to discuss the following issues: (1) The scheduling of the Work to be completed; (2) The procedures for handling shop drawings and other submittals; (3) The processing of applications for payment; (4) The establishment of an understanding among the involved parties in regard to the proposed project; (5) The establishment of procedures for effectively implementing the LFUCG's 10% minimum DBE goals; and (6) Requirement for Mechanic's Lien on Partial Applications for Payment.

2.7 Finalizing Schedules

At least ten days before submission of the first Application for Payment a conference attended by CONTRACTOR, CONSULTANT and others as appropriate will be held to finalize the schedules submitted in accordance with paragraph 2.6. The finalized progress schedule will be acceptable to CONSULTANT as providing orderly progression of the Work to completion within the Contract Time, but such acceptance will neither impose on CONSULTANT responsibility for the progress or scheduling of the Work nor relieve CONTRACTOR from full responsibility thereof. The finalized schedule of Shop Drawing submissions will be acceptable to CONSULTANT as providing a workable arrangement for processing the submissions. The finalized schedule of values will be acceptable to CONSULTANT as to form and substance.

3. CONTRACT DOCUMENTS: INTENT, CONFLICTS, AMENDING AND REUSE

3.1 General

The Contract Documents comprise the entire agreement between OWNER and CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the law of the place of the Project.

3.2 Intent

It is the intent of the Contract Documents to describe a functionally complete Project (or part thereof) to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied whether or not specifically called for. When words which have a well-known technical or trade meaning are used to describe Work, materials or equipment such words shall be interpreted in accordance with that meaning. Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code or laws or regulations in effect at the time of opening of Bids (or, on the Effective Date of the Agreement if there were no

Bids), except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of OWNER, CONTRACTOR or CONSULTANT, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to CONSULTANT, or any of CONSULTANT'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4. Clarifications and interpretations of the Contract Documents shall be issued by CONSULTANT as provided in paragraph 8.4.

3.3 Conflicts

If, during the performance of the Work, CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, CONTRACTOR shall so report to CONSULTANT in writing at once and before proceeding with the Work affected thereby shall obtain a written interpretation or clarification from CONSULTANT; however, CONTRACTOR shall not be liable to OWNER or CONSULTANT for failure to report any conflict, error or discrepancy in the Contract Documents unless CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

In resolving such conflicts, errors and discrepancies, the documents shall be given precedence in the following order:

1. Agreement
2. Field and Change Orders
3. Addenda
4. Special Conditions
5. Instruction to Bidders
6. General Conditions
7. Specifications and Drawings

Figure dimension on drawings shall govern over scale dimensions and detailed Drawings shall govern over general Drawings.

3.4 Amending and Supplementing Contract Documents

The Contract Documents may be amended to provide for additions, deletions and revisions in the Work or to modify the terms and conditions thereof by means of a Change Order or a Field Order. Contract Price and Contract Time may only be changed by a Change Order.

3.5 Reuse of Documents

Neither CONTRACTOR nor any Subcontractor or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with OWNER shall have or acquire any title to or ownership rights in any

of the Drawings, Specifications or other documents (or copies of any thereof) prepared by or bearing the seal of CONSULTANT; and they shall not reuse any of them on extensions of the Project or any other project without written consent of OWNER and CONSULTANT and specific written verification or adaptation by CONSULTANT.

4. AVAILABILITY OF LANDS; PHYSICAL CONDITIONS, REFERENCE POINTS

4.1 Availability of Lands

OWNER shall furnish, as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for the use of CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by OWNER, unless otherwise provided in the Contract Documents. If CONTRACTOR believes that any delay in OWNER'S furnishing these lands, rights-of-way or easements entitles CONTRACTOR to an extension of the Contract Time, CONTRACTOR may make a claim therefor as provided in Article 11. CONSULTANT shall determine if the claim is legitimate or not. CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2 Physical Conditions

4.2.1 Explorations and Reports

Reference is made to the Special Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by CONSULTANT in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such reports, but not upon non-technical data, interpretations or opinions contained therein or for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to subsurface conditions at the site.

4.2.2 Existing Structures

Reference is made to the Special Conditions for identification of those drawings of physical conditions in or relating to existing surface and subsurface structures (except Underground Facilities referred to in paragraph 4.3 which are at or contiguous to the site that have been utilized by CONSULTANT in preparation of the Contract Documents. CONTRACTOR may rely upon the accuracy of the technical data contained in such drawings, but not for the completeness thereof for CONTRACTOR'S purposes. Except as indicated in the immediately preceding sentence and in paragraph 4.2.6, CONTRACTOR shall have full responsibility with respect to physical conditions in or relating to such structures.

4.2.3 Report of Differing Conditions

If CONTRACTOR believes that:

4.2.3.1 any technical data on which CONTRACTOR is entitled to rely as provided in paragraphs 4.2.1 and 4.2.2 is inaccurate, or

4.2.3.2 any physical conditions uncovered or revealed at the site differ materially from that indicated, reflected or referred to in the Contract Documents,

CONTRACTOR shall, promptly after becoming aware thereof and before performing and WORK in connection therewith (except in an emergency) notify OWNER and CONSULTANT in writing about the inaccuracy or difference.

4.2.4 CONSULTANT'S Review

CONSULTANT will promptly review the pertinent conditions, determine the necessity of obtaining additional explorations or tests with respect thereto and advise CONTRACTOR of CONSULTANT'S findings and conclusions.

4.2.5 Possible Document Change

If CONSULTANT concludes that there is a material error in the Contract Documents or that because of newly discovered conditions a change I the Contract Documents is required, a Change Order will be issued as provided in Article 10 to reflect and document the consequences of the inaccuracy or difference.

4.2.6 Possible Price and Time Adjustments

In each such case, an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, or any combination thereof, will be allowable to the extent that they are attributable to any such inaccuracy or difference.

4.3 Physical Conditions-Underground Facilities

4.3.1 Shown or Indicated

The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or contiguous to the site is based on information and data furnished to OWNER or CONSULTANT by the owners of such underground facilities or by others. Unless it is otherwise expressly provided in the Special Conditions:

4.3.1.1 OWNER and CONSULTANT shall not be responsible for the accuracy or completeness of any such information or data; and,

4.2.1.2 CONTRACTOR shall have full responsibility for reviewing and checking all such information and data; for locating all underground facilities shown or indicated in the Contract Documents; for coordination of the Work with the owners of such underground facilities during construction;

and for the safety and protection thereof and repairing any damage thereto resulting from the Work, the cost of all of which will be considered as having been included in the Contract Price.

4.3.2 Not Shown or Indicated

If an underground facility is uncovered or revealed at or contiguous to the site which was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of, CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency), identify the owner of such Underground Facility and give written notice thereof to that owner and to OWNER and CONSULTANT. CONSULTANT will promptly review the underground facility to determine the extent to which the Contract Documents should be modified to reflect and document the consequences of the existence of the Underground Facility, and the Contract Documents will be amended or supplemented to the extent necessary. During such time, CONTRACTOR shall be responsible for the safety and protection of such underground facility. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are attributable to the existence of any underground facility that was not shown or indicated in the Contract Documents and which CONTRACTOR could not reasonably have been expected to be aware of.

4.4 Reference Points

OWNER shall provide engineering surveys to establish reference points for construction which in CONSULTANT'S judgment are necessary to enable CONTRACTOR to proceed with the Work. CONTRACTOR shall be responsible for laying out the Work (unless otherwise specified), shall protect and preserve the established reference points and shall make no changes or relocations without the prior written approval of OWNER. CONTRACTOR shall report to CONSULTANT whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points by a Registered Land Surveyor.

5. CONTRACTOR'S RESPONSIBILITIES

5.1 Supervision

CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. CONTRACTOR shall assure that all CONTRACTOR personnel (including subcontractors, etc.) conduct themselves in a courteous and respectful manner toward the CONSULTANT and the general public. CONTRACTOR shall keep at the Project Site during the progress of the Work a competent project manager/superintendent and all necessary assistants, all of whom shall be

satisfactory to OWNER. OWNER reserves the right to reject CONTRACTOR'S construction superintendent and project management personnel if they are unsatisfactory to OWNER and upon such rejection CONTRACTOR shall designate and provide competent successors. Failure to comply with this condition of the Contract will result in immediate suspension of the Work. Following a review by the Commissioner of Public Works, the Contract may be terminated (see GC section 14). CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction, but CONTRACTOR shall not be responsible for the negligence of others in the design or selection of a specific means, method, technique, sequence or procedure of construction which is indicated in and required by the Contract Documents. CONTRACTOR shall be responsible to see that the finished Work complies accurately with the Contract Documents.

5.2 Superintendence

CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent, who shall not be replaced without written notice to OWNER and CONSULTANT except under extraordinary circumstances. The superintendent will be CONTRACTOR'S representative at the site and shall have authority to act on behalf of CONTRACTOR. All communications given to the superintendent shall be as binding as if given to CONTRACTOR.

5.3 Labor

CONTRACTOR shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. CONTRACTOR shall at all times maintain good discipline and order at the site. OWNER reserves the right to require CONTRACTOR to remove from the Project any of it's personnel, or subcontractor's personnel for violating LFUCG Policies, Rules or Regulations. Except in connection with the safety or protection of persons or the Work or property at the site or adjacent thereto, and except as otherwise indicated in the Contract Documents, all Work at the site shall be performed during regular working hours, and CONTRACTOR will not permit overtime work or the performance of Work on Saturday, Sunday or any legal holiday without OWNER'S written consent given after prior written notice to CONSULTANT.

5.4 Start-Up and Completion of Work

Unless otherwise specified, CONTRACTOR shall furnish and assume full responsibility for all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance, testing, start-up and completion of the Work.

5.5 Materials and Equipment

All materials and equipment shall be of good quality and new, except as otherwise provided in the Contract Documents. If required by CONSULTANT,

CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to CONSULTANT, or any of CONSULTANT'S consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4.

5.5.1 Not Clearly Specified or Indicated

In all instances where materials specified are obtainable in different sizes, weights, trade grades, qualities or finishes, etc., whose weights, trade grades, qualities or finishes, etc., are not clearly specified or indicated on the Drawings, the CONTRACTOR shall notify the CONSULTANT of all such instances at least five (5) days in advance of receiving the proposals. The CONSULTANT will then determine which size, weight, trade grade, quality, finish, etc., is required.

5.5.2 Coordination of Work

The CONTRACTOR shall see that for his own Work and for the work of each subcontractor, proper templates and patterns necessary for the coordination of the various parts of the Work are prepared. The CONTRACTOR shall furnish or require the Subcontractor to furnish such duplicates as will enable the Subcontractors to fit together and execute fully their respective portions of the Work.

5.6 Adjusting Progress Schedule

CONTRACTOR shall submit to CONSULTANT for acceptance (to the extent indicated in paragraph 2.8) adjustments in the progress schedule to reflect the impact thereon of new developments; these will conform generally to the progress schedule then in effect and additionally will comply with any provisions of the Contract Documents applicable thereto.

5.7 Substitutes or "Or-Equal" Items

5.7.1 General

Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function, and quality required. Unless the name is followed by words indicating that no substitution is permitted, materials or equipment of other Suppliers may be accepted by OWNER/CONSULTANT if sufficient information is submitted by CONTRACTOR to allow OWNER/CONSULTANT to determine that the material or equipment

proposed is equivalent or equal to that named. The procedure for review by OWNER/CONSULTANT will include the following. Requests for review of substitute items of material and equipment will not be accepted by OWNER/CONSULTANT from anyone, other than CONTRACTOR. If CONTRACTOR wishes to furnish or use a substitute item of material or equipment, CONTRACTOR shall make written application to OWNER/CONSULTANT for acceptance thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified. The application will state that the evaluation and acceptance of the proposed substitute will not prejudice CONTRACTOR'S achievement of completion on time, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with OWNER for work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty. All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by OWNER/CONSULTANT in evaluating the proposed substitute. OWNER/CONSULTANT may require CONTRACTOR to furnish at CONTRACTOR'S expense additional data about the proposed substitute.

5.7.2 Substitutes

If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to OWNER/CONSULTANT, if CONTRACTOR submits sufficient information to allow OWNER/CONSULTANT to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by OWNER/CONSULTANT will be similar to that provided in paragraph 5.7.1 as applied by OWNER/CONSULTANT.

5.7.3 OWNER/CONSULTANT'S Approval

OWNER/CONSULTANT will be allowed a reasonable time within which to evaluate each proposed substitute. OWNER/CONSULTANT will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without OWNER/CONSULTANT'S prior written acceptance which will be evidenced by either a Change Order or an approved Shop Drawing. OWNER may require CONTRACTOR to furnish at

CONTRACTOR'S expense a special performance guarantee or other surety with respect to any substitute. OWNER/CONSULTANT will record time required by OWNER/CONSULTANT and OWNER/CONSULTANT'S consultants in evaluating substitutions proposed by CONTRACTOR and in making changes in the Contract Documents occasioned thereby. Whether or not OWNER/CONSULTANT accepts a proposed substitute, CONTRACTOR shall reimburse OWNER for the charges of OWNER/CONSULTANT and OWNER/CONSULTANT'S consultants for evaluating each proposed substitute.

5.8 Subcontractors, Suppliers, and Others

5.8.1 Acceptable to CONSULTANT

CONTRACTOR shall not employ any Subcontractor, Supplier or other person or organization (including those acceptable to OWNER and CONSULTANT as indicated in paragraph 5.8.2), whether initially or as a substitute, against whom OWNER or CONSULTANT may have reasonable objection. CONTRACTOR shall not be required to employ any Subcontractor, Supplier or other person or organization to furnish or perform any of the Work against whom CONTRACTOR has reasonable objection.

5.8.2 Objection After Due Investigation

If the Contract Documents require the identity of certain Subcontractors, Suppliers or other persons or organizations (including those who are to furnish the principal items of materials and equipment) to be submitted to OWNER in advance of the specified date prior to the Effective Date of the Agreement for acceptance by OWNER and CONSULTANT and if CONTRACTOR has submitted a list thereof, OWNER'S or CONSULTANT'S acceptance (either in writing or by failing to make written objection thereto by the date indicated for acceptance or objection in the bidding documents or the Contract Documents) of any such Subcontractor, Supplier or other person or organization so identified may be revoked on the basis of reasonable objection after due investigation, in which case CONTRACTOR shall submit an acceptable substitute. No acceptance by OWNER or CONSULTANT of any such Subcontractor, Supplier or other person or organization shall constitute a waiver of any right of OWNER or CONSULTANT to reject defective Work.

5.8.3 Contractor Responsible for Acts of Subcontractors

The CONTRACTOR shall perform on the site, and with its own organization, work equivalent to at least fifty (50) percent of the total amount of Work to be performed under the Contract. This percentage may be reduced by a supplemental agreement to this Contract if, during performing the Work, the CONTRACTOR requests a reduction and the Urban County

project manager determines that the reduction would be to the advantage of the Urban County Government.

The CONTRACTOR shall, at the time he submits his proposal for the Contract, notify the OWNER in writing of the names of Subcontractors proposed for the Work. He shall not employ any Subcontractor without the prior written approval of the OWNER.

CONTRACTOR shall be fully responsible to OWNER and CONSULTANT for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR'S own acts and omissions. Nothing in the Contract Documents shall create any contractual relationship between OWNER or CONSULTANT and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of OWNER or CONSULTANT to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Laws and Regulations.

5.8.4 Division of Specifications

The divisions and sections of the Specifications and the identifications of any Drawings shall not control CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

5.8.5 Agreement Between Contractor and Subcontractors

All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of OWNER and CONSULTANT.

5.8.6 Statements and Comments by CONTRACTOR

Neither the CONTRACTOR, his employees, nor his subcontractors shall at any time make any statement or comment as to the project scope, nature, intention, design, or construction method to any third party or parties without the explicit written consent of the OWNER.

Any third party requesting such information shall be referred to the OWNER or his representative.

Should there be any change from the original intent of the project as a result of any statement or comment by the contractor, his employees or subcontractors, contractor shall be held liable for any change in the scope,

nature, design, or construction method and shall bear the full cost for the previously mentioned changes.

5.9 Patent Fees and Royalties

CONTRACTOR shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product or device which is the subject of patent rights or copyrights held by others.

5.10 Permits

Unless otherwise provided in the Special conditions, CONTRACTOR shall obtain and pay for all construction permits and licenses. OWNER shall assist CONTRACTOR, when necessary, in obtaining such permits and licenses. CONTRACTOR shall pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of opening of Bids, or if there are no Bids on the Effective Date of the Agreement. CONTRACTOR shall pay all charges of utility owners for connections to the Work, and OWNER shall pay all charges of such utility owners for capital costs related thereto such as plant investment fees.

5.11 Laws and Regulations

5.11.1 CONTRACTOR to Comply

CONTRACTOR shall give all notices and comply with all Laws and Regulations applicable to furnishing and performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither OWNER nor CONSULTANT shall be responsible for monitoring CONTRACTOR'S compliance with any Laws and Regulations.

5.11.2 Specifications and Drawings at Variance

If CONTRACTOR observes that the Specifications or Drawings are at variance with any Laws or Regulations, CONTRACTOR shall give CONSULTANT prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 3.4. If CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Laws, or Regulations, and without such notice to CONSULTANT, CONTRACTOR shall bear all costs arising therefrom; however, it shall not be CONTRACTOR'S primary responsibility to make certain that the Specifications and Drawings are in accordance with such Laws and Regulations.

Any party, firm or individual submitting a proposal pursuant to invitation must have paid all taxes owed to the Lexington-Fayette Urban County Government at the time the proposal is submitted, and must maintain a "current" status in regard to those taxes throughout the Contract. If applicable, business must be licensed in Fayette County.

5.12 Taxes

CONTRACTOR shall pay all sales, consumer, use and other similar taxes required to be paid by CONTRACTOR in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work. Any party, firm or individual submitting a proposal pursuant to invitation must have paid all taxes owed to the Lexington-Fayette Urban County Government at the time the proposal is submitted, and must maintain a "current" status in regard to those taxes throughout the Contract. If applicable, business must be licensed in Fayette County.

5.13 Use of Premises

5.13.1 Project Site

CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the staging areas or work site areas identified in and permitted by the Contract Documents and other land and areas permitted by Laws and Regulations, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against OWNER or CONSULTANT by any such owner or occupant because of the performance of the Work, CONTRACTOR shall promptly attempt to settle with such other party by agreement or otherwise resolve the claim by arbitration or at law. CONTRACTOR shall, to the fullest extent permitted by Laws and Regulations, indemnify and hold OWNER and CONSULTANT harmless from and against all claims, damages, losses and expenses (including, but not limited to, fees of engineers, architects, attorneys and other professionals and court and arbitration costs) arising directly, indirectly or consequentially out of any action, legal or equitable, brought by any such other party against OWNER or CONSULTANT to the extent based on a claim arising out of CONTRACTOR'S performance of the Work.

5.13.2 Clean UP

During the progress of the Work, CONTRACTOR shall keep the premises free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, CONTRACTOR shall remove all waste materials, rubbish and debris from and about the premises as well as all tools, appliances, construction equipment and machinery, and surplus materials, and shall leave the site clean and ready for occupancy by OWNER. CONTRACTOR shall restore to original condition all property not designated for alteration by the Contract Documents.

5.13.1 Loading of Structures

CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

5.14 Record Drawings

CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Change Orders, Field Orders and written interpretations and clarifications (issued pursuant to paragraph 9.4) in good order and annotated to show all changes made during construction. These record documents together with all approved samples and a counterpart of all approved Shop Drawings will be available to CONSULTANT for reference. Upon completion of the Work, these record documents, samples and Shop Drawings will be delivered to CONSULTANT for OWNER.

5.15 Shop Drawings and Samples

5.15.1 Shop Drawing Submittals

After checking and verifying all field measurements and after complying with applicable procedures specified, CONTRACTOR shall submit to CONSULTANT for review and approval in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.8), or for other appropriate action if so indicated in the Special Conditions, five copies (unless otherwise specified) of all Shop Drawings, which will bear a stamp or specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as CONSULTANT may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable CONSULTANT to review the information as required.

5.15.2 Sample Submittals

CONTRACTOR shall also submit to CONSULTANT for review and approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that CONTRACTOR has satisfied CONTRACTOR'S responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.

5.15.3 Review by CONTRACTOR

Before submission of each Shop Drawing or sample CONTRACTOR shall have determined and verified all quantities, dimensions, specified

performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.

5.15.4 Notice of Variation

At the time of each submission, CONTRACTOR shall give CONSULTANT specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to CONSULTANT for review and approval of each such variation.

5.15.5 CONSULTANT'S Approval

CONSULTANT will review and approve with reasonable promptness Shop Drawings and samples, but CONSULTANT'S review and approval will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. CONTRACTOR shall make corrections required by CONSULTANT, and shall return the required number of corrected copies of Shop Drawings and submit, as required, new samples for review and approval. CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by CONSULTANT on previous submittals.

5.15.6 Responsibility for Errors and Omissions

CONSULTANT'S review and approval of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless CONTRACTOR has in writing called CONSULTANT'S attention to each such variation at the time of submission as required by paragraph 5.15.4 and CONSULTANT has given written approval of each such variation by a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample approval; nor will any approval by CONSULTANT relieve CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 5.15.3.

5.15.7 Cost of Related Work

Where a Shop or sample is required by the Specifications, any related Work performed prior to CONSULTANT'S review and approval of the pertinent submission will be the sole expense and responsibility of CONTRACTOR.

5.16 Continuing the Work

CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with OWNER. No Work shall be delayed or postponed pending resolutions of any disputes or disagreements, except as permitted by paragraph 14.5 or as CONTRACTOR and OWNER may otherwise agree in writing.

5.17 Erosion and Sediment Control

5.17.1 General Environmental Requirements

The CONTRACTOR and Subcontractors performing work on projects on behalf of the OWNER shall comply with all applicable federal, state, and local environmental regulations and all requirements and conditions set forth in "special" permits including but not limited to Corp of Engineers 404 permits, 401 Water Quality Certifications, Stream Crossing and Floodplain Encroachment Permits.

Any fines or penalties resulting from the failure to comply with the terms of the federal, state or local permits or perform necessary corrective action are solely the obligation of the CONTRACTOR.

5.17.2 Stormwater Pollution Prevention

A. The CONTRACTOR shall exercise due care to prevent or minimize any damage to any stream or wetland from pollution by debris, sediment or other material. The operation of equipment and/or materials in a jurisdictional wetland is expressly prohibited. Water that has been used for washing or processing, or that contains oils, sediments or other pollutants shall not be discharged from the job site. Such waters shall be collected and properly disposed of by the CONTRACTOR in accordance with applicable local, state and federal law.

B. The CONTRACTOR is solely responsible for securing all required state and local permits associated with stormwater discharges from the project including, but not necessarily limited to the KY Notice of Intent to Disturb (NOI) for Coverage of Storm Water Discharges Associated with Construction Activities under the KPDES Storm Water General Permit KYR100000 and the LFUCG, Land Disturbance Permit. Permit application preparation and all required documentation are the responsibility of the CONTRACTOR. The CONTRACTOR is solely responsible for maintaining compliance with the stormwater pollution prevention plan or erosion and sediment control plan and ensuring the following:

a. That the Stormwater Pollution Prevention Plan (SWPPP) or erosion control plan is current and available for review on site;

b. That any and all stormwater inspection reports required by the permit are conducted by qualified personnel and are available for review onsite; and
c. That all best management practices (BMPs) are adequately maintained and effective at controlling erosion and preventing sediment from leaving the site.

C. The CONTRACTOR shall provide the necessary equipment and personnel to perform any and all emergency measures that may be required to contain any spillage or leakage and to remove materials, soils or liquids that become contaminated. The collected spill material shall be properly disposed at the CONTRACTOR's expense.

D. Upon completion of the work and with the concurrence of the OWNER, the CONTRACTOR must file a Notice of Termination (NOT) of Coverage Under the KPDES General Permit for Storm Water Discharges Associated with Construction Activity with the appropriate local and state authorities.

E. Any fines or penalties resulting from the failure to comply with the terms of the state or local stormwater permits or perform necessary corrective action are solely the obligation of the CONTRACTOR.

6. OTHER WORK

6.1 Related Work at Site

OWNER may perform other work related to the Project at the site by OWNER'S own forces, have other work performed by utility owners or let other direct contracts therefor which shall contain General Conditions similar to these. If the fact that such other work is to be performed was not noted in the Contract Documents, written notice thereof will be given to CONTRACTOR prior to starting any such other work; and, if such performance will involve additional expense to CONTRACTOR or requires additional time, a Change Order to the Contract will be negotiated.

6.2 Other Contractors or Utility Owners

CONTRACTOR shall afford each utility owner and other contractor who is a party to such a direct contract (or OWNER, if OWNER is performing the additional work with OWNER'S employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with theirs. CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of CONSULTANT and the others whose work will be affected. The duties and responsibilities of CONTRACTOR under this paragraph are for the

benefit of such utility owners and other contractors to the extent that there are comparable provisions for the benefit of CONTRACTOR in said direct contracts between OWNER and such utility owners and other contractors.

6.3 Delays Caused by Others
If any part of CONTRACTOR'S Work depends for proper execution or results upon the work of any such other contractor or utility owner (or OWNER), CONTRACTOR shall inspect and promptly report to CONSULTANT in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. CONTRACTOR'S failure so to report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR'S Work except for latent or non-apparent defects and deficiencies in the other work.

6.4 Coordination
If OWNER contracts with others for the performance of other work on the Project at the site, the person or organization who will have authority and responsibility for coordination of the activities among the various prime contractors will be identified in the Special Conditions, and the specific matters to be covered by such authority and responsibility will be itemized, and the extent of such authority and responsibilities will be provided, in the Special Conditions.

7. OWNER'S RESPONSIBILITIES

7.1 Communications
OWNER shall issue all communications to CONTRACTOR through CONSULTANT.

7.2 Data and Payments
OWNER shall furnish the data required of OWNER under the Contract Documents promptly after they are due.

7.3 Lands, Easements, and Surveys
OWNER'S duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1 and 4.4. Paragraph 4.2 refers to OWNER'S identifying and making available to CONTRACTOR copies of reports of explorations and tests of subsurface conditions at the site and in existing structures which have been utilized by CONSULTANT in preparing the Drawings and Specifications.

7.4 Change Orders
OWNER is obligated to execute Change Orders as indicated in paragraph 9.4.

7.5 Inspections, Tests and Approvals
OWNER'S responsibility in respect to certain inspections, tests and approvals is set forth in paragraph 13.3.

7.6 Stop or Suspend Work
In connection with OWNER'S right to stop Work or suspend Work, see paragraph 12.4 and 14.1 Paragraph 14.2 deals with OWNER'S rights to terminate services of CONTRACTOR under certain circumstances.

8. CONSULTANT'S STATUS DURING CONSTRUCTION

8.1 OWNER'S Representative
CONSULTANT will be OWNER'S representative during the construction period. The duties and responsibilities and the limitations of authority of CONSULTANT as OWNER'S representative during construction are set forth in the Contract Documents and shall not be extended without written consent of OWNER and CONSULTANT.

8.2 Visits to Site
CONSULTANT will make visits to the site at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. CONSULTANT will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. CONSULTANT'S efforts will be directed toward providing for OWNER a greater degree of confidence that the completed Work will conform to the Contract Documents. On the basis of such visits and on-site observations, CONSULTANT will keep OWNER informed of the progress of the Work and will endeavor to guard OWNER against defects and deficiencies in the Work.

8.3 Project Representation
CONSULTANT will provide an Inspector to assist CONSULTANT in observing the performance of the Work. If OWNER designates another agent to represent OWNER at the site who is not CONSULTANT'S agent or employee, the duties, responsibilities and limitations of authority of such other person will be as provided in the Special Conditions.

8.4 Clarifications and Interpretations
CONSULTANT will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents (in the form of Drawings or otherwise) as CONSULTANT may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

8.5 Authorized Variations in Work
CONSULTANT may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order.

8.6 Rejecting Defective Work
CONSULTANT will have authority to disapprove or reject Work which CONSULTANT believes to be defective, and will also have authority to require special inspection or testing of the Work as provided in paragraph 12.3, whether or not the Work is fabricated, installed or completed.

8.7 Shop Drawings
In connection with CONSULTANT'S responsibility for Shop Drawings and samples, see paragraphs 5.15.1 through 5.16 inclusive.

8.8 Change Orders
In connection with CONSULTANT'S responsibilities as to Change Orders, see Articles 10, 11 and 12.

8.9 Payments
In connection with CONSULTANT'S responsibilities with respect to Applications for Payment, etc., see Article 13.

8.10 Determinations for Unit Prices
CONSULTANT will determine the actual quantities and classifications of Unit Price Work performed by CONTRACTOR.

CONSULTANT will review with CONTRACTOR CONSULTANT'S preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise).

8.11 Decision on Disputes
CONSULTANT will be the initial interpreter of the requirements of the Contract Documents and judge of the acceptability of the Work thereunder. Claims, disputes and other matters relating to the acceptability of the Work or the interpretation of the requirements of the Contract Documents pertaining to the performance and furnishing of the Work and claims under Articles 10 and 11 in respect of changes in the Contract Price or Contract Time will be referred initially to CONSULTANT in writing with a request for a formal decision in accordance with this paragraph, which CONSULTANT will render in writing within a reasonable time. Written notice of each such claim, dispute and other matter will be delivered to CONSULTANT promptly (but in no event later than thirty days) after the occurrence of the event giving rise thereto, and written supporting data will be submitted to CONSULTANT within sixty days after such occurrence unless CONSULTANT allows an additional period of time to ascertain more accurate data in support of the claim.

8.12 Limitations on CONSULTANT's Responsibilities

8.12.1 CONTRACTOR, Supplier, or Surety

Neither CONSULTANTS authority to act under this Article 8 or elsewhere in the Contract Documents nor any decision made by CONSULTANT in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of CONSULTANT to CONTRACTOR, any Subcontractor, any Supplier, or any other person or organization performing any of the Work, or to any surety for any of them.

8.12.2 To Evaluate the Work
Whenever in the Contract Documents the terms "as ordered", "as directed", "as required", "as allowed", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper", or "satisfactory" or adjectives or like "effect" or "import" are used to describe a requirement, direction, review or judgment of CONSULTANT as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective shall not be effective to assign CONSULTANT any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 8.12.3 or 8.12.4.

8.12.3 CONTRACTOR'S Means, Methods, Etc.
CONSULTANT will not be responsible for CONTRACTOR'S means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, and CONSULTANT will not be responsible for CONTRACTOR'S failure to perform or furnish the Work in accordance with the Contract Documents.

8.12.4 Acts of Omissions of CONTRACTOR
CONSULTANT will not be responsible for the acts or omissions of CONTRACTOR or of any Subcontractor, any Supplier, or of any other person or organization performing or furnishing any of the Work.

9. CHANGES IN THE WORK

9.1 OWNER May Order Change
Without invalidating the Agreement and without notice to any surety, OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by a Change Order. Upon receipt of such notice, CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents (except as otherwise specifically provided).

9.2 Claims
Claims for an increase or decrease in the Contract Price or an extension or shortening or the Contract Time that should be allowed as a result of a Change Order will be settled as provided for in Article 10 or Article 11.

9.3 Work Not in Contract Documents

CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any Work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in paragraph 3.4, except in the case of an emergency and except in the case of uncovering Work as provided in paragraph 12.3.4.

9.4 Change Orders

OWNER and CONTRACTOR shall execute appropriate Change Orders covering:

9.4.1 changes in the Work which are ordered by OWNER pursuant to paragraph 9.1, are required because of acceptance of defective Work under paragraph 12.7 or corrective defective Work under paragraph 12.8, or are agreed to by the parties;

9.4.2 changes in the Contract Price or Contract Time which are agreed to by the parties; and

9.4.3 changes in the Contract Price or Contract Time which embody the substance of any written decision rendered by CONSULTANT pursuant to paragraph 8.11; provided that, in lieu of executing any such Change Order, an appeal may be taken from any such decision in accordance with the provisions of the Contract Documents and applicable Laws and REGULATIONS, but during any such appeal, CONTRACTOR shall carry on the Work and adhere to the progress schedule as provided in paragraph 5.16.

9.5 Notice of Change

If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any Bond to be given to a surety, the giving of any such notice will be CONTRACTOR'S responsibility, and the amount of each applicable Bond will be adjusted accordingly.

10. CHANGE OF CONTRACT PRICE

10.1 Total Compensation

The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by CONTRACTOR shall be at his expense without change in the Contract Price.

10.2 Claim for Increase or Decrease in Price

The Contract Price may only be changed by a Change Order. Any claim for an increase or decrease in the Contract Price shall be based on written notice delivered by the CONTRACTOR to the CONSULTANT promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the amount of the claim with supporting data shall be delivered within sixty days after such occurrence (unless CONSULTANT allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by CONTRACTOR'S written statement that the amount claimed covers all known amounts (direct, indirect, and consequential) to which the CONTRACTOR is entitled as a result of the occurrence of said event.

10.3 Value of Work

The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

10.3.1 Unit Prices

Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of paragraphs 10.9.1. through 10.9.3, inclusive).

10.3.2 Lump Sum

By mutual acceptance of a lump sum (which may include an allowance for overhead and profit not necessarily in accordance with paragraph 10.6.2.1).

10.3.3 Cost Plus Fee

On the basis of the Cost of the Work (determined as provided in paragraphs 10.4 and 10.5) plus a CONTRACTOR'S fee for overhead and profit (determined as provided in paragraphs 10.6 and 10.7).

10.4 Cost of the Work

The term Cost of the Work means the sum of all costs necessarily incurred and paid by CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project; shall include only the following items; and shall not include any of the costs itemized in paragraph 10.5:

10.4.1 Payroll Costs

Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions,

unemployment, excise and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays, shall be included in the above to the extent authorized by OWNER.

10.4.2 Materials and Equipment Costs

Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

10.4.3 Subcontractor Costs

Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to CONTRACTOR and shall deliver such bids to OWNER who will then determine, with the advice of CONSULTANT, which bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work Plus a Fee, the Subcontractor's Cost of the Work shall be determined in the same manner as CONTRACTOR'S Cost of the Work. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.

10.4.4 Special Consultant Costs

Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys and accountants) employed for services specifically related to the Work.

10.4.5 Supplemental Costs

10.4.5.1 The proportion of necessary transportation, travel and subsistence expenses of CONTRACTOR'S employees incurred in discharge of duties connected with the Work.

10.4.5.2 Cost, including transportation and maintenance, of all materials, supplies, equipment,

machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

10.4.5.3 Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or others in accordance with rental agreements approved by OWNER with the advice of CONSULTANT, and the costs of transportation, loading, unloading, installation, dismantling and removal shall be in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

10.4.5.4 Sales, consumer, use or similar taxes related to the Work, and for which CONTRACTOR is liable, imposed by Laws and Regulations.

10.4.5.5 Deposits lost for causes other than negligence of CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

10.4.5.6 Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by CONTRACTOR in connection with the performance and furnishing of the Work (except losses and damages within the deductible amounts of property insurance established by OWNER), provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of the Work for the purpose of determining CONTRACTOR'S fee. If, however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, CONTRACTOR shall be paid a fee proportionate to that stated in paragraph 10.6.2 for services.

10.4.5.7 The cost of utilities, fuel and sanitary facilities at the site.

10.4.5.8 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

10.4.5.9 Cost of premiums for additional Bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by OWNER.

10.5 Not to Be Included in Cost of the Work
The term Cost of the Work shall not include any of the following:

10.5.1 Costs of Officers and Executives
Payroll costs and other compensation of CONTRACTOR'S officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR'S principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 10.4.1 or specifically covered by paragraph 10.4.4 - all of which are to be considered administrative costs covered by the CONTRACTOR'S fee.

10.5.2 Principal Office
Expenses of CONTRACTOR'S principal and branch offices other than CONTRACTOR'S office at the site.

10.5.3 Capital Expense
Any part of CONTRACTOR'S capital expenses, including interest on CONTRACTOR'S capital employed for the Work and charges against CONTRACTOR for delinquent payments.

10.5.4 Bonds and Insurance
Cost of premiums for all Bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 10.4.5.9 above).

10.5.5 Costs Due to Negligence
Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.

10.5.6 Other Costs
Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 10.4.

10.6 Contractor's Fee
The CONTRACTOR'S Fee allowed to CONTRACTOR for overhead and profit shall be determined as follows:

10.6.1 a mutually acceptable fixed fee; or if none can be agreed upon,

10.6.2 a fee based on the following percentages of the various portions of the Cost of the Work:

10.6.2.1 for costs incurred under paragraphs 10.4.1 and 10.4.2, the CONTRACTOR'S fee shall be fifteen percent;

10.6.2.2 for costs incurred under paragraph 10.4.3, the CONTRACTOR'S fee shall be five percent; and if a subcontract is on the basis of Cost of the Work Plus a fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors shall be fifteen percent;

10.6.2.3 no fee shall be payable on the basis of costs itemized under paragraphs 10.4.4, 10.4.5 and 10.5;

10.6.2.4 the amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR'S Fee by an amount equal to ten percent of the net decrease; and

10.6.2.5 when both additions and credits are involved in any one change, the adjustment in CONTRACTOR'S fee shall be computed on the basis of the net change in accordance with paragraphs 10.6.2.1 through 10.6.2.4, inclusive.

10.7 Itemized Cost Breakdown
Whenever the cost of any Work is to be determined pursuant to paragraph 10.4 or 10.5, CONTRACTOR will submit in form acceptable to CONSULTANT an itemized cost breakdown together with supporting data.

10.8 Cash Allowances
It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within

the limit of the allowances as may be acceptable to CONSULTANT, CONTRACTOR agrees that:

10.8.1 Materials and Equipment
The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and

10.8.2 Other Costs
CONTRACTOR'S costs for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

10.8.3 Change Order
Prior to final payment, an appropriate Change Order will be issued as recommended by CONSULTANT to reflect actual amounts due CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

10.9 Unit Price Work

10.9.1 General
Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by CONTRACTOR will be made by CONSULTANT in accordance with Paragraph 8.10.

10.9.2 Overhead and Profit
Each unit price will be deemed to include an amount considered by CONTRACTOR to be adequate to cover CONTRACTOR'S overhead and profit for each separately identified item.

10.9.3 Claim for Increase in Unit Price
Where the quantity of any item of Unit Price Work performed by CONTRACTOR differs materially and significantly from the estimated quantity of such item indicated in the Agreement and there is no corresponding adjustment with respect to any other item of Work and if CONTRACTOR believes that CONTRACTOR has incurred additional

expense as a result thereof, CONTRACTOR may make a claim for an increase in the Contract Price in accordance with Article 10.

11. CHANGE OF CONTRACT TIME

11.1 Change Order
The Contract Time may only be changed by a Change Order. Any claim for an extension or shortening of the Contract Time shall be based on written notice delivered to CONSULTANT promptly (but in no event later than thirty days) after the occurrence of the event giving rise to the claim and stating the general nature of the claim. Notice of the extent of the claim with supporting data shall be delivered within sixty days after such occurrence (unless CONSULTANT allows an additional period of time to ascertain more accurate data in support of the claim) and shall be accompanied by the claimant's written statement that the adjustment claimed is the entire adjustment to which the claimant has reason to believe it is entitled as a result of the occurrence of said event. All claims for adjustment in the Contract Time shall be determined by CONSULTANT in accordance with paragraph 8.11. No claim for an adjustment in the Contract Time will be valid if not submitted in accordance with the requirements of this paragraph 11.1.

11.2 Justification for Time Extensions
The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if a claim is made therefore as provided in paragraph 11.1. Such delays shall include, but not be limited to, acts or neglect by OWNER or others performing additional work as contemplated by Article 6, or to fires, floods, labor disputes, epidemics, abnormal weather conditions or acts of God.

11.3 Time Limits
All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of this Article 11 shall not exclude recovery for damages (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court costs) for delay by either party.

12. WARRANTY AND GUARANTEE; TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

12.1 Warranty and Guarantee
CONTRACTOR warrants and guarantees to OWNER and CONSULTANT that all Work will be in accordance with the Contract Documents and will not be defective. All defective Work, whether or not in place, may be rejected, corrected or accepted as provided in this Article 12.

12.2 Access to Work
CONSULTANT and CONSULTANT'S representatives, other representatives of OWNER, testing agencies and governmental agencies with jurisdictional interests

will have access to the Work at reasonable times for their observation, inspecting and testing. CONTRACTOR shall provide proper and safe conditions for such access.

12.3 Tests and Inspections

12.3.1 Timely Notice
CONTRACTOR shall give CONSULTANT timely notice of readiness of the Work for all required inspections, tests or approvals.

12.3.2 Requirements and Responsibilities
The CONSULTANT may require such inspection and testing during the course of the Work as he/she deems necessary to ascertain and assure the integrity and acceptable quality of the materials incorporated and the work performed. Inspection presence may be either full-time or intermittent, and neither the presence nor absence at any time of the CONSULTANT or the INSPECTOR shall relieve the CONTRACTOR of sole responsibility for the acceptability and integrity of the Work or any part thereof.

The costs of sampling, testing, and inspection on-site to ascertain acceptability of the Work and materials will be borne by the OWNER except as otherwise provided. The OWNER will select a testing laboratory to perform such sampling and testing. Sampling and/or testing required by the CONTRACTOR or necessitated by failure of Work or materials to meet the above acceptability test shall be at the expense of the CONTRACTOR.

Inspection services may be performed by the employees of the OWNER or by others selected or designated by the OWNER or the CONSULTANT.

Sampling and/or testing required for manufacturing quality and/or process control, for certification that raw mineral materials or manufactured products are the quality specified in the contract, or to assure the acceptability for incorporation into the Work shall be borne by the CONTRACTOR or the material supplier.

Cost for inspection, sampling, testing, and approvals required by the laws or regulations of any public body having competent jurisdiction shall be borne by the CONTRACTOR or the material supplier.

Sampling and testing will be in accord with pertinent codes and regulations and with appropriate standards of the American Society of Testing Materials or other specified standards.

12.3.3 On-Site Construction Test and Other Testing
All inspections, tests or approvals other than those required by Laws or Regulations of any public body having jurisdiction shall be performed by

organizations acceptable to OWNER and CONTRACTOR (or by CONSULTANT if so specified).

12.3.4 Covered Work
If any Work (including the work of others) that is to be inspected, tested or approved is covered without written concurrence of CONSULTANT, it must, if requested by CONSULTANT, be uncovered for observation. Such uncovering shall be at CONTRACTOR'S expense unless CONTRACTOR has given CONSULTANT timely notice of CONTRACTOR'S intention to cover the same and CONSULTANT has not acted with reasonable promptness in response to such notice.

12.3.5 CONTRACTOR'S Obligation
Neither observations by CONSULTANT nor inspections, tests or approvals by others shall relieve CONTRACTOR from CONTRACTOR'S obligations to perform the Work in accordance with the Contract Documents.

12.4 OWNER May Stop the Work
If the Work is defective, or CONTRACTOR fails to supply sufficient skilled workers or suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, OWNER may order CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of OWNER to stop the Work shall not give rise to any duty on the part of OWNER to exercise this right for the benefit of CONTRACTOR or any other party.

12.5 Correction or Removal of Defective Work
If required by CONSULTANT, CONTRACTOR shall promptly, as directed, either correct all defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by CONSULTANT, remove it from the site and replace it with non-defective Work. CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

12.6 One Year Correction Period
If within one year after the date of Completion or such longer period of time as may be prescribed by Laws or Regulations or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be defective, CONTRACTOR shall promptly, without cost to OWNER and in accordance with OWNER'S written instructions, either correct such defective Work, or, if it has been rejected by OWNER, remove it from the site and replace it with non-defective Work. If CONTRACTOR does not promptly comply with the terms of such instructions, or in

an emergency where delay would cause serious risk of loss or damage, OWNER may have the defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service before Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications or by Change Order.

12.7 Acceptance of Defective Work

If, instead of requiring correction or removal and replacement of defective Work, OWNER prefers to accept it, OWNER may do so. CONTRACTOR shall bear all direct, indirect and consequential costs attributable to OWNER'S evaluation of and determination to accept such defective Work (such costs to be approved by CONSULTANT as to reasonableness and to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals).

12.8 OWNER May Correct Defective Work

If CONTRACTOR fails within a reasonable time after written notice of CONSULTANT to proceed to correct and to correct defective Work or to remove and replace rejected Work as required by CONSULTANT in accordance with paragraph 12.5, or if CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if CONTRACTOR fails to comply with any other provision of the Contract Documents, OWNER may, after seven days' written notice to CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph OWNER shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, OWNER may exclude CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend CONTRACTOR'S services related thereto, take possession of CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere. CONTRACTOR shall allow OWNER, OWNER'S representatives, agents and employees such access to the site as may be necessary to enable OWNER to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of OWNER in exercising such rights and remedies will be charged against CONTRACTOR in an amount approved as to reasonableness by CONSULTANT, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and OWNER shall be entitled to an appropriate decrease in the Contract Price. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of CONTRACTOR'S defective Work. CONTRACTOR shall not be allowed an extension of the Contract Time because of any delay in performance of

the Work attributable to the exercise by OWNER of OWNER'S rights and remedies hereunder.

13. PAYMENTS TO CONTRACTOR AND COMPLETION

13.1 Schedule of Values

The schedule of values established as provided in paragraph 2.8 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to CONSULTANT. Progress payments on account of Unit Price Work will be based on the number of units completed.

13.2 Application for Progress Payment

At least ten days before each progress payment is scheduled (but not more often than once a month), CONTRACTOR shall submit to CONSULTANT for review an Application for Payment filled out and signed by CONTRACTOR covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice or other documentation warranting that OWNER has received the materials and equipment free and clear of all liens, charges, security interests and encumbrances (which are hereinafter in these General Conditions referred to as "Liens") and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect OWNER'S interest therein, all of which will be satisfactory to OWNER. OWNER shall, within thirty (30) calendar days of presentation to him of an approved Application for Payment, pay CONTRACTOR the amount approved by CONSULTANT. Monthly progress payments shall be ninety (90) percent of the sum obtained by applying the respective bid unit prices to the approved estimated quantities of work completed by the Contractor during the preceding month. The remaining ten (10) percent will be held by the Owner, as retainage. At such time as the CONSULTANT deems appropriate - based on the quality of work performed, progress of cleanup, and other pertinent factors - the rate of retainage, or the total amount retained, may be reduced; although, any reduction in retainage, below the ten (10) percent level, is made solely at the CONSULTANT's discretion. All remaining retainage held will be included in the final payment to the Contractor.

13.2.1 Waivers of Mechanic's Lien

With each Application for Payment OWNER may require CONTRACTOR to submit waivers of mechanic's lien from entities lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment.

13.2.1.1 Requirement for waivers of Mechanic's Lien on Partial Applications for Payment will be determined and communicated at the Preconstruction Conference.

13.2.1.2 Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.

13.2.1.3 When an application shows completion of an item, submit conditional final or full waivers.

13.2.1.4 Owner reserves the right to designate which entities involved in the Work must submit waivers.

13.2.1.5 Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

13.3 CONTRACTOR'S Warranty of Title

CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to OWNER no later than the time of payment free and clear of all Liens.

13.4 Review of Applications for Progress Payment

13.4.1 Submission of Application for Payment

CONSULTANT will, after receipt of each Application for Payment, either indicate in writing a recommendation of payment and present the Application to OWNER, or return the Application to CONTRACTOR indicating in writing CONSULTANT'S reasons for refusing to recommend payment. In the latter case, CONTRACTOR may make the necessary corrections and resubmit the Application.

13.4.2 CONSULTANT'S Recommendation

CONSULTANT may refuse to recommend the whole or any part of any payment, if, in CONSULTANT'S opinion, it would be incorrect to make such representations to OWNER. CONSULTANT may also refuse to recommend any such payment, or, because of subsequently discovered evidence or the results of subsequent inspections or tests, nullify any such payment previously recommended, to such extent as may be necessary in CONSULTANT'S opinion to protect OWNER from loss because:

13.4.2.1 the Work is defective, or completed Work has been damaged requiring correction or replacement;

13.4.2.2 the Contract Price has been reduced by Written Amendment or Change Order;

13.4.2.3 OWNER has been required to correct defective Work or complete Work in accordance with paragraph 12.8; or

13.4.2.4 of CONSULTANT's actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.2.1 through 14.2.9 inclusive.

13.5 Partial Utilization

OWNER at any time may request CONTRACTOR in writing to permit OWNER to use any such part of the Work which OWNER believes to be ready for its intended use and has been completed. If CONTRACTOR agrees, CONTRACTOR will certify to OWNER that said part of the Work is complete and request that a Certificate of Completion be issued for that part of the Work.

13.6 Final Inspection

Upon written notice from CONTRACTOR that the entire Work or an agreed portion thereof is complete, CONSULTANT will make a final inspection with 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 remedy such deficiencies.

13.7 Final Application for Payment

After CONTRACTOR has completed all such corrections to the satisfaction of CONSULTANT and delivered all maintenance and operating instructions, schedules, guarantees, Bonds, certificates of inspection, marked-up record documents (as provided in paragraph 5.14) and other documents - all as required by the Contract Documents, and after CONSULTANT has indicated that the Work is acceptable (subject to the provisions of paragraph 13.10), CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all documentation called for in the Contract Documents, together with complete and legally effective releases or waivers (satisfactory to OWNER) of all Liens arising out of or filed in connection with the Work. In lieu thereof and as approved by OWNER, CONTRACTOR may furnish receipts or releases in full; an affidavit of CONTRACTOR that the releases and receipts include all labor, services, material and equipment for which a Lien could be filed, and that all payrolls, material and equipment bills, and other indebtedness connected with the Work for which OWNER or OWNER'S property might in any way be responsible, have been paid or otherwise satisfied; and consent of the surety, if any, to final payment. If any Subcontractor or Supplier fails to

furnish a release or receipt in full, CONTRACTOR may furnish a Bond or other collateral satisfactory to OWNER to indemnify OWNER against any Lien.

13.8 Final Payment and Acceptance

13.8.1 CONSULTANT'S Approval

If, on the basis of CONSULTANT'S observation of the Work during construction and final inspection, and CONSULTANT'S review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents, CONSULTANT is satisfied that the Work has been completed and CONTRACTOR'S other obligations under the Contract Documents have been fulfilled, CONSULTANT will, after receipt of the final Application for Payment, indicate in writing CONSULTANT'S recommendation of payment and present the Application to OWNER for payment. Thereupon CONSULTANT will give written notice to OWNER and CONTRACTOR that the Work is acceptable, subject to the provisions of paragraph 13.10. Otherwise, CONSULTANT will return the Application to CONTRACTOR, indicating in writing the reasons for refusing to recommend final payment, in which case CONTRACTOR shall make the necessary corrections and resubmit the Application.

13.8.2 Delay in Completion of Work

If, through no fault of CONTRACTOR, final completion of the Work is significantly delayed, OWNER shall, upon receipt of CONTRACTOR'S final Application for Payment and recommendation of CONSULTANT, and without terminating the Agreement, make payment of the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by OWNER for Work not fully completed or corrected is less than the retainage stipulated in the Agreement, and if Bonds have been furnished as required in paragraph 10 of Part II, Information for Bidders, the written consent of the surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by CONTRACTOR to CONSULTANT with the Application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

13.9 CONTRACTOR'S Continuing Obligation

CONTRACTOR'S obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. Neither recommendation of any progress or final payment by CONSULTANT, nor the issuance of a certificate of Completion, nor any payment by OWNER to CONTRACTOR under the Contract Documents, nor any use or occupancy of the Work or any part thereof by OWNER, nor any act of acceptance by OWNER nor any failure to do so, nor any review and approval of a Shop Drawing or sample submission, nor any correction of defective Work by OWNER will constitute an acceptance of Work not in accordance with the Contract Documents or a release of CONTRACTOR'S obligation to perform the

Work in accordance with the Contract Documents (except as provided in paragraph 13.10).

13.10 Waiver of Claims

The making and acceptance of final payment will constitute:

13.10.1 a waiver of all claims by OWNER against CONTRACTOR, except claims arising from unsettled Liens, from defective Work appearing after final inspection or from failure to comply with the Contract Documents or the terms of any special guarantees specified therein; however, it will not constitute a waiver by OWNER of any rights in respect of CONTRACTOR'S continuing obligations under the Contract Documents; and

13.10.2 a waiver of all claims by CONTRACTOR against OWNER other than those previously made in writing and still unsettled.

14. SUSPENSION OF WORK AND TERMINATION

14.1 OWNER May Suspend Work

OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to CONTRACTOR and CONSULTANT which will fix the date on which Work will be resumed. CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if CONTRACTOR makes an approved claim therefor as provided in Articles 10 and 11.

14.2 OWNER May Terminate

The OWNER may terminate the Work upon the occurrence of any one or more of the following events:

14.2.1 if CONTRACTOR commences a voluntary case under any chapter of the Bankruptcy Code (Title 11, United States Code), as now or hereafter in effect, or if CONTRACTOR takes any equivalent or similar action by filing a petition or otherwise under any other federal or state law in effect at such time relating to the bankruptcy or insolvency;

14.2.2 if a petition is filed against CONTRACTOR under any chapter of the Bankruptcy Code as now or hereafter in effect at the time of filing, or if a petition is filed seeking any such equivalent or similar relief against CONTRACTOR under any other federal or state law in effect at the time relating to bankruptcy or insolvency;

14.2.3 if CONTRACTOR makes a general assignment for the benefit of creditors;

14.2.4 if a trustee, receiver, custodian or agent of CONTRACTOR is appointed under applicable law or under contract, whose appointment or authority to take charge of property of CONTRACTOR is for the purpose of enforcing a Lien against such property or for the purpose of general administration of such property for the benefit of CONTRACTOR'S creditors;

14.2.5 if CONTRACTOR admits in writing an inability to pay its debts generally as they become due;

14.2.6 if CONTRACTOR persistently fails to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the progress schedule established under paragraph 2.8 as revised from time to time);

14.2.7 if CONTRACTOR disregards Laws or Regulations of any public body having jurisdiction;

14.2.8 if CONTRACTOR disregards the authority of CONSULTANT, or

14.2.9 if CONTRACTOR otherwise violates in any substantial way any provisions of the Contract Documents;

OWNER may, after giving CONTRACTOR (and the surety) seven days' written notice and to the extent permitted by Laws and Regulations, terminate the services of CONTRACTOR, exclude CONTRACTOR from the site and take possession of the Work and of all CONTRACTOR'S tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by CONTRACTOR (without liability to CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which OWNER has paid CONTRACTOR but which are stored elsewhere, and finish the Work as OWNER may deem expedient. In such case CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct, indirect and consequential costs of completing the Work (including but not limited to fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs) such excess will be paid to CONTRACTOR. If such costs exceed such unpaid balance, CONTRACTOR shall pay the difference to OWNER. Such costs incurred by OWNER will be approved as to reasonableness by CONSULTANT and incorporated in a Change Order,

but when exercising any rights or remedies under this paragraph OWNER shall not be required to obtain the lowest price for the Work performed.

14.2.10 If safety violations are observed and brought to the Contractors attention and Contractor fails to take immediate corrective measures any repeat of similar safety violations, Owner will order an immediate termination of contract. Note: it is the Contractor's responsibility to know proper safety measures as they pertain to construction and OSHA.

14.2.11 This contract may be canceled by either party thirty (30) days after delivery by canceling party of written notice of intent to cancel to the other contracting party.

14.2.12 This contract may be canceled by the Lexington-Fayette Urban County Government if it is determined that the Bidder has failed to perform under the terms of this agreement, such cancellation to be effective upon receipt of written notice of cancellation by the Bidder.

14.3 CONTRACTOR'S Services Terminated

Where CONTRACTOR'S services have been so terminated by OWNER, the termination will not affect any rights or remedies of OWNER against CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due CONTRACTOR by OWNER will not release CONTRACTOR from liability.

14.4 Payment After Termination

Upon seven days' written notice to CONTRACTOR, OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Work and terminate the Agreement. In such case, CONTRACTOR shall be paid for all Work executed and any expense sustained plus reasonable termination expenses, which will include, but not be limited to, direct, indirect and consequential costs (including, but not limited to, fees and charges of engineers, architects, attorneys and other professionals and court and arbitration costs).

14.5 CONTRACTOR May Stop Work or Terminate

If, through no act or fault of CONTRACTOR, the Work is suspended for a period of more than ninety days by OWNER or under an order of court or other public authority, or CONSULTANT fails to act on any Application for Payment within sixty days after it is submitted, or OWNER fails for sixty days to pay CONTRACTOR any sum finally determined to be due, then CONTRACTOR may, upon seven days' written notice to OWNER and CONSULTANT, terminate the Agreement and recover from OWNER payment for all Work executed and any expense sustained plus reasonable termination expenses. In addition and in lieu of terminating the Agreement, if CONSULTANT has failed to act on an Application for Payment or OWNER has failed to make any payment as aforesaid, CONTRACTOR may upon seven days' written notice to OWNER and

CONSULTANT stop the Work until payment of all amounts then due. The provisions of this paragraph shall not relieve CONTRACTOR of the obligations under paragraph 5.16 to carry on the Work in accordance with the progress schedule and without delay during disputes and disagreements with OWNER.

15. MISCELLANEOUS

15.1 Claims for Injury or Damage
Should OWNER or CONTRACTOR suffer injury or damage to person or property because of any error, omission or act of the other party or of any of the other party's employees or agents or others for whose acts the other party is legally liable, claim will be made in writing to the other party within a reasonable time of the first observance of such injury or damage. The provisions of this paragraph 15.1 shall not be construed as a substitute for or a waiver of the provisions of any applicable statute of limitations or repose.

15.2 Non-Discrimination in Employment
The CONTRACTOR shall comply with the following requirements prohibiting discrimination:

15.2.1 That no person (as defined in KRS 344.010) shall bid on Lexington-Fayette Urban County Government construction projects, or bid to furnish materials or supplies to the Lexington-Fayette Urban County Government, if, within six months prior to the time of opening of bids, said person shall have been found, by declamatory judgment action in Fayette Circuit Court, to be presently engaging in an unlawful practice, as hereinafter defined. Such declamatory judgment action may be brought by an aggrieved individual or upon an allegation that an effort at conciliation pursuant to KRS 344.200 has been attempted and failed, by the Lexington-Fayette County Human Rights Commission.

15.2.2 That it is an unlawful practice for an employer:

15.2.2.1 to fail or refuse to hire, or to discharge any individual or otherwise to discriminate against an individual, with respect to his compensation, terms, conditions, or privileges of employment, because of such individual's race, color, religion, sex, age, or national origin; or

15.2.2.2 to limit, segregate or classify his employees in any way which would deprive or tend to deprive an individual of employment opportunities or otherwise adversely affect his status as an employee because of such individual's sex, race, color, religion, age, or national origin.

15.2.3 That it is an unlawful practice for an employer, labor organization, or joint-labor management committee controlling apprenticeship or other training or retraining, including on-the-job training programs to discriminate against an individual because of his race, color, religion, sex, age, or national origin in admission to, or employment in, any program established to provide apprenticeship or other training.

15.2.4 That a copy of this Ordinance shall be furnished all suppliers and made a part of all bid specifications.

15.2.5 This Ordinance shall take effect after it is signed, published and recorded, as required by law.

15.3 Temporary Street Closing or Blockage
The CONTRACTOR will notify the CONSULTANT at least 72 hours prior to making any temporary street closing or blockage. This will permit orderly notification to all concerned public agencies. Specific details and restrictions on street closure or blockage are contained in the Special Conditions.

15.4 Percentage of Work Performed by prime CONTRACTOR
The CONTRACTOR shall perform on site, and with its own organization, Work equivalent to at least fifty (50%) percent of the total amount of Work to be performed under the Contract. This percentage may be reduced by a supplemental agreement to this Contract if, during performing the Work, the CONTRACTOR requests a reduction and the CONSULTANT determines that the reduction would be to the advantage of the OWNER.

15.5 Clean-up
Cleanup shall progress, to the greatest degree practicable, throughout the course of the Work. The Work will not be considered as completed, and final payment will not be made, until the right-of-way and all ground occupied or affected by the Contractor in connection with the Work has been cleared of all rubbish, equipment, excess materials, temporary structures, and weeds. Rubbish and all waste materials of whatever nature shall be disposed of, off of the project site, in an acceptable manner. All property, both public and private, which has been damaged in the prosecution of the Work, shall be restored in an acceptable manner. All areas shall be draining, and all drainage ways shall be left unobstructed, and in such a condition that drift will not collect or scour be induced.

15.6 General
The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 12.1, 12.3.5, 13.3, and 15.2 and all of the rights and remedies available to OWNER and CONSULTANT thereunder, are in addition to, and are not to be construed in any way as a limitation of, any rights and remedies

available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee or by other provisions of the Contract Documents, and the provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right and remedy to which they apply. All representations, warranties and guarantees made in the Contract Documents will survive final payment and termination or completion of the Agreement.

15.7 Debris Disposal

For all LFUCG projects any trash, construction demolition debris, yard waste, dirt or debris of any kind that is removed from the project site must be disposed of in accordance with local, state, and federal regulations. The disposal site or facility must be approved in advance by the LFUCG and disposal documentation is required. The Contractor will be responsible for payment of any fines associated with improper disposal of material removed from the project site.

END OF SECTION

PART V
SPECIAL CONDITIONS
INDEX

1. **BLASTING** – not applicable.

2. **RISK MANAGEMENT PROVISIONS**
INSURANCE AND INDEMNIFICATION

DEFINITIONS

(1) The CONTRACTOR understands and agrees that the Risk Management Provisions of this Contract define the responsibilities of the CONTRACTOR to the OWNER.

(2) As used in these Risk Management Provisions, the terms "CONTRACTOR" and "OWNER" shall be defined as follows:

a. "CONTRACTOR" means the contractor and its employees, agents, servants, owners, principals, licensees, assigns and subcontractors of any tier.

b. "OWNER" means the Lexington-Fayette Urban County Government (LFUCG) and its elected and appointed officials, employees, agents, boards, consultants, assigns, volunteers and successors in interest.

c. OWNER/ENGINEER's Consultant means Strand Associates, Inc.®

Strand Associates, Inc.® provided design services for the Project, which included preparation of Contract Documents, and will provide services during construction consisting of: responding to questions of OWNER and ENGINEER about the Contract Documents; preparing change orders as needed; providing shop drawing review; and reviewing CONTRACTOR progress pay requests. Strand Associates, Inc.® shall be provided with the same indemnification by CONTRACTOR as is provided for OWNER in the Contract Documents and shall be listed as an additional insured as is provided for OWNER in the Contract Documents. Excepting those noted above, no other duties or responsibilities shall be construed from the Contract Documents as being the obligation of Strand Associates, Inc.®

INDEMNIFICATION AND HOLD HARMLESS PROVISION

(1) It is understood and agreed by the parties that Contractor hereby assumes the entire responsibility and liability for any and all damages to persons or property caused by or resulting from or arising out of any act or omission on the part of Contractor or its employees, agents, servants, owners, principals, licensees, assigns or subcontractors of any tier (hereinafter "CONTRACTOR") under or in connection with this agreement and/or the provision of goods or services and the performance or failure to perform any work required thereby.

(2) CONTRACTOR shall indemnify, save, hold harmless and defend the Lexington-Fayette Urban County Government and its elected and appointed officials, employees, agents, volunteers, and successors in interest (hereinafter "LFUCG") from and against all

liability, damages, and losses, including but not limited to, demands, claims, obligations, causes of action, judgments, penalties, fines, liens, costs, expenses, interest, defense costs and reasonable attorney's fees that are in any way incidental to or connected with, or that arise or are alleged to have arisen, directly or indirectly, from or by CONTRACTOR's performance or breach of the agreement and/or the provision of goods or services provided that: (a) it is attributable to personal injury, bodily injury, sickness, or death, or to injury to or destruction of property (including the loss of use resulting therefrom), or to or from the negligent acts, errors or omissions or willful misconduct of the CONTRACTOR; and (b) not caused solely by the active negligence or willful misconduct of LFUCG.

(3) In the event LFUCG is alleged to be liable based upon the above, CONTRACTOR shall defend such allegations and shall bear all costs, fees and expenses of such defense, including but not limited to, all reasonable attorneys' fees and expenses, court costs, and expert witness fees and expenses, using attorneys approved in writing by LFUCG, which approval shall not be unreasonably withheld.

(4) These provisions shall in no way be limited by any financial responsibility or insurance requirements, and shall survive the termination of this agreement.

(5) LFUCG is a political subdivision of the Commonwealth of Kentucky. CONTRACTOR acknowledges and agrees that LFUCG is unable to provide indemnity or otherwise save, hold harmless, or defend the CONTRACTOR in any manner.

FINANCIAL RESPONSIBILITY

BIDDER/CONTRACTOR understands and agrees that it shall, prior to final acceptance of its bid and the commencement of any work, demonstrate the ability to assure compliance with the above Indemnity provisions and these other risk management provisions.

INSURANCE REQUIREMENTS

YOUR ATTENTION IS DIRECTED TO THE INSURANCE REQUIREMENTS BELOW, AAND YOU MAY NEED TO CONFER WITH YOUR INSURANCE AGENTS, BROKERS, OR CARRIERS TO DETERMINE IN ADVANCE OF SUBMISSION OF A RESPONSE THE AVAILABILITY OF THE INSURANCE COVERAGES AND ENDORSEMENTS REQUIRED HEREIN. IF YOU FAIL TO COMPLY WITH THE INSURANCE REQUIREMENTS BELOW, YOU MAY BE DISQUALIFIED FROM AWARD OF THE CONTRACT.

Required Insurance Coverage

BIDDER/CONTRACTOR shall procure and maintain for the duration of this contract the following or equivalent insurance policies at no less than the limits shown below and cause its subcontractors to maintain similar insurance with limits acceptable to LFUCG in order to protect LFUCG against claims for injuries to persons or damages to property which may

arise from or in connection with the performance of the work hereunder by CONTRACTOR. The cost of such insurance shall be included in any bid:

Coverage	Limits
General Liability	$1 million per occurrence, $2 million aggregate
Commercial Automobile Liability	$1 million per occurrence
Worker's Compensation	Statutory
Employer's Liability	$100,000.00
Excess/Umbrella Liability	$5 million per occurrence

The policies above shall contain the following conditions:

a. All Certificates of Insurance forms used by the insurance carrier shall be properly filed and approved by the Department of Insurance for the Commonwealth of Kentucky (DOI). LFUCG shall be named as an additional insured in the General Liability Policy and Commercial Automobile Liability Policy using the Kentucky DOI approved forms.

b. The General Liability Policy shall be primary to any insurance or self-insurance retained by LFUCG.

c. The General Liability Policy shall include a Products and Completed Operations endorsement or Premises and Operations Liability endorsement unless it is deemed not to apply by LFUCG.

d. LFUCG shall be provided at least 30 days advance written notice via certified mail, return receipt requested, in the event any of the required policies are canceled or non-renewed.

e. Said coverage shall be written by insurers acceptable to LFUCG and shall be in a form acceptable to LFUCG. Insurance placed with insurers with a rating classification of no less than Excellent (A or A-) and a financial size category of no less than VIII, as defined by the most current Best's Key Rating Guide shall be deemed automatically acceptable.

Renewals

After insurance has been approved by LFUCG, evidence of renewal of an expiring policy must be submitted to LFUCG, and may be submitted on a manually signed renewal endorsement form. If the policy or carrier has changed, however, new evidence of coverage must be submitted in accordance with these Insurance Requirements.

Deductibles and Self-Insured Programs

IF YOU INTEND TO SUBMIT A SELF-INSURANCE PLAN IT MUST BE FORWARDED TO LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT, DIVISION OF RISK MANAGEMENT, 200 EAST MAIN STREET, LEXINGTON, KENTUCKY 40507 NO LATER THAN A MINIMUM OF FIVE (5) WORKING DAYS PRIOR TO THE RESPONSE DATE. Self-insurance programs, deductibles, and self-insured retentions in insurance policies are subject to separate approval by Lexington-Fayette Urban County Government's Division of Risk Management, upon review of evidence of BIDDER/CONTRACTOR's financial capacity to respond to claims. Any such programs or retentions must provide LFUCG with at least the same protection from liability and defense of suits as would be afforded by first-dollar insurance coverage. If BIDDER/CONTRACTOR satisfies any portion of the insurance requirements through deductibles, self-insurance programs, or self-insured retentions, BIDDER/CONTRACTOR agrees to provide Lexington-Fayette Urban County Government, Division of Risk Management, the following data prior to the final acceptance of bid and the commencement of any work:

a. Latest audited financial statement, including auditor's notes.

b. Any records of any self-insured trust fund plan or policy and related accounting statements.

c. Actuarial funding reports or retained losses.

d. Risk Management Manual or a description of the self-insurance and risk management program.

e. A claim loss run summary for the previous five (5) years.

f. Self-Insured Associations will be considered.

Safety and Loss Control

CONTRACTOR shall comply with all applicable federal, state, and local safety standards related to the performance of its works or services under this Agreement and take necessary action to protect the life, health and safety and property of all of its personnel on the job site, the public, and LFUCG.

Verification of Coverage

BIDDER/CONTRACTOR agrees to furnish LFUCG with all applicable Certificates of Insurance signed by a person authorized by the insurer to bind coverage on its behalf prior to final award, and if requested, shall provide LFUCG copies of all insurance policies, including all endorsements.

Right to Review, Audit and Inspect

CONTRACTOR understands and agrees that LFUCG may review, audit and inspect any and all of its records and operations to insure compliance with these Insurance Requirements.

Additional Insured Endorsement

a. CONTRACTOR shall purchase and maintain liability insurance, as described above, specifically naming as additional insureds OWNER, ENGINEER, and OWNER/ENGINEER's Consultant as well as other individuals or entities identified, using Additional Insurance Endorsement Form CG 20 26 07 04, CG 20 10 07 04, or equivalent form. General liability policies shall also be endorsed with Form CG 20 37 07 04 to include the "products-completed operations hazard." Endorsements or General Liability policy shall not exclude supervisory or inspection services. CONTRACTOR shall also provide an Additional Insured Endorsement for the automobile policy.

b. CONTRACTOR shall, prior to the start of any work on the project by an subcontractor receive: (1) a certificate of insurance from each subcontractor naming OWNER, ENGINEER, and OWNER/ENGINEER's Consultant as well as other individuals and entities so identified as an additional insured, under each subcontractor's general liability for policy; and (2) the Additional Insured Endorsement language as required by paragraph 1 for subcontractor's operations. Certificate shall be Acord 25-S or equivalent.

c. That failure of CONTRACTOR or subcontractor to comply with the above requirements with respect to the Additional Insured Endorsement and/or Certificate of Insurance, shall not be construed as waiver of those provisions by OWNER, ENGINEER, and OWNER/ENGINEER's Consultant as well as other individuals and entities so identified.

DEFAULT

BIDDER/CONTRACTOR understands and agrees that the failure to comply with any of these insurance, safety, or loss control provisions shall constitute default and that LFUCG may elect at its option any single remedy or penalty or any combination of remedies and penalties, as available, including but not limited to purchasing insurance and charging BIDDER/CONTRACTOR for any such insurance premiums purchased, or suspending or terminating the work.

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3. **WAGE SCALES** – NOT APPLICABLE.

4. **WEATHER RELATED DELAYS**

A. The Project Completion date shall be established with the understanding that no extension of time will be granted for weather related delays that are within the average temperature or number of rain or snow days within a particular month. The average weather conditions shall be established by referencing the records of the National Oceanic and Atmospheric Administration (NOAA) and as defined herein.

B. Extensions of inclement weather shall be granted only when the work affected must be on schedule at the time of delay. No time will be granted for work which is behind schedule in excess of the actual delay caused by the weather, assuming the work had been on schedule.

C. Time granted for weather delays shall be requested on a monthly basis.

D. The weather experienced at the project site during the contract period must be found to be unusually severe, that is more severe than the adverse weather anticipated for the project location during any given month. The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the contractor.

E. The anticipated adverse weather delays shall be based on the National Oceanic and Atmospheric Administration (NOAA) climatography ten year average for the Lexington Bluegrass Airport KY US location. The Mean Number of Days of daily precipitation using >= 0.10 will determine the base line for monthly anticipated adverse weather evaluations. The contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities. Upon acknowledgement of the Notice to Proceed (NTP) and continuing throughout the contract, the contractor will record the occurrence of actual adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on critical path activities for 50 percent or more of the contractor's scheduled work date. The number of actual adverse weather delay days shall be calculated chronologically from the first to the last day of each month, and be recorded as full days. The number of actual adverse weather days greater than the number of anticipated adverse weather days, listed above, shall be the number of unusually severe weather days for the purposes of any contract extensions (actual adverse weather days - anticipated adverse weather days = unusually severe weather days.)

F. Definitions:

1. "Unusually severe weather" - weather that is more severe than the adverse weather anticipated for the season or location involved.

2. "Adverse weather" - atmospheric conditions at a definite time and place that are unfavorable to construction activities.

END OF SECTION

PART VI

CONTRACT AGREEMENT

INDEX

PART VI

CONTRACT AGREEMENT

THIS AGREEMENT, made on the _____ day of _____, 20___, by and between **Lexington-Fayette Urban County Government**, acting herein called "OWNER" and _____ **(bidder's name)** _____, doing business as *(an individual) (a partnership) (a corporation) located in the City of _____, County of _____, and State of _____, hereinafter called "CONTRACTOR."

WITNESSETH: That the CONTRACTOR and the OWNER in consideration of _____ Dollars and _____ Cents ($_____) quoted in the proposal by the CONTRACTOR, dated _____, hereby agree to commence and complete the construction described as follows:

1. SCOPE OF WORK

The CONTRACTOR shall furnish all the materials, supplies, machinery, equipment, tools, superintendence, labor, insurance, and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the General Conditions, and the Special Conditions of the Contract, the Specifications and Contract Documents therefore as prepared by Tate Hill Jacobs Architect Inc. for the **Police Roll Call West Envelope and HVAC** project.

2. TIME OF COMPLETION

The time estimated and authorized by the OWNER for the proper execution of the Work by the Contract, in full, is hereby fixed as three hundred (300) calendar days to substantial completion and sixty (60) calendar days to final completion. The time shall begin in accordance with the Notice to Proceed provided by OWNER.

3. ISSUANCE OF WORK ORDERS

Notice to begin Work will be given in whole or for part of the Work as determined by the OWNER pending the availability of funds. The order of construction will be as determined after consultation between the CONTRACTOR and the OWNER.

4. THE CONTRACT SUM

The OWNER agrees to pay the CONTRACTOR in current funds for the performance of the Contract, as quoted in the proposal, subject to any additions and deductions, as provided therein.

5. PROGRESS PAYMENTS

The OWNER shall make payments on account of the Contract, as provided in accordance with the General Conditions, less the aggregate of previous payments.

6. ACCEPTANCE AND FINAL PAYMENT

Final payment shall be due within ninety (90) days after completion of the Work, provided the Work be then fully completed and the Contract fully accepted.

Before issuance of final certificate, the CONTRACTOR shall submit evidence satisfactory to the Owner that all payrolls, material bills, and other indebtedness connected with the Work has been paid.

If, after the Work has been substantially completed, full completion thereof is materially delayed through no fault of the CONTRACTOR, the OWNER shall without terminating the Contract, make payment of the balance due for that portion of the Work fully completed and accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

7. THE CONTRACT DOCUMENTS

The Advertisement for Bids, Information for Bidders, the General Conditions, Performance and Payment Bonds, Contract Agreement, Special Conditions, Technical Specifications, any and all Addenda, and Proposal, Ion Wave Q&A, and Plan Drawings form the Contract, and they are fully a part of the Contract as if hereto attached or herein repeated.

8. EXTRA WORK

The OWNER, without invalidating the Contract, may order extra work or make changes by altering, adding to or deducting from the Work, the Contract Sum being adjusted accordingly. All such Work shall be executed and paid for in accordance with the General Conditions, which is a part of this Contract.

9. THE FOLLOWING IS AN ENUMERATION OF THE SPECIFICATIONS AND DRAWINGS (CONTRACT DOCUMENTS):

SPECIFICATIONS

SECTION NO.	TITLE
I	Advertisement for Bids
II	Information for Bidders
III	Form of Proposal
IV	General Conditions
V	Special Conditions
VI	Contract Agreement
VII	Performance and Payment Bonds
VIII	Addenda
IX	Technical Specifications and Drawings

IN WITNESSETH WHEREOF, the parties hereto have executed this Contract as of the date and year above written.

(Seal)

Lexington-Fayette Urban County Government.
Lexington, Kentucky
(Owner)

ATTEST:

_____
Clerk of the Urban County Council

BY: _____
MAYOR

_____
(Witness)

_____
(Title)

(Seal)

_____
(Contractor)

_____
(Secretary)*

BY: _____

_____
(Witness)

_____
(Title)

_____
(Address and Zip Code)

IMPORTANT: *Strike out any non-applicable terms.

Secretary of the Owner should attest. If the CONTRACTOR is corporation, Secretary should attest. Give proper title of each person-executing Contract.

PART VII

PERFORMANCE AND PAYMENT BONDS

1. PERFORMANCE BOND
2. PAYMENT BOND

PART VII

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that

_____
(Name of CONTRACTOR)

_____
(Address of CONTRACTOR)

a _____, hereinafter
(Corporation, Partnership, or Individual)

called Principal, and _____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
200 East Main Street, Third Floor
Lexington, Kentucky 40507

hereinafter called "OWNER" in the penal sum of: _____ Dollars, ($_____), for the payment of whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal by written agreement is entering into a Contract with OWNER for _____**(project name)**_____ in accordance with drawings and specifications prepared by: _____**(the Engineer)**_____ which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal shall promptly and faithfully perform said Contract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

The Surety hereby waives notice of any alteration or extension of time made by the OWNER.

Whenever, Principal shall be, and declared by OWNER to be in default under the Contract, the OWNER having performed OWNER'S obligations thereunder, the Surety may promptly remedy the default, or shall promptly:

(1) Complete the Contract in accordance with its terms and conditions or

(2) Obtain a bid or bids for completing the Contract in accordance with its terms and conditions, and upon determination by Surety of the lowest responsible bidder, or if the OWNER elects, upon determination by the OWNER and Surety jointly of the lowest responsible bidder, arrange for a Contract between such bidder and OWNER, and make available as Work progresses (even though there may be a default or a succession of defaults under the Contract or Contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Price", as used in this paragraph shall mean the total amount payable by OWNER to Principal under the Contract and any amendments thereto, less the amount properly paid by OWNER to Principal.

Any suit under this bond must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the OWNER named herein or the heirs, executors, administrators or successors of OWNER.

IN WITNESS WHEREOF, this instrument is executed in _____ (number) each one of which shall be deemed an original, this the _____ day of _____, 20_____.

ATTEST:

_____
(Principal) Secretary

_____
Principal

BY: _____(s)

_____
(Address)

_____

_____
Witness as to Principal

_____
(Address)

_____

_____
Surety

ATTEST:

BY: _____
Attorney-in-Fact

_____
(Surety) Secretary

_____
(Address)

_____

(SEAL)

_____
Witness as to Surety

_____
(Address)

_____

TITLE: _____
Surety

_____

BY: _____

_____

TITLE: _____

NOTE: The number of executed counterparts of the bond shall coincide with the number of executed counterparts of the Contract.

PART VII

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENT: that

_____
(Name of Contractor)

_____
(Address of Contractor)

a _____, hereinafter
(Corporation, Partnership or Individual)

called Principal, and _____
(Name of Surety)

_____
(Address of Surety)

hereinafter called Surety, are held and firmly bound unto:

LEXINGTON-FAYETTE URBAN COUNTY GOVERNMENT
200 East Main Street, Third Floor
Lexington, Kentucky 40507

Obligee, hereinafter called OWNER, for the use and benefit of claimants as hereinafter defined, in the amount of _____ Dollars ($_____) the payment whereof Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, Principal by written agreement is entering into a Contract with OWNER for **(project name)** in accordance with drawings and specifications prepared by: **(the Engineer)** which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Principal shall promptly make payment to all claimants as hereinafter defined for all labor and material used or reasonably required for use in the performance of the Contract, then this obligation shall be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions.

1. A claimant is defined as one having a direct contract with the Principal or with a Subcontractor of the Principal for labor, material, or both, used or reasonably required for use in the performance of the Contract, labor and material being construed to include that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental of equipment directly applicable to the Contract.

2. The above named Principal and Surety hereby jointly and severally agree with the OWNER that every claimant as herein defined, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed, or materials were furnished by such claimant, may sue on this bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. The OWNER shall not be liable for the payment of any costs or expenses of any such suit.

3. No suit or action shall be commenced hereunder by any claimant:

   (a) Unless claimant, other than one having a direct contract with the Principal, shall have given written notice to any two of the following: The Principal, the OWNER, or the Surety above named, within ninety (90) days after such claimant did or performed the last of the Work or labor, or furnished the last of the materials for which said claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the Work or labor was done or performed. Such notice shall be served by mailing the same by registered mail or certified mail, postage prepaid, in an envelope addressed to the Principal, OWNER, or Surety, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid project is located, save that such service need not be made by a public officer.

   (b) After the expiration of one (1) year following the date on which Principal ceased Work on said Contract, it being understood, however, that if any limitation embodied in this bond is prohibited by any law controlling the construction hereof such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law.

   (c) Other than in a state court of competent jurisdiction in and for the county or other political subdivision of the state in which the project, or any part thereof, is situated, or in the United States District Court for the district in which the project, or any part thereof, is situated, and not elsewhere.

4. The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder, inclusive of the payment by Surety of mechanics' liens which may be filed of record against aid improvement, whether or not claim for the amount of such lien be presented under and against this bond.

IN WITNESS WHEREOF, this instrument is executed in _____ counterparts, each one of
(number)

which shall be deemed an original, this the _____ day of _____, 20_____.

ATTEST:

_____
(Principal)

_____
(Principal) Secretary

(SEAL) BY: _____(s)

_____
(Address)

_____

_____
(Witness to Principal)

_____
(Address)

_____

_____
(Surety)

ATTEST:

BY: _____
(Attorney-in-Fact)

_____
(Surety) Secretary

(SEAL)

_____ _____
Witness as to Surety (Address)

_____
(Address)

_____

NOTE: The number of executed counterparts of the bond shall coincide with the number of executed counterparts of the Contract.

END OF SECTION

PART VIII

ADDENDA

All addenda issued during the bidding of the Project will be reproduced in the signed Contract Documents, on the pages following this heading sheet.

Addendum Number	Title	Date
1.		
2.		
3.		
4.		
5.		

IX. TECHNICAL SPECIFICATIONS

Police Roll Call West Envelope and HVAC Project

1795 Old Frankfort Pike
Lexington, KY

LFUCG Bid #: 78-2024

Lexington Fayette Urban County Government

LEXINGTON

Architect.....Tate Hill Jacobs Architects
Structural Engineer.....SDG
MEP Engineer.....N3D

Date : **May 3, 2024**
CONSTRUCTION DOCUMENTS

TABLE OF CONTENTS

Police Roll Call West Envelope and HVAC Project
Lexington Fayette Urban County Government
LFUCG RFP No. 78-2024

Tate Hill Jacobs Architects
Construction Documents
May 3, 2024

DOCUMENT 002000 - INFORMATION AVAILABLE TO BIDDERS

1. WHITE POLLARD ENVELOPE STUDY.

A. A copy of an existing envelope survey prepared by White Pollard Architects. July 6, 2018 is available upon request.

2. RECORD DRAWINGS (EXISTING BUILDING).

A. A copy of the original record drawings for the existing building are available upon request.

SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Contract description.
2. Times of Completion and Liquidated Damages
3. Pre-Bid Meeting
4. Work by Owner.
5. Contractor's use of Site and premises.
6. Work sequence.
7. Owner occupancy.
8. Permits.
9. Specification conventions.

B. Related Requirements:
1. Section 015000 - Temporary Facilities and Controls: Limitations and procedures governing temporary use of Owner's facilities.
2. Section 017000 - Execution and Closeout Requirements: Coordination of Owner-installed products.

1.2 THE CONTRACT DOCUMENTS

A. The drawings and specifications are intended to be fully explanatory and supplementary. However, should anything be shown, indicated or specified on one and not the other, it shall be done the same as if shown, indicated or specified in both.

B. It shall be the responsibility of all Contractors and Subcontractors to carefully examine all Drawings, Specifications and Contract Documents pertaining to all phases of the construction in order that Contractor and Subcontractors may foresee all requirements for coordination of their work. Submission of a bid shall be construed as evidence that such an examination has been made. Claims based on unforeseen requirements will not be considered.

C. Should any error or inconsistency appear in Drawings or Specifications, the Contractor, before proceeding with the work, must make mention of the same to the Architect for proper adjustment, and in no case proceed with the work in uncertainty or with insufficient drawings.

D. Bidders, subcontractors and suppliers, before submitting proposals, shall become fully familiar with the documents as to the nature and scope of work. Requests for additional compensation resulting from any difficulties encountered, which could have been foreseen with a thorough examination of the Bid Documents and asking questions for clarifications, will not be recognized.

E. The Contractor and each Subcontractor shall be responsible for verification of all measurements at the building before ordering any materials or doing any work. No additional compensation

shall be allowed due to differences between actual dimensions and dimensions indicated on the Drawings. Any such discrepancy in dimensions, which may be found, shall be submitted to the Architect for consideration before the Contractor proceeds with the work in the affected areas.

F. Contractors shall follow sizes in Specifications or figures on Drawings, in preference to scale measurements and follow detail drawings in preference to general drawings.

G. Where it is obvious that a drawing illustrates only part of a given work or of a number of items, the remaining shall be deemed repetitions and so constructed.

1.3 CONTRACT DESCRIPTION

A. The project entails a total envelope replacement for an approximately 17,100 sf 3 story office type building from the 1990's. The building consists of a steel column and beam structure, concrete slabs and metal stud framed walls and parapet. The roof is corrugated metal deck, flat, with tapered insulation and a 2-ply modified bitumen roofing system. The existing exterior of the building is EIFS on gypsum on mtl studs and has begun to fail. Work of the project will entail demolition and replacement of all exterior envelope components including, the EIFS, gypsum sheathing batt insulation in the wall cavity, windows and a complete tear-off and replacement of the roof. New canopies are planned for the two main entries while a pre-engineered canopy and walkway cover are also included. Aluminum storefront entrances and 2 steel doors are scheduled for replacement as well. Building systems work will include replacement of select HVAC heat pumps, new exterior lighting and new roof drains and emergency overflow.

B. Substantial Completion: Subject to the conditions of contract, the total work to be done under this contract shall commence on the date the Contractor receives the Notice to Proceed and shall Substantially Complete the work within the time specified.

C. The date of Substantial Completion shall be the date certified by the Architect when the work is sufficiently complete, in accordance with the Contract Documents, so that the Owner may conditionally accept, and beneficially occupy and use, all of the systems and facilities provided under this Construction Contract. The Owner will not take possession of the work if it has not been cleaned under the requirements of the Contract.

D. Final Completion: Subject to the conditions of the contract, the total work to be done under this combined Construction Contract shall be fully completed within sixty (60) consecutive calendar days after the Date of Substantial Completion. The Date of Final Completion shall be the date that the work is complete and all Contract requirements have been fulfilled by the Contractor.

1.4 PRE-BID MEETING

A. A Pre-Bid Meeting will be held at the time and date identified in the Advertisement for Bids.

Police Roll Call West Envelope and HVAC Project
Lexington Fayette Urban County Government
LFUCG RFP No. 78-2024

Tate Hill Jacobs Architects
Construction Documents
May 3, 2024

1.5 CONTRACTOR'S USE OF SITE AND PREMISES

A. Restricted Use of Site: Owner will occupy the Project site during the entire period of construction. Contractor's use of Project Site is limited only by Owner's right to perform work or to retain other contractors on portions of Project. Access to Site: Utilize existing Old Frankfort Pike.

B. Construction Operations: Limited to areas indicated on Drawings. Do not disturb areas of the site beyond areas in which the Work is indicated except as specifically noted. This requirement will be strictly observed and enforced.

C. Site trailers and Storage limits: Confine storage of materials and support facilities to area within the site development area. Use of other areas of the site for storage facilities is prohibited without prior approval and authorization by Owner.

D. Utility Outages and Shutdown:

1. Coordinate and schedule electrical and other utility outages with Owner.
2. Outages: Allowed only at previously agreed upon times.

E. Conduct of Construction Workers:

1. No smoking is allowed on site during this work.

2. No alcoholic beverages or firearms are allowed on property. These conditions are grounds for immediate and permanent dismissal from the site. Workers must wear shirts, may not use foul language. No drugs allow on-site or to be used while on site.

3. Photo ID Badges of all personnel are required to be provided by the contractor, identifying name and company for each employee on this jobsite.

F. General Contractor is responsible for daily clean-up of all construction areas, including non-construction areas that are impacted by construction work.

1.6 WORK SEQUENCE

A. Construct Work as required to accommodate Owner's occupancy requirements during construction period.

1.7 OWNER OCCUPANCY

A. Partial Owner Occupancy: Owner reserves the right to occupy and to place and install equipment in completed areas of building, before Substantial Completion, provided such occupancy does not interfere with completion of the Work. Such placement of equipment and partial occupancy shall not constitute acceptance of the total work.

B. Architect will prepare a Certificate of Substantial Completion for any specific portion of Work to be occupied before Owner Occupancy.

C. Before partial Owner occupancy, plumbing and electrical systems shall be fully operational, and required tests and inspections shall be successfully completed. On occupancy, Owner will provide, operate and maintain plumbing and electrical systems serving occupied areas of the building.

D. On occupancy, Owner will assume responsibility for maintenance and custodial service for occupied areas of the building.

E. Obtain a Certificate of Occupancy from authorities having jurisdiction before Owner Occupancy.

F. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.

G. Furnish all necessary permits for construction of Work.

1.8 SPECIFICATION CONVENTIONS

A. These Specifications are written in imperative mood and streamlined form. This imperative language is directed to Contractor unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. List of Alternates. See 1.4 Schedule of Alternates.

B. Alternative submission procedures.

C. Documentation of changes to Contract Sum/Price and Contract Time.

1.2 RELATED SECTIONS

A. Document 003000- Instructions to Bidders, and Supplemental to Instruction to Bidders.

B. Document 004000 - Form of Proposal.

C. Document 005000 – Form of Agreement: Incorporating monetary value of accepted Alternatives.

D. Section 011000 - Summary: Time Frame Requirements for contractor.

1.3 SUBMISSION REQUIREMENTS

A. Submit alternatives identifying the effect on adjacent or related components.

B. Alternatives quoted on Bid Forms will be reviewed and accepted or rejected at the Owner's option. Accepted alternatives will be identified in the Owner-Contractor Agreement. Contractor will be selected based on combination of Base Bid plus selected Alternates.

C. Coordinate related work and modify surrounding work to integrate the Work of each alternative.

1.4 SCHEDULE OF ALTERNATES

A. ADD Alternate No. 1 – **Paint finish.**
   1. **Base Bid:** No pricing for any work aside from what is outlined in the drawings.
   2. Alternate: Provide paint finish system (prep, primer + 2 coats) for all walls in all interior areas, rooms and corridors.

END OF SECTION

SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Administrative / Supervisory Personnel.

B. Coordination and Project conditions.

C. Field Engineering.

D. Preconstruction meeting.

E. Hazardous Materials.

F. Pre-Construction Meeting.

G. Progress meetings.

H. Preinstallation meetings.

I. Special Procedures.

1.2 ADMINISTRATIVE / SUPERVISORY PERSONNEL

A. Each contractor shall maintain a competent Job superintendent who has documented experience working on a project of this type, scope and complexity; who is assigned to only this project, full-time through Final completion. Said superintendent shall have authority to act in the contractor's behalf and represent the contractor at all job and Safety Meetings.

B. In addition to the General Contractor's Job Superintendent and other administrative personnel required for performance of the work, each Subcontractor shall provide specific coordinating personnel as reasonably required for interfacing their work with other work of total project.

C. General Contractor and all subcontractors working on LFUCG or Lexington Police property shall be responsible for notifying the Owner of any personnel doing work on-site that have a communicable disease, including but not limited to: Tuberculosis, measles, mumps, rubella, COVID, etc.

1.3 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.

B. Verify that utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.

C. Coordinate space requirements, supports, and installation of mechanical and electrical Work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit as closely as practical; place runs parallel with lines of building. Use spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

D. Coordination Drawings: Prepare as required to coordinate all portions of Work. Show relationship and integration of different construction elements that require coordination during fabrication or installation to fit in space provided or to function as intended. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are important.

E. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.

F. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within construction. Coordinate locations of fixtures and outlets with finish elements.

G. Coordinate completion and clean-up of Work of separate Sections in preparation for Substantial Completion and for portions of Work designated for Owner's occupancy.

H. After Owner's occupancy of premises, coordinate access to Site for correction of defective Work and Work not complying with Contract Documents, to minimize disruption of Owner's activities.

1.4 FIELD ENGINEERING

A. Provide per Section 017000 Execution and Closeout Requirements.

1.5 PRECONSTRUCTION MEETING

A. Architect will schedule meeting after Notice of Award.

B. Attendance Required: Architect/Engineer, Owner, all major Subcontractors including plumbing, electrical, and Contractor.

C. Minimum Agenda:

1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission list of Subcontractors, list of products, schedule of values, and Progress Schedule.
5. Designation of personnel representing parties in Contract and Architect/Engineer.
6. Communication procedures.

7. Procedures and processing of requests for interpretations, field decisions, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
8. Scheduling.
9. Critical Work Sequencing.
10. Use of premises by Owner and Contractor.
11. Owner's requirements and partial occupancy of campus.
12. Construction facilities and controls.
13. Temporary utilities.
14. Security and housekeeping procedures.
15. Procedures for testing.
16. Procedures for maintaining record documents.
17. Requirements for start-up of equipment.
18. Inspection and acceptance of equipment put into service during construction period.

1.6 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at maximum bi-monthly intervals. Owner shall reserve the right to increase or decrease the frequency of progress meetings as required.

B. Architect will make arrangements for meetings, prepare agenda with copies for participants, and preside over meetings.

C. The Contractor's Superintendent shall prepare a detailed written report of progress made since the last meeting and planned work for the following 30-day period. Copies shall be provided by the Contractor and distributed at the meeting.

D. Attendance Required: Job superintendent, major Subcontractors, Contractors and suppliers, and Architect/Engineer, Owner, as appropriate to agenda topics for each meeting.

E. Minimum Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittal schedule and status of submittals.
6. Review of off-Site fabrication and delivery schedules.
7. Maintenance of Progress Schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on Progress Schedule and coordination.
13. Other business relating to Work.

F. Progress Meeting Construction Reports: The General Contractor shall provide written copy of each meeting's construction report within five (5) days after meeting to the architect for inclusion in the full meeting minutes.

G. Meeting Minutes: The Architect shall record minutes of meetings and distribute copies within ten (10) days after meeting to all participants and those affected by decisions made.

1.7 PREINSTALLATION MEETINGS

A. When required in individual Specification Sections, convene preinstallation meetings at Project Site minimum two weeks before starting Work of specific Section.

B. Submittals / Shop Drawings are to have already been received by Architect/Engineer and returned to Contractor.

C. Require attendance of parties directly affecting, or affected by, Work of specific Section.

D. Notify Architect/Engineer minimum one week in advance of meeting date.

E. Prepare agenda and preside over meeting:
1. Review conditions of installation, preparation, and installation procedures.
2. Review submittal and documentation requirements.
3. Review coordination with related Work.

F. The General Contractor shall record minutes of the meeting and distribute to participants within five days after meeting, to those affected by decisions made.

G. List of Pre-Installation Meetings – Assume every Specification Section will require at least one pre-install meeting. Review ALL Spec Sections for specifics.

1.8 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting:
1. Structural integrity of element.
2. Integrity of weather-exposed or moisture-resistant elements.
3. Efficiency, maintenance, or safety of element.
4. Visual qualities of sight exposed elements.
5. Work of Owner or separate contractor.

1.9 Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and non-conforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

B. Execute work by methods to avoid damage to other Work, and to provide proper surfaces to receive patching and finishing.

C. Cut masonry and concrete materials using masonry saw or core drill.

D. Restore Work with new products in accordance with requirements of Contract Documents.

E. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

F. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

G. At penetrations of fire or smoke rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 078400, to full thickness of penetrated element.

H. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.

I. Identify hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.

1.10 SPECIAL PROCEDURES

A. Remove debris and abandoned items from construction area and from any concealed spaces.

B. Close openings in exterior surfaces to protect all work from weather and extremes of temperature and humidity.

C. Where change of plane of 1/4 inch or more occurs, submit recommendation for providing smooth transition; to Architect/Engineer for review/approval prior to commencement of the work.

D. Finish surfaces as specified in individual product sections

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

END OF SECTION 013000

SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Submittal procedures.

B. Construction progress schedules.

C. Proposed product list.

D. Product data.

E. Use of electronic CAD files of Project Drawings.

F. Shop Drawings.

G. Samples.

H. Design data.

I. Test reports.

J. Certificates.

K. Manufacturer's instructions.

L. Manufacturer's field reports.

M. Erection Drawings.

N. Construction photographs.

1.2 SUBMITTAL PROCEDURES

A. Transmit each submittal each submittal with Contractor's standard Cover Letter/Transmittal.

B. Sequentially number transmittal forms. Submittals are to be number to correspond to specification sections. Mark revised submittals with original number, an R and sequential numeric suffix.

C. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.

D. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.

E. Schedule submittals to expedite Project, and submit electronic submittals via email as PDF electronic files. Coordinate submission of related items. Hardcopy of certain submittals may also be required and will be determined at the Pre-construction meeting.

F. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.

G. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.

H. Allow space on submittals for Contractor and Architect/Engineer review stamps.

I. When revised for resubmission, identify changes made since previous submission.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

K. Submittals not requested will not be recognized nor processed.

L. Include all components of a system or assembly as required for a complete review.

M. Incomplete Submittals: Architect/Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Architect/Engineer.

1.3 CONSTRUCTION PROGRESS SCHEDULES – Critical Path

A. Submit initial Critical Path Schedule within 10 days after date of Notice of Award of Contract. After review, resubmit required revised data within five days.

B. Submit revised Progress Schedules with each Application for Payment.

C. Distribute copies of reviewed schedules to subcontractors, suppliers, and other concerned parties.

D. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

E. Submit computer generated horizontal bar chart with separate line for each major portion of Work or operation, identifying first work day of each week.

F. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.

G. Indicate estimated percentage of completion for each item of Work at each submission.

H. Submit separate schedule of submittal dates for shop drawings, product data, and samples, including Owner furnished products, and dates reviewed submittals will be required from Architect/Engineer. Indicate decision dates for selection of finishes.

I. Indicate delivery dates for Owner furnished products.

J. Revisions to Schedules:
1. Indicate progress of each activity to date of submittal, and projected completion date of each activity.
2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
3. Prepare narrative report to define problem areas, anticipated delays, and impact on Schedule. Report corrective action taken, or proposed, and its effect including effect of changes on schedules of separate contractors.

1.4 PROPOSED PRODUCT LIST

A. Within 10 days after date of Owner-Contractor Agreement, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.5 PRODUCT DATA

A. Product Data: Action Submittal: Submit to Architect/Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.

B. Provide submittals as PDF electronic files.

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

D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.6 DIGITAL PROJECT DATA LICENSING

A. Use of Architect's/Engineer's Digital Data Files: Digital data files of Architect's/Engineer's BIM model or CAD drawings may be provided by Architect/Engineer upon request for Contractor's use during construction.

B. Conditions for Use:

1. Digital data files may be used by Contractor to expedite production of Shop Drawings, for the Project. Use for other Projects or purposes is not allowed.

2. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:
   a. Use of files is solely at receiver's risk. Architect/Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Architect/Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
   b. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
   c. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
   d. Receiver shall not hold Architect/Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
   e. Receiver shall understand that even though Architect/Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
   f. Receiver shall not hold Architect/Engineer responsible for such viruses or their consequences, and shall hold Architect/Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

1.7 SAMPLES

A. Samples: Action Submittal: Submit to Architect/Engineer for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.

B. Samples for Selection as Specified in Product Sections:

   1. Submit to Architect/Engineer for aesthetic, color, and finish selection.
   2. Submit Samples of finishes, textures, and patterns for Architect/Engineer selection.

C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.

D. Include identification on each Sample, with full Project information.

E. Submit number of Samples specified in individual Specification Sections; Architect/Engineer will retain one Sample.

F. After review, produce copies and distribute according to "Submittal Procedures" Article and for record documents described in Section 017000 - Execution and Closeout Requirements.

1.8 TEST REPORTS

A. Informational Submittal: Submit reports for Architect/Engineer's knowledge as Contract administrator or for Owner.

B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.9 CERTIFICATES

A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Architect/Engineer, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product but must be acceptable to Architect/Engineer.

1.10 MANUFACTURER'S INSTRUCTIONS

A. Informational Submittal: Submit manufacturer's installation instructions for Architect/Engineer's knowledge as Contract administrator or for Owner.

B. Submit printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing, to Architect/Engineer in quantities specified for Product Data.

C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.11 MANUFACTURER'S FIELD REPORTS

A. Informational Submittal: Submit reports for Architect/Engineer's knowledge as Contract administrator or for Owner.

B. Submit report within 5 days of observation to Architect/Engineer for information.

C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.12 CONSTRUCTION PHOTOGRAPHS

A. When requested by Owner, Architect or Engineer, provide photographs of site and construction of specified work.

B. Digital Images: Deliver complete set of digital image electronic files on CD-ROM + flash Drive to Owner with Project record documents. Identify electronic media with date photographs were taken. Submit images that have same aspect ratio as sensor, uncropped.

1. Digital Images: Uncompressed TIFF format, produced by digital camera with minimum sensor size of 4.0 megapixels, and image resolution of not less than 1024 by 768 pixels.
2. Date and Time: Include date and time in filename for each image.

1.13 CONTRACTOR REVIEW

A. Review for compliance with Contract Documents and approve submittals before transmitting to Architect/Engineer.

B. Contractor: Responsible for:

1. Determination and verification of materials including manufacturer's catalog numbers.
2. Determination and verification of field measurements and field construction criteria.
3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
4. Determination of accuracy and completeness of dimensions and quantities.
5. Confirmation and coordination of dimensions and field conditions at Site.
6. Construction means, techniques, sequences, and procedures.
7. Safety precautions.
8. Coordination and performance of Work of all trades.

C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.

D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Architect/Engineer.

1.14 ARCHITECT/ENGINEER REVIEW

A. Do not make "mass submittals" to Architect/Engineer. "Mass submittals" are defined as six or more submittals or items in one day or 15 or more submittals or items in one week. If "mass submittals" are received, Architect/Engineer's review time stated above will be extended as necessary to perform proper review. Architect/Engineer will review "mass submittals" based on priority determined by Architect/Engineer after consultation with Owner and Contractor.

B. Informational submittals and other similar data are for Architect/Engineer's information, do not require Architect/Engineer's responsive action, and will not be reviewed or returned with comment.

C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.

D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 013300

SECTION 014100 - SPECIAL INSPECTION & TESTING

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes administrative and procedural requirements for Special Inspection as defined in Chapter 17 of the Kentucky Building Code.

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

C. Perform Tests & Inspections as specified.

1.03 SUBMITTALS

A. Overall:

1. Prepare and submit certifications:

a. Contractor's Statement of Responsibility: Submit before the start of construction, acknowledging the following:

1) Awareness of the special requirements contained in this Statement of Special Inspections.
2) Acknowledgement that control will be exercised by the contractor to ensure conformance with the construction documents.
3) Description of the procedures within the contractor's organization to exercise such control.
4) The method by and frequency of which reports are distributed to the persons in the contractor's organization exercising the control.
5) Identification and qualifications of the persons in the contractor's organization exercising such control and their positions within the organization.

b. Inspector's Qualifications: Inspection Agency shall submit before the start of construction.
c. Inspector's Final Certification: Inspection Agency shall submit after completion of inspections.

B. Fabricators:

1. Prepare and submit inspection reports:

a. Inspection of Fabricator's Quality Control Procedures

2. Prepare and submit certifications:

a. Quality Control Certification
b. Fabrication Quality Control Procedures
c. Fabricators Certificate of Compliance: stating that the work was performed in accordance with the approved construction documents (submitted at the completion of such work).
d. If fabricator is not Nationally Certified, then Special Inspections must be performed in the fabricator's shop.

E. Steel Construction:

1. Prepare and submit inspection reports:

a. Inspection of marking and connection details for all members and connections – verify all steel members are installed in the correct locations and are connected in accordance with the construction documents and approved erection drawings.
b. Inspection of bolt pretensioning for each fully-pretensioned bolted connection.
c. Visual inspection of all non-pretensioned bolted connections including anchor bolts.
d. Visual inspection of all field welds.

2. Prepare and submit certifications:

a. Certified Mill Test Reports (MTRs) for steel, bolts, nuts, washers, and weld filler metal (for field welds).
1) Only field material certifications are required where a Nationally Certified fabricator is performing the work.

1.04 QUALIFICATIONS

A. Use a qualified Inspector to perform all Inspections required by this Section.

B. Inspector's qualifications shall include information which provides evidence of the knowledge and experience necessary to qualify a person as an Inspector for the category of work being certified.

C. The Inspection agency shall be employed by the Owner.

D. Inspectors perform their duties independent from the construction quality control staff employed by the Contractor.

E. More than one Inspector may be required to provide the varied knowledge and experience necessary to adequately inspect all the categories of work requiring Inspection.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 DUTIES AND RESPONSIBILITIES OF THE INSPECTOR

A. The Inspector shall observe the Work and review tests performed by the contractor's independent agent to ensure conformance with the design drawings and specifications, and the applicable workmanship provisions of the Kentucky Building Code:

1. Reviewed shop drawings may be used only as an aid to inspection.

a. The Special Inspector shall observe activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.
b. The Special Inspector shall submit timely inspection reports; weekly at a maximum.

B. The Special Inspector shall obtain from the contractor all certifications required to be submitted as part of the inspection requirements (e.g. Contractor's Statement of Responsibility, Fabricators' Quality Control Plans, Material Certifications, etc.) and submit them along with the field inspections and test review that the Special Inspector performs. Inspection submittals by the Inspector include ALL items included above, not just the ones that the Inspector prepares.

C. The Inspector shall cooperate with the Contractor and provide timely service, keep records of all inspections, and furnish them in a timely manner to the Architect, and Contractor as construction progresses.

D. Discrepancies shall be brought to the immediate attention of the Contractor for correction. If discrepancies are not corrected, the discrepancies shall be brought to the attention of the Architect prior to the completion of that phase of work.

E. Special Inspection Reports shall include the following:

1. Name, address, and telephone number of Inspector performing the inspection and making the report.
2. Qualifications and Certifications of the Inspector performing the inspection and making the report.
3. Dates and locations of samples and tests or inspections, date of report.
4. Record of temperature and weather conditions at time of sample taking and testing and inspecting.
5. Description of the Work, identification of products, Specification Section, tests reviewed, and inspection methods.
6. Complete test or inspection data results.
7. Test review and inspection results and an interpretation of test results.
8. Statement on condition of substrates and their acceptability for installation of the the next phase of work – according to the Construction Documents.

9. Statement that products being installed at site comply with requirements.
10. Comments and professional opinion on whether tested, inspected, or installed Work complies with the Contract Document requirements.
11. Statement whether conditions, products, and installation may affect warranty of any products installed, according to the Construction Documents.
12. Other required inspections and/or tests indicated in individual Specification Sections.

F. Special Inspector's Final Certificates shall state that all items requiring Inspection and Testing were fulfilled and are in conformance with the approved design and shop drawings, specifications, approved change orders, and the applicable provisions of the Kentucky Building Code.

1. Items that were not in conformance and any unresolved discrepancies shall be itemized in the report.

a. Final report shall be bound, divided by construction type, and in chronological order.
b. Final Report shall be prepared by, sealed, and signed by the Licensed Kentucky Professional Engineer employed by the Special Inspection and Testing Agency under whose supervision the inspection and testing work was performed.

3.02 DUTIES AND RESPONSIBILITIES OF THE CONTRACTOR

A. Notify the Inspector with adequate advance notice when construction is ready to be inspected.

B. Provide Inspector access to plans, specifications, shop drawings, and change orders at the jobsite.

C. Submit required certifications (e.g. Contractor's Statement of Responsibility, Fabricators' Quality Control Plans, Material Certifications, etc.) to Inspector.

D. Provide Inspector access to work, including equipment with operator when necessary. Access to equipment includes, but is not limited to, man lifts, excavation equipment, etc.

E. Provide and make samples of materials to be tested in required quantities.

F. Engage an independent, qualified testing laboratory to perform required tests.

G. Provide storage space for Structural Testing/Inspection Agency's exclusive use, such as for storing and curing concrete testing samples. If required by the Inspector, Contractor shall provide cure box with electricity, water, and blankets for curing concrete specimens.

H. Provide labor to assist the Structural Testing/Inspection Agency in performing tests/inspections.

I. Retain at the jobsite all Inspection records submitted by the Inspector and provide these records for review by the Architect and Building Inspector upon request.

J. Maintain a discrepancy log on site. Log shall list each discrepancy documented by the Inspector, state the date of discovery and Inspector's report number. Provide room for the

Inspector to sign and date when said discrepancy is corrected. No work containing discrepancy shall be covered prior to having reinspection and approval by the Inspector.

K. Cooperate with the Inspector, Architect, and Building Inspector in resolving any Inspection related coordination or quality problems.

L. Resolve non-conforming work before additional work is done that would make it difficult to resolve non-conforming work.

M. Costs of additional retesting that are required due to non-conforming work may be charged to the Contractor.

N. Neither the observation of the Architect in the administration of the contract, nor tests/inspections by the Testing/Inspection Agency, nor approvals by persons other than the Architect shall relieve the Contractor from his obligation to perform the work in accordance with the Contract Documents.

END OF SECTION 014100

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Temporary Utilities:

1. Temporary electricity.
2. Temporary lighting for construction purposes.
3. Temporary heating.
4. Temporary cooling.
5. Temporary ventilation.
6. Communication services.
7. Temporary water service.
8. Temporary sanitary facilities.

B. Construction Facilities:

1. Field storage.
2. Vehicular access.
3. Parking.
4. Progress cleaning and waste removal.
5. Project identification.

C. Temporary Controls:

1. Barriers.
2. Enclosures and fencing.
3. Security.
4. Water control.
5. Dust control.
6. Erosion and sediment control.
7. Noise control.
8. Pest and rodent control.
9. Pollution control.
10. Worker Conduct.

D. Removal of utilities, facilities, and controls.

E. In addition to temporary MEP/FP services for the construction process, the General Contractor is responsible for maintaining all existing services and systems including but not limited to data, mechanical, electrical, plumbing and fire protection services that are necessary for the continual, 24-hr operation of this Emergency Service Owner-occupied facility throughout the entirety of the construction process and until notified by the owner otherwise.

F. For all phases of the work, contractor to provide temporary barricades separating building users from the work of the project. Maintain and coordinate egress with fire marshal and phasing. Barricade to be, at a minimum 2x4 studs, 16" o.c. with ¾ plywood sheathing and batt insulation

for the entirety of the barrier and tight at top at bottom. Provide plastic or manufactured product such as Siplast temporary enclosure product for dust control. Typ as required per each phase and to be removed at the end of each phase.

1.2 REFERENCES

A. ASTM International:

1. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
2. ASTM E 90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
3. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

1.3 TEMPORARY ELECTRICITY

A. Use Owners existing power service. Provide temporary electric feeder from existing building. Exercise measures to conserve energy and Do Not disrupt Owner's use of service. If at any time usage appears egregious, owner reserves the right to deny utility connections and insist that the contractor provide a secondary service till the end of the project.

B. Provide power outlets with branch wiring and distribution boxes as required for construction operations. Provide suitable, flexible power cords as required for portable construction tools and equipment.

C. Complement existing power service capacity and characteristics as required for construction operations.

1.4 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

A. Provide and maintain lighting for construction operations.

B. Provide and maintain lighting to exterior staging and storage areas after dark for security purposes.

C. Provide and maintain 0.25 watt/sq ft lighting to interior work areas after dark for security purposes.

D. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, lamps, and the like, for specified lighting levels. See individual specification sections, especially 092116 Gypsum Board Assemblies, and 099000 Painting for minimum lighting requirements for installation of specific systems.

E. Maintain lighting and provide routine repairs.

1.5 TEMPORARY HEATING

A. Owner will pay cost of temporary heat. Exercise measures to conserve energy and use Owners existing heat plant, extend and supplemented with temporary heat devices as needed to maintain specified conditions for construction operations. Do Not disrupt Owner's use of service. If at any time usage appears egregious, owner reserves the right to deny utility connections and insist that the contractor provide a secondary service till the end of the project.

B. Ensure insulation is utilized in areas under construction during sever weather.

C. Enclose building before activating temporary heat according to "Enclosures and Fencing" Article in this Section.

1.6 TEMPORARY COOLING

A. Owner will pay cost of temporary cooling. Exercise measures to conserve energy and use Owners existing cooling plant, extend and supplemented with temporary devices as needed to maintain specified conditions for construction operations. Do Not disrupt Owner's use of service. If at any time usage appears egregious, owner reserves the right to deny utility connections and insist that the contractor provide a secondary service till the end of the project

B. Enclose building before activating temporary cooling according to "Enclosures and Fencing" Article in this Section.

C. Before operating permanent equipment for temporary cooling purposes, verify installation is approved for operation, equipment is lubricated, and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts. Replace filters at Substantial Completion. Contractor shall refer to 200100 for additional requirements on operating permanent equipment for temporary use.

D. Maintain maximum ambient temperature of 80 degrees F in areas where construction is in progress unless indicated otherwise in individual product Sections.

1.7 TEMPORARY VENTILATION

A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

B. Provide temporary fan units as required to maintain clean air for construction operations.

1.8 COMMUNICATION SERVICES

A. Telephone Service: Provide, maintain, and pay for telephone service to field personnel/office at time of Project mobilization and until completion of Work.

B. Internet Service: Provide, maintain, and pay for high-speed computer, email and Internet service to field personnel/office at time of Project mobilization.

1.9 TEMPORARY WATER SERVICE

A. Owner will pay cost of temporary water. Exercise measures to conserve energy. Utilize Owner's existing water system, extended and supplemented with temporary devices as needed to maintain specified conditions for construction operations.

B. Extend branch piping with outlets located so that water is available by hoses with threaded connections. Provide temporary pipe insulation and heat tape to prevent freezing as required.

1.10 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of Project mobilization.

B. Remove and end of work and repair all impacted areas to original conditions, TYP for all temporary facilities.

1.11 VEHICULAR ACCESS

A. Utilize existing paved surfaces for access to the site. Do not block drives or other vehicular accessways. Maintain drives unobstructed and for Owner's continuous use. Maintain drives free of mud. Provide unimpeded access for emergency vehicles.

B. Provide and maintain access to fire hydrants free of obstructions.

C. Provide means of removing mud from vehicle wheels before entering streets; set up wheel wash stations with provisions for drainage if necessary.

1.12 FIELD OFFICE/STORAGE SHEDS

A. Locate Storage sheds a minimum distance of 30 feet from existing structures.

B. Do not use permanent facilities for field offices or for storage.

C. Environmental Control:
1. Storage Spaces: Heating and ventilating as needed to maintain products according to Contract Documents; lighting for maintenance and inspection of products.

1.13 PARKING

A. Parking areas will be defined at the Pre-Construction meeting.

B. On-site parking is at the discretion of the Contractor. Any/all parking areas must be restored to like-new condition prior to completion of Project.

C. When site space is not adequate, provide additional off-site parking.

D. Use of existing on-site streets and driveways used for light weight construction traffic is permitted. Tracked vehicles not allowed on paved areas.

E. Do not allow heavy vehicles or construction equipment in parking areas.

F. Do not allow vehicle parking on offsite existing pavement; except where allowed by Owner's Representative.

G. Maintenance:
1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, and ice.
2. Maintain existing and permanent paved areas used for construction; promptly repair breaks, potholes, low areas, standing water, and other deficiencies, to maintain paving and drainage in original, or specified, condition.

H. Repair:
1. Repair existing facilities damaged by use, to "like new" condition, typ. for all temporary or construction related impacts.
2. Remove temporary material and construction before substantial completion.

I. Mud from Site Vehicles: Provide means of removing mud from vehicle wheels before entering streets; set up wheel wash stations with provisions for drainage if necessary.

1.14 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.

B. Do not allow waste materials to become imbedded into soils.

C. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.

D. Broom and vacuum clean interior areas before starting surface finishing, and continue cleaning to eliminate dust.

E. Collect and remove waste materials, debris, and rubbish from Site weekly and dispose of off-Site. Comply with Section 017419 - Construction Waste Management and Disposal.

F. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.15 PROJECT IDENTIFICATION

A. Project Informational Signs:
1. Refer to LFUCG template included in the documents for project.
2. Painted informational signs of same colors and lettering as standard products; size lettering for legibility at 100-foot distance.
3. Provide sign at each field office and storage shed, and provide directional signs to direct traffic into and within Site. Relocate as Work progress requires.
4. No other signs are allowed except those required by law.

B. Design sign and structure to withstand 60-mph wind velocity.

C. Installation:
   1. Erect at designated location determined at Pre-Construction Meeting.
   2. Erect supports and framing on secure foundation, rigidly braced and framed to resist wind loadings.
   3. Install sign surface plumb and level, with butt joints. Anchor securely.
   4. Paint exposed surfaces of sign, supports, and framing.

D. Maintenance: Maintain clean signs and supports; repair deterioration and damage.

E. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore area.

F. Provide temporary directional signage at time/phasing of work as required by AHJ and function of occupants.

1.16 WORKER CONDUCT

A. Workers shall be fully clothed at all times including shirts, full length pants, and shoes.

B. Use and/or the presence of alcohol, tobacco products, drugs and/or firearms is strictly prohibited.

C. Workers shall not socialize/fraternize with staff.

D. No smoking is allowed on site.

E. Workers shall meet LFUCG/Lexington Police requirements for background checks and identification.

1.17 BARRIERS

A. Provide barriers to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.

B. Provide barricades and/or covered walkways required by authorities having jurisdiction for public rights-of-way, and by Owner to protect users and or the public from construction activities.

C. Provide protection for plants designated to remain. Replace damaged plants.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

E. Exterior Enclosures:

   1. Provide temporary insulated weathertight closure of exterior openings to accommodate acceptable working conditions and protection for products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual Specification Sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

F. Interior Enclosures:

   1. Provide temporary partitions as required to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
   2. Construction: 2x4 min wood Framing 16" o.c., 4" batt insulation, polyethylene and plywood sheet materials with closed joints and sealed edges at intersections with existing surfaces. Temporary stud wall and enclosure systems such as Siplast Monarflex are acceptable in lieu of polyethylene.

1.18 SECURITY

A. Security Program:

   1. Protect Work on existing premises and Owner's operations from theft, vandalism, and unauthorized entry.
   2. Initiate program in coordination with Owner's existing security measures at Project mobilization.
   3. Maintain program throughout construction period until Owner's acceptance precludes need for Contractor's security.
   4. Absolutely no weapons are allowed on site or in vehicles.

B. Entry Control:

   1. Restrict entrance of persons and vehicles to Project Site and existing facilities.
   2. Allow entrance only to authorized persons with proper identification.
   3. Maintain log of workers and visitors and make available to Owner on request.
   4. Coordinate access of Owner's personnel to Site in coordination with Owner's security forces.

C. Personnel Identification:

   1. Provide identification badge for each person authorized to enter premises.
   2. Badge to Include: Personal photograph, name, and employer.
   3. Maintain list of accredited persons and submit copy to Owner on request.
   4. Require return of badges at expiration of employment on the Work.

1.19 FIRE-PREVENTION FACILITIES

A. Prohibit smoking within buildings under construction and demolition. Coordinate with owner at pre- construction meeting if and where smoking is allowed on site.

B. Establish fire watch for cutting, welding, and other hazardous operations capable of starting fires. Maintain fire watch before, during, and after hazardous operations until threat of fire does not exist.

C. Portable Fire Extinguishers: NFPA 10; 10-pound capacity, 4A-60B: C UL rating.

   1. Provide one fire extinguisher at each stairway on each floor of buildings under construction and demolition.

2. Provide minimum of one fire extinguisher in every construction trailer and storage shed.
3. Provide minimum of one fire extinguisher on roof during roofing operations using heat-producing equipment.

1.20 DUST CONTROL

A. Execute Work by methods that minimize raising dust from construction operations.

B. Provide positive means to prevent airborne dust from dispersing into atmosphere.

1.21 PEST AND RODENT CONTROL

A. Provide methods, means, and facilities to prevent pests and insects from damaging the Work or entering facility.

B. Provide methods, means, and facilities to prevent rodents from accessing or invading premises.

1.22 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.

B. Comply with pollution and environmental control requirements of authorities having jurisdiction.

1.23 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, barriers and materials before Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary Work.

C. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 015000

SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Product delivery requirements.

C. Product storage and handling requirements.

D. Product options.

E. Equipment electrical characteristics and components.

1.2 PRODUCTS

A. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.

B. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.

C. Furnish interchangeable components from same manufacturer for components being replaced.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Comply with delivery requirements in Section 017419 - Construction Waste Management and Disposal.

B. Transport and handle products according to manufacturer's instructions.

C. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

D. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products according to manufacturer's instructions.

B. Store products with seals and labels intact and legible.

C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.

D. For exterior storage of fabricated products, place products on sloped supports aboveground.

E. Provide bonded off-Site storage and protection when Site does not permit on-Site storage or protection.

F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

G. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

H. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.

I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

A. Except where substitutions are specifically identified as "not permitted", manufactured products, devices or materials specified under particular brand names or name of manufacturer shall not be construed to mean that these are closed specifications, whether the clause "or equal" is included or not. Other products comparable in type, quality, utility and price are acceptable if approved by the Architect and the Owner.

B. The burden of proof of quality shall, in all cases, rest with the Contractor. The Owner shall be the final judge of parallel equality and reserves the right to require that the product or material specified by name be furnished at no increase in contract amount.

C. If the materials listed within the proposal form are accepted by the Owner, then no deviations from those listings will be permitted except at the discretion of the Owner in the interest of expediting construction or overall standardization.

1.6 PRODUCT SUBSTITUTION PROCEDURES

A. Architect/Engineer will consider requests for Substitutions ONLY at the time of Bidding.

B. All requests for Substitutions must be submitted a minimum of 10 days prior to Bid Date.

C. Any/all proposed equals must be approved in writing prior to the Bid Opening.

D. Utilize CSI Substitution Request Form attached to this specification in electronic pdf format.

E. Limit each request to one proposed Substitution. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents. Submit Product

Data, and certified test results attesting to proposed product equivalence. Burden of proof is on proposer.

F. A request constitutes a representation that Bidder:
1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
2. Will provide same warranty for Substitution as for specified product.
3. Will coordinate installation and make changes to other Work, which may be required for the Work to be complete with no additional cost to Owner.
4. Waives claims for additional costs or time extension, which may subsequently become apparent.
5. Will reimburse Owner and Architect/Engineer for review or redesign services associated with re-approval by authorities having jurisdiction.

G. Substitutions will not be considered when they are indicated or implied on Shop Drawing or Product Data submittals, without separate written request prior to Bid Date, or when acceptance will require revision to Contract Documents.

PART 2 - PRODUCTS – Not Used.

PART 3 - EXECUTION - Not Used

END OF SECTION 016000

SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Examination.

B. Preparation.

C. Field engineering.

D. Execution.

E. Cutting and patching.

F. Protecting installed construction.

G. Demonstration and instruction.

H. Closeout procedures.

I. Project record documents.

J. Operation and maintenance data.

K. Manual for materials and finishes.

L. Manual for equipment and systems.

M. Spare parts and maintenance products.

N. Product warranties and product bonds.

O. Maintenance service.

P. Final cleaning.

1.2 EXAMINATION

A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.

B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.

C. Examine and verify specific conditions described in individual Specification Sections.

D. Verify that utility services are available with correct characteristics and in correct locations.

1.3 PREPARATION

A. Clean substrate surfaces prior to applying next material or substance according to manufacturer's instructions.

B. Seal cracks or openings of substrate prior to applying next material or substance.

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

1.4 EXECUTION

A. Comply with manufacturer's installation instructions, performing each step-in sequence. Maintain one set of manufacturer's installation instructions at Project Site during installation and until completion of construction.

B. When manufacturer's installation instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.

C. Verify that field measurements are as indicated on approved Shop Drawings or as instructed by manufacturer.

D. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1. Secure Work true to line and level and within specified tolerances, or if not specified, industry-recognized tolerances.
2. Physically separate products in place and provide electrical insulation or protective coatings to prevent galvanic action or corrosion between dissimilar metals.
3. Exposed Joints: Provide uniform joint width and arrange to obtain best visual effect. Refer questionable visual effect choices to Architect/Engineer for final decision.

E. Allow for expansion of materials and building movement.

F. Climatic Conditions and Project Status: Install each unit of Work under conditions to ensure best possible results in coordination with entire Project.

1. Isolate each unit of Work from incompatible Work as necessary to prevent deterioration.
2. Coordinate enclosure of Work with required inspections and tests to minimize necessity of uncovering Work for those purposes.

G. Mounting Heights: Where not indicated, mount individual units of Work at industry-recognized standard mounting heights for particular application indicated. Meet all ADA/ANSI 117 recommendations. Refer questionable mounting height choices to Architect/Engineer for final decision. Elements Identified as Handicap Accessible: Comply with applicable codes and regulations.

H. Adjust operating products and equipment to ensure smooth and unhindered operation.

I. Clean and perform maintenance on installed Work as frequently as necessary through remainder of construction period. Lubricate operable components as recommended by manufacturer.

1.5 CUTTING AND PATCHING

A. Employ skilled and experienced installers to perform cutting and patching.

B. Submit written request in advance of cutting or altering elements affecting the following:

1. Structural integrity of element.
2. Integrity of weather-exposed or moisture-resistant elements.
3. Efficiency, maintenance, or safety of element.
4. Visual qualities of sight-exposed elements.
5. Work of Owner or separate Contractor.

C. Execute cutting, fitting, and patching, including excavation and fill to complete Work and to accomplish the following:

1. Fit the several parts together, to integrate with other Work.
2. Uncover Work to install or correct ill-timed Work.
3. Remove and replace defective and nonconforming Work.
4. Remove samples of installed Work for testing.
5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

D. Execute Work by methods to avoid damage to other Work and to provide proper surfaces to receive patching and finishing.

E. Cut masonry and concrete materials using masonry saw or core drill.

F. Restore Work with new products according to requirements of Contract Documents.

G. Fit Work tight to pipes, sleeves, ducts, conduits, and other penetrations through surfaces.

H. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

I. At penetrations of fire-rated walls, partitions, ceiling, or floor construction, completely seal voids with fire-rated and/or fire-resistive material to full thickness of penetrated element as coordinated with wall ratings as shown on plans and required by all applicable building codes.

J. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for assembly, refinish entire unit.

K. Identify the hazardous substances or conditions exposed during the Work to Architect/Engineer for decision or remedy.

1.6 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide special protection where specified in individual Specification Sections.

B. Provide temporary and removable protection for installed products. Control activity in immediate Work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Use durable sheet materials to protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

F. Prohibit traffic from landscaped areas.

1.7 STARTING OF SYSTEMS

A. Coordinate schedule for startup of various equipment and systems.

B. Notify Architect/Engineer seven days prior to startup of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.

D. Verify that tests, meter readings, and electrical characteristics agree with those required by equipment or system manufacturer.

E. Verify that wiring and support components for equipment are complete and tested.

F. Execute startup under supervision of manufacturer's representative or Contractors' personnel according to manufacturer's instructions.

G. When specified in individual Specification Sections, require manufacturer to provide authorized representative who will be present at Site to inspect, check, and approve equipment or system installation prior to startup and will supervise placing equipment or system in operation.

H. Submit a written report in accordance with Section 013300 - Submittal Procedures stating that equipment or system has been properly installed and is functioning correctly.

1.8 DEMONSTRATION AND INSTRUCTION

A. Demonstrate operation and maintenance of products to Owner's personnel two weeks prior to date of Substantial Completion.

B. Demonstrate Project equipment and instruct in classroom environment located at the project site and instructed by manufacturer's representative who is knowledgeable about the Project.

C. Video Recordings: Provide high-quality color video recordings of demonstration and instructional sessions. Engage commercial videographer to record sessions. Include classroom instructions, demonstrations, board diagrams, and other visual aids. Include menu navigation.

D. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

E. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

F. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment.

G. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

1.9 CLOSEOUT PROCEDURES

A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:

1. Submit maintenance manuals, Project record documents, digital images of construction photographs, and other similar final record data in compliance with this Section.
2. Complete facility startup, testing, adjusting, balancing of systems and equipment, demonstrations, and instructions to Owner's operating and maintenance personnel as specified in compliance with this Section.
3. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
4. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of occupancy, operating certificates, and similar releases from authorities having jurisdiction and utility companies.
5. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
6. Make final change-over of locks and transmit keys directly to Owner. Advise Owner's personnel of change-over in security provisions.
7. Discontinue or change over and remove temporary facilities and services from Project Site, along with construction tools, mockups, and similar elements.
8. Perform final cleaning according to this Section. Final cleaning shall be for occupancy, and shall exceed daily construction clean up. All surfaces shall be free of dust, clean, and as intended to appear. The Contractor shall employ a professional cleaning company in order to provide the Owner with a clean facility upon completion of the work.
9. Detailed requirements for Operations and Maintenance Data should be noted in the specific section of the Specifications. For items of General Construction, specify that

information for care and maintenance be furnished for any item requiring more than ordinary custodial care.

B. Substantial Completion Inspection:

1. When Contractor considers Work to be substantially complete, submit to Architect:

   a. Written certificate that Work, or designated portion, is substantially complete.
   b. List of items to be completed or corrected (initial punch list).

2. Within seven days after receipt of request for Substantial Completion, Architect/Engineer will make inspection to determine whether Work or designated portion is substantially complete.

3. Should Architect/Engineer determine that Work is not substantially complete:

   a. Architect/Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
   b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Architect/Engineer.
   c. Architect/Engineer will reinspect Work.
   d. Redo and Inspection of Deficient Work: Repeated until Work passes Architect/Engineer's inspection.

4. When Architect finds that Work is substantially complete, Architect will:

   a. Prepare Certificate of Substantial Completion on AIA G704 - Certificate of Substantial Completion, accompanied by Contractor's list of items to be completed or corrected as verified and amended by Architect/Engineer and Owner (final punch list).
   b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.

5. After Work is substantially complete, Contractor shall:

   a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
   b. Complete Work listed for completion or correction within time period stipulated.

6. Owner will occupy all portions of building as specified in Section 011000 - Summary.

C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.

1. When Contractor considers Work to be complete, submit written certification that:

   a. Contract Documents have been reviewed.
   b. Work has been examined for compliance with Contract Documents.
   c. Work has been completed according to Contract Documents.
   d. Work is completed and ready for final inspection.

2. Submittals: Submit following:

   a. Final punch list indicating all items have been completed or corrected.
   b. Final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.
   c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
   d. Accounting statement for final changes to Contract Sum.
   e. Contractor's affidavit of payment of debts and claims on AIA G706 - Contractor's Affidavit of Payment of Debts and Claims.
   f. Contractor affidavit of release of liens on AIA G706A - Contractor's Affidavit of Release of Liens.
   g. Consent of surety to final payment on AIA G707 - Consent of Surety to Final Payment Form.

3. Perform final cleaning for Contractor-soiled areas according to this Section.

4. Prior to Final Completion, the Architect of Record shall provide the owner with the following:
   a. A full set of Autodesk® DWG files for each sheet issued. There will be one DWG file for each drawing sheet with all reference files bound. If fonts are utilized that are not standard, they shall be embedded into the drawing file. The CAD file name shall be the same as the sheet name. The drawings should be properly annotated as "Record Drawings" in the revision block of each sheet.
   b. A complete set of full-size drawings utilizing PDF file format. It is imperative that the PDF file plot configuration be such that the drawings are the correct size and scale as the original drawings when plotted.

5. Prior to Final Completion and according to the Project Specifications, the General Contractor shall provide the owner with the following:
   a. A complete set of printed and bound full size Record Drawings which incorporate "as-built" markup information. Printed media shall be a minimum 20 lb bond paper. In lieu of printed sets, electronic submission of Record Drawings may be permitted at the discretion of the owner.
   b. A complete set of printed (not bound) full size Record Drawings which incorporate "as-built" markup information.
   c. One copy of the Record Specifications printed and bound. In lieu of a printed set, electronic submission of Record Specifications (in PDF format) may be permitted at the discretion of the owner.
   d. One copy of Record Product Data in the format dictated in the Project Specifications.
   e. Two (2) copies of Operations and Maintenance Data manuals in the format dictated in the Project Specifications.

D. Final Completion Inspection:

1. Within seven days after receipt of request for final inspection, Architect/Engineer will make inspection to determine whether Work or designated portion is complete.
2. Should Architect/Engineer consider Work to be incomplete or defective:

   a. Architect/Engineer will promptly notify Contractor in writing, listing incomplete or defective Work.
   b. Contractor shall remedy stated deficiencies and send second written request to Architect/Engineer that Work is complete.
   c. Architect/Engineer will reinspect Work.
   d. Redo and Inspection of Deficient Work: Repeated until Work passes Architect/Engineer's inspection.

1.10 PROJECT RECORD DOCUMENTS

A. Maintain on Site one set of the following record documents; record actual revisions to the Work:

   1. Drawings.
   2. Specifications.
   3. Addenda.
   4. Change Orders and other modifications to the Contract.
   5. Reviewed Shop Drawings, product data, and Samples.
   6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Store record documents separate from documents used for construction.

D. Record information concurrent with construction progress, not less than weekly.

E. Specifications: Legibly mark and record, at each product Section, description of actual products installed, including the following:

   1. Manufacturer's name and product model and number.
   2. Product substitutions or alternates used.
   3. Changes made by Addenda, bulletin, Change Order, and modifications.

F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction as follows:

   1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
   2. Include locations of concealed elements of the Work.
   3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
   4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
   5. Identify and locate existing buried or concealed items encountered during Project.
   6. Measured depths of foundations in relation to finish main floor datum.
   7. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
   8. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work.

9. Field changes of dimension and detail.
10. Details not on original Drawings.

G. Submit marked-up paper copy AND electronic file/scan of marked-up of documents to Architect/Engineer claim for final Application for Payment.

1.11 OPERATION AND MAINTENANCE DATA

A. Submit in PDF composite electronic indexed file.

B. Submit three (3) complete sets of Operation and Maintenance Manuals at the time of Substantial Completion.

C. Submit data bound in 8-1/2 x 11-inch (A4) text pages, three D side ring binders with durable covers.

D. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS," title of Project and subject matter of binder when multiple binders are required.

E. Internally subdivide binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

F. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

G. Contents: Prepare table of contents for each volume, with each product or system description identified, typed on white paper, in three parts as follows:

1. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
2. Part 2: Operation and maintenance instructions, arranged by system and subdivided by Specification Section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Include the following:

    a. Significant design criteria.
    b. List of equipment.
    c. Parts list for each component.
    d. Operating instructions.
    e. Maintenance instructions for equipment and systems.
    f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
    g. Safety precautions to be taken when operating and maintaining or working near equipment.

3. Part 3: Project documents and certificates, including the following:

    a. Shop Drawings and product data.
    b. Air and water balance reports.
    c. Certificates (three copies).

d. Originals of warranties (three copies).

1.12 MANUAL FOR MATERIALS AND FINISHES

A. Submit one electronic and one pdf copy of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.

B. For equipment or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

C. Submit one copy of completed volumes before Substantial Completion. Completed volumes, with Architect/Engineer comments, will be returned after Substantial Completion. Revise content of document sets as required prior to final submission.

D. Submit two sets of revised final volumes within 10 days after final inspection.

E. Submit in PDF composite electronic indexed file of final volumes within 10 days after final inspection.

F. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom-manufactured products.

G. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

H. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.

I. Additional Requirements: As specified in individual product Specification Sections.

J. Include listing in table of contents for design data, with tabbed fly sheet and space for insertion of data.

1.13 MANUAL FOR EQUIPMENT AND SYSTEMS

A. Submit two copies of preliminary draft or proposed formats and outlines of contents before start of Work. Architect/Engineer will review draft and return one copy with comments.

B. For equipment, or component parts of equipment put into service during construction and operated by Owner, submit documents within ten days after acceptance.

C. Submit one copy hard copy and 1 pdf of completed volumes before Substantial Completion. Completed volumes, with Architect/Engineer comments, will be returned after Substantial Completion. Revise content of document sets as required prior to final submission.

D. Submit two sets of revised final volumes within ten days after final inspection.

E. Submit in PDF composite electronic indexed file of final volumes within ten days after final inspection.

F. Equipment and Systems: Include description of unit or system and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.

G. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications.

H. Include color-coded wiring diagrams as installed.

I. Operating Procedures: Include startup, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instructions. Include summer, winter, and special operating instructions.

J. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

K. Include servicing and lubrication schedule and list of lubricants required.

L. Include manufacturer's printed operation and maintenance instructions.

M. Include sequence of operation by controls manufacturer.

N. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

O. Include control diagrams by controls manufacturer as installed.

P. Include Contractor's coordination drawings indicating installed color-coded piping diagrams.

Q. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

R. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

S. Include test and balancing reports as specified in Section 014000 - Quality Requirements.

T. Additional Requirements: As specified in individual product Specification Sections.

U. Include listing in table of contents for design data with tabbed dividers and space for insertion of data.

1.14 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Furnish spare parts, maintenance, and extra products in quantities specified in individual Specification Sections.

B. Deliver to Project Site and place in location as directed by Owner; obtain receipt prior to final payment.

1.15 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed in triplicate by responsible Subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of Work.

B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.

C. Verify documents are in proper form, contain full information, and are notarized.

D. Co-execute submittals when required.

E. Include table of contents and assemble in three D side ring binder with durable cover. Along with a pdf of documents, indexed.

F. Submit prior to final Application for Payment.

G. Time of Submittals:

1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.
2. Make other submittals within ten days after date of Substantial Completion, prior to final Application for Payment.
3. For items of Work for which acceptance is delayed beyond Substantial Completion, submit within ten days after acceptance, listing date of acceptance as beginning of warranty or bond period.

1.16 MAINTENANCE SERVICE

A. Furnish service and maintenance of components indicated in Specification Sections for the period specified, commencing on the date of Substantial Completion.

B. Examine system components at frequency consistent with reliable operation. Clean, adjust, and lubricate as required.

C. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by manufacturer of original component.

D. Do not assign or transfer maintenance service to agent or Subcontractor without prior written consent of Owner.

1.17 CLEANING – IN-PROGRESS and FINAL CLEANING

A. Partial Cleanings will be required prior to start-up of HVAC, installation of finishes or any Punch List reviews begin.

B. Execute FULL & COMPLETE cleaning prior to final Project assessment and Substantial completion is granted.

1. The Contractor shall Employ experienced and professional cleaning firm to provide the owner with a clean facility upon completion of the work and prior to owner occupancy of space.

2. Multiple cleanings will be required to provide the Owner a fully cleaned, ready-to-occupy building(s) with no construction dirt, dust, glues, films, paint, residues etc. on any surfaces. All spaces are to be fully ready for the Owner to take occupancy prior to delivery of furnishings and other Owner-provided equipment

C. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains, and foreign substances; polish transparent and glossy surfaces; and vacuum carpeted and soft surfaces.

D. Clean equipment and fixtures to sanitary condition with appropriate cleaning materials.

E. Replace filters of operating equipment.

F. Clean debris from roofs, gutters, downspouts, and drainage systems.

G. Clean Site; sweep paved areas, rake clean landscaped surfaces.

H. Remove waste and surplus materials, rubbish, and construction facilities from Site.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 017000

SECTION 017419 - CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 - GENERAL

1.1 SUMMARY

A. Sustainable Project Goals: LFUCG does not have specific certification requirements but is fully interested in being wise stewards of this publicly-funded project for now and future generations. Information contained is offered as a potential approach to recycling and disposal of construction materials.

B. Section Includes:

1. Construction waste management plan.
2. Construction waste recycling.
3. Construction waste adaptive reuse.

C. Related Sections:

1. Section 018113 - Sustainable Design Goals.

1.2 REFERENCES

A. ASTM E1609 - Standard Guide for Development and Implementation of a Pollution Prevention Program.

B. US Green Building Council:
1. USGBC LEED NC Letter Template – MR Credit: Construction Waste Management.

1.3 PLAN FORMAT

A. Develop and implement construction waste management plan to divert min. 75 percent from landfill.

B. Intent:

1. Divert construction, demolition, and land-clearing debris from landfill disposal.
2. Redirect recyclable material back to manufacturing process.
3. Generate cost savings or increase minimal additional cost to Project for waste disposal.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures contains requirements for submittals.

B. Construction Waste Management Plan: Formulate construction waste management plan describing methods and procedures for implementation and monitoring compliance including the following:

1. Transportation company hauling construction waste to waste processing facilities.
2. Recycling and adaptive reuse processing facilities and waste type each facility will accept.
3. Construction waste materials anticipated for recycling and adaptive reuse.
4. On-Site sorting and Site storage methods.

1.5 CONSTRUCTION WASTE MANAGEMENT PLAN

A. Section 017000 – Execution and Closeout Requirements: Requirements for submittals Section 017000 – Execution and Closeout Requirements: Requirements.

B. Construction Waste Landfill Diversion: Minimum 75 percent by weight of construction waste materials for duration of Project through resale, recycling, or adaptive reuse.

C. Implement construction waste management plan at start of construction.

D. Review construction waste management plan at preconstruction meeting and progress meetings specified in Section 013000 - Administrative Requirements.

E. Distribute approved construction waste management plan to Subcontractors and others affected by plan requirements.

F. Oversee plan implementation, instruct construction personnel for plan compliance, and document plan results.

G. Purchase products to prevent waste by:

1. Ensuring correct quantity of each material is delivered to Site.
2. Choosing products with minimal or no packaging.
3. Requiring suppliers to use returnable pallets or containers.
4. Requiring suppliers to take or buy back rejected or unused items.

1.6 CONSTRUCTION WASTE RECYCLING

A. Use source separation method or comingling method suitable to sorting and processing method of selected recycling center. Dispose nonrecyclable trash separately into landfill.

B. Source Separation Method: Recyclable materials separated from trash and sorted into separate bins or containers, identified by waste type, prior to transportation to recycling center.

C. Comingling Method: Recyclable materials separated from trash and placed in unsorted bins or container for sorting at recycling center.

D. Materials suggested for recycling include:

1. Packing materials including paper, cardboard, foam plastic, and sheeting.
2. Recyclable plastics.
3. Organic plant debris.
4. Earth materials.
5. Native stone and granular fill.
6. Asphalt and concrete paving.
7. Glass, clear and colored types.
8. Metals.
9. Gypsum products.
10. Acoustical ceiling tile.
11. Carpet.
12. Equipment oil.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE COLLECTION

A. Collect construction waste materials in marked bins or containers and arrange for transportation to recycling centers or adaptive salvage and reuse processing facilities.

B. Maintain recycling and adaptive reuse storage and collection area in orderly arrangement with materials separated to eliminate co-mingling of materials required to be delivered separately to waste processing facility.

C. Store construction waste materials to prevent environmental pollution, fire hazards, hazards to persons and property, and contamination of stored materials.

D. Cover construction waste materials subject to disintegration, evaporation, settling, or runoff to prevent polluting air, water, and soil.

3.2 CONSTRUCTION WASTE DISPOSAL

A. Deliver construction waste to waste processing facilities.

B. Dispose of construction waste not capable of being recycled or adaptively reused by delivery to landfill, incinerator, or other legal disposal facility.

END OF SECTION 017419

SECTION 018113 - SUSTAINABLE DESIGN GOALS

PART 1 - GENERAL

1.1 SUMMARY

A. LFUCG does not have specific certification requirements for this project but is fully interested in being wise stewards of this publicly-funded project for now and future generations. Information to follow is offered as a potential approach for the work.

B. Section Includes:

1. Sustainable design Project goals.
2. Sustainable design product requirements.

C. Related Sections:
1. Individual Specification Sections for additional product requirements.

1.2 REFERENCE STANDARDS

A. American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE):

1. ASHRAE 52.2 - Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size.
2. ASHRAE 62.1 - Ventilation for Acceptable Indoor Air Quality.
3. ASHRAE 90.1 - Energy Efficient Design of New Buildings Except Low-Rise Residential Buildings.

B. ASTM International (ASTM):

1. ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
2. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
3. ASTM E408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
4. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
5. ASTM E1918 - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
6. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

C. California Code of Regulations (CCR):

1. CCR Title 24 - California Building Code.

D. California Department of Health Services (CA/DHS):

1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

E. Carpet and Rug Institute (CRI):

1. CRI Green Label Plus Testing Program.
2. CRI Green Label Testing Program.

F. Forest Stewardship Council (FSC):

1. FSC Guidelines.

G. Green Seal (GS):

1. GC-03 - Anti-Corrosive Paints.
2. GS-11 - Product Specific Environmental Requirements.
3. GS-36 - Aerosol Adhesives.

H. GREENGUARD Environmental Institute:

1. GREENGUARD Children and Schools Certification Program.

I. International Standards Organization (ISO):

1. ISO 14021 - Environmental Labels and Declarations - Self-Declared Environmental Claims (Type II Environmental Labeling).

J. Scientific Certification Systems (SCS):

1. SCS EC10.2 - Environmental Certification Program Indoor Air Quality Performance.

K. Sheet Metal and Air Conditioning Contractors (SMACNA):

1. SMACNA IAQ - IAQ Guidelines for Occupied Buildings Under Construction.

L. South Coast Air Quality Management District (SCAQMD):

1. SCAQMD Rule 1113 - Architectural Coatings.
2. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

M. U.S. Environmental Protection Agency (EPA):

1. ENERGY STAR Voluntary Labeling Program.
2. EPA IAQ Testing - Compendium of Methods for the Determination of Air Pollutants in Indoor Air.
3. EPA Construction General Permit.

1.3 SUSTAINABLE PROJECT GOALS

A. Sustainable Project Goals: LFUCG does not have specific certification requirements for this project but is fully interested in being wise stewards of this publicly-funded project for now and future generations. Information to follow is offered as a potential approach for the work.

B. Comply with the following general sustainable project goals and refer to specific specification sections for more detailed requirements.

C. Use resources efficiently:
1. Furnish materials that use resources efficiently.
2. Use construction practices that achieve efficient use of resources and materials.
3. Recycle or reuse (with engineer permission) Project Site waste.
4. Furnish recycled content materials.
5. Furnish materials that can be recycled.

D. Avoid scarce, irreplaceable, or endangered resources:

1. Furnish materials from abundant, well-managed resources.
2. Furnish materials that are replaceable, renewable, or can be replenished.
3. Furnish materials that minimize damage to natural habitats.

E. Use durable materials:

1. Furnish materials with longest usable life.
2. Furnish materials that can be reused.
3. Furnish materials with least maintenance requirements.

F. Create spaces that are healthy for occupants:

1. Furnish low-toxicity products and materials.
2. Furnish materials without toxic maintenance requirements.
3. Furnish mechanical equipment that provides fresh air and does not trap water or pollutants.

G. Use energy efficiently:

1. Furnish materials with low embodied energy.
2. Furnish materials that save energy during building operations.

H. Use water efficiently:

1. Use construction practices that use water efficiently.
2. Furnish water conserving appliances and equipment.
3. Landscape Project Site for water conservation.
4. Capture and utilize rainwater.

I. Furnish materials that generate least amount of pollution.

J. Protect and restore natural habitats on Site.

Police Roll Call West Envelope and HVAC Project
Lexington Fayette Urban County Government
LFUCG RFP No. 78-2024

Tate Hill Jacobs Architects
Construction Documents
May 3, 2024

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures contains requirements for submittals.

B. Product Data:

1. Submit data for filter media and filter efficiency.

C. Manufacturer's Certificate: Certify products meet or exceed requirements.

1. Certify paving material solar reflectance index.

a. Indicate solar reflectance index and percent of total Site hardscape surfaces for each paving material.

2. Certify roofing material solar reflectance index.

a. Indicate roof slope, solar reflectance index, and percent of total roof surface for each roofing material.

3. Certify plumbing fixture water consumption rates.

a. Indicate manufacturer and model number of each fixture and fitting and water consumption rates.

4. Certify recycled material content for recycled content products permanently installed as part of Project.

a. Indicate postconsumer recycled content percent by weight.
b. Indicate preconsumer recycled content percent by weight.
c. Indicate recycled content materials according to ISO 14021.

5. Certify source for regional materials for products permanently installed as part of Project.

a. Indicate manufacturing or fabrication location and distance to Site in miles.
b. Indicate percent by weight of each product qualifying as regional material.

6. Certify lumber is harvested from Forest Stewardship Council certified well-managed forest.

a. Indicate certifying agency and agency accreditation by Forest Stewardship Council.
b. Include chain-of-custody documentation tracking wood product from forest to installed product.
c. Include description and location of each certified wood-based product in completed construction.

7. Certify volatile organic compound content for each interior adhesive and sealant and related primer.

a. Include data sheet indicating volatile organic compound content, in g/L, for each product.

8. Certify volatile organic compound content for each interior paint and coating.

a. Include data sheet indicating volatile organic compound, in g/L, and chemical component content for each product.

9. Certify volatile organic compound content for each carpet, carpet adhesive and carpet cushion.

a. Include independent test results indicating that each carpet complies with CRI Green Label Plus Testing Program.
b. Include independent test results indicating each carpet cushion complies with CRI Green Label Testing Program.

10. Certify each composite wood and agrifiber product contains no added urea-formaldehyde resins.

a. Include data sheet indicating urea-formaldehyde resin content for each product.

D. Construction Photographs: Photograph measures protecting materials from moisture for the following:

1. Absorptive materials, including but not limited to masonry units, lumber, finished architectural woodwork, flush wood doors, gypsum board, acoustical ceiling tiles, and insulation.
2. Ducts and other HVAC equipment.

1.5 QUALITY ASSURANCE

A. Perform storm water management and erosion control Work in accordance with EPA 832-R-92-005 or local erosion and sedimentation control standards, whichever is more stringent.

B. Perform Work to meet or exceed minimum energy efficiency and performance in accordance with ASHRAE 90.1 or local energy code, whichever is more stringent.

C. Perform Work without use of CFC based refrigerants.

D. Perform ventilation Work in accordance with ASHRAE 62.

E. Work with Owner's Commissioning of Mech + Elec systems.

F. Develop and implement construction indoor air quality management plan including the following:
1. Comply with minimum requirements of SMACNA IAQ.

2. Protect stored and installed absorptive materials from moisture damage.
a. Store materials on elevated platforms under cover, and in dry location.

b. When materials are not stored in enclosed location, cover tops and sides of material with secured waterproof sheeting.

G. Protect HVAC equipment during construction.
1. Shut down return side of HVAC system whenever possible during heavy construction or demolition.
2. When HVAC system are operated during heavy construction, furnish disposable temporary filters.

H. Replace filtration media immediately before occupancy.

I. Conduct minimum two-week building flush-out with new filtration media at 100 percent outside air after construction ends and before occupancy.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept absorptive materials on site in manufacturer's sealed, protective packaging. Inspect for damage.

C. Store absorptive materials in enclosed, environmentally conditioned space to prevent moisture absorption.

D. Do not store or install absorptive materials within building until building is enclosed and materials are protected from exposure to elements.

E. Protect installed absorptive materials from damage with temporary exterior enclosure to prevent moisture absorption.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section 016000 - Product Requirements: Environmental conditions affecting products on site.

B. Recycle or salvage a minimum of 75 percent by weight of construction, demolition, and land clearing waste

PART 2 - PRODUCTS

2.1 PROHIBITED MATERIALS

A. Do not use materials containing asbestos, polychlorinated biphenyls (PCB), or other hazardous materials.

B. Do not use HCFC-based refrigerants or halon extinguishing agents.

C. Do not use materials containing butyl for interior locations.

2.2 HVAC FILTERS

A. Temporary Return Air Filters: ASHRAE 52.2 minimum efficiency reporting value (MERV) of 13.

2.3 ROOFING MATERIALS

A. Roof Surface: ENERGY STAR compliant with the following performance:

1. Reflectance: Minimum 0.65 initial and 0.5 three year aged in accordance with ASTM E903.

2. Emissivity: Minimum 0.9 for 75 percent of roof area according to ASTM E408.

2.4 RECYCLED CONTENT MATERIALS

A. Where available, furnish materials with recycled content (pre and post-consumer) and document the % of each.

2.5 REGIONAL MATERIALS

A. Manufacturers to provide information on materials manufactured and extracted, harvested, or recovered within 500 miles (800 km) of Project site.

B. Manufacturers to provide information on materials manufactured within 500 miles (800 km) of Project site

2.6 CERTIFIED WOOD MATERIALS

A. Wood-Based Materials: Furnish the following materials certified according to FSC Guidelines.

2.7 LOW-EMITTING MATERIALS - ADHESIVES AND SEALANTS

A. Adhesives and Adhesive Primers: Maximum volatile organic compound content in accordance with SCAQMD Rule 1168.

B. Sealants Used as Fillers and Sealant Primers: Maximum volatile organic compound content in accordance with BAAQMD Regulation 8, Rule 51.

C. Paints: Maximum volatile organic compound content in accordance with GS-11.

D. Carpets, Carpet Cushions, and Carpet Adhesives: Maximum volatile organic compound content in accordance with CRI Green Label Testing Program.

E. Composite Wood and Agrifiber Products: Contain no added urea-formaldehyde resins.

2.8 EQUIPMENT AND APPLIANCES

A. Equipment and Appliances: ENERGY STAR compliant for appliances, office equipment, electronics, and commercial food service equipment.

PART 3 - EXECUTION – NOT USED

END OF SECTION 018113

SECTION 024119.13 - SELECTIVE BUILDING DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Demolishing designated construction.
2. Cutting and alterations for completion of the Work.
3. Protecting items designated to remain.
4. Removing demolished materials.

1.2 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Demolition Schedule: Indicate overall schedule and interruptions required for utility and building services.

C. Shop Drawings:

1. Indicate demolition and removal sequence.
2. Indicate location of items designated for reuse and/or Owners retention.
3. Indicate location and construction of temporary work.

1.3 CLOSEOUT SUBMITTALS

A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Accurately record actual locations of capped utilities, concealed utilities discovered during demolition, subsurface obstructions, and other items important to the record of the building's history.

C. Operation and Maintenance Data: Submit description of system, inspection data, and parts lists.

1.4 QUALITY ASSURANCE

A. Conform to the 2018 Kentucky Building Code, as well as requirements by all entities under which the project falls, including, but not limited to all Federal, State, LFUCG, OSHA and EPA, Clean Water etc for demolition work, dust control, products requiring electrical disconnection and re-connection or as required

B. Conform to applicable code for procedures when hazardous or contaminated materials are discovered.

C. Obtain required permits from authorities having jurisdiction.

D. Perform Work in accordance with LFUCG 's standards.

1.5 PRE-INSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.6 SEQUENCING

A. Section 011000 - Summary: Requirements for sequencing.

B. Owner will conduct salvage operations before each phase of selective demolition begins to remove materials Owner chooses to retain.

1.7 SCHEDULING

A. Section 013000 - Administrative Requirements: Requirements for scheduling.

B. Schedule Work to coincide with new construction and weather requirements.

C. Cooperate with Owner in scheduling noisy operations and waste removal that may impact Owners operation in adjoining spaces.

D. Coordinate utility and building service interruptions with Owner.

1. Do not disable or disrupt building fire or life safety systems without three days prior written notice to Owner.
2. Schedule tie-ins to existing systems to minimize disruption.
3. Coordinate Work to ensure fire sprinklers, fire alarms, smoke detectors, emergency lighting, exit signs and other life safety systems remain in full operation in occupied areas.
4. For select areas of construction, notify the owner minimum 1 week in advance of work.

1.8 PROJECT CONDITIONS

A. Conduct demolition to minimize interference with adjacent and occupied building areas.

B. Cease operations immediately if structure appears to be in danger and notify Architect/Engineer. Do not resume operations until directed.

PART 2 - PRODUCTS

2.1 Not Used.

PART 3 - EXECUTION

3.1 PREPARATION

A. Notify affected utility companies before starting work and comply with their requirements.

B. Mark location and termination of utilities.

C. Erect, and maintain temporary barriers and security devices as required, including warning signs and lights, and similar measures, for protection of the Owner, building users, and existing improvements indicated to remain.

D. Layout cuts in post tensioned concrete elements to avoid cutting concrete within 12 inches (300 mm) of any stressing tendon. Notify Architect/Engineer three days in advance of cutting post-tensioned concrete (if applicable).

E. Erect and maintain weatherproof closures for exterior openings.

F. Erect and maintain temporary partitions to prevent spread of dust, odors, and noise to permit continued Owner occupancy. Reference Section 015000 and suggested possible phasing.

G. Prevent movement of structure; provide temporary bracing and shoring required to ensure safety of existing structure.

H. Provide appropriate temporary signage including signage for exit or building egress.

I. Do not close or obstruct building egress path.

J. Do not disable or disrupt building fire or life safety systems without 3 days prior written notice to Owner.

3.2 SALVAGE REQUIREMENTS

A. Coordinate with Owner to identify building components and equipment required to be removed and delivered to Owner.

B. Prior to each phase of demolition, coordinate with owner, components that will remain in offices, but are to be covered and protected from harm.

C. Tag components and equipment Owner designates for salvage.

D. Protect designated salvage items from demolition operations until items can be removed.

E. Carefully remove building components and equipment indicated to be salvaged.

F. Disassemble as required to permit removal from building.

G. Package small and loose parts to avoid loss.

H. Mark equipment and packaged parts to permit identification and consolidation of components of each salvaged item.

I. Prepare assembly instructions consistent with disassembled parts. Package assembly instructions in protective envelope and securely attach to each disassembled salvaged item.

J. Deliver salvaged items to Owner. Obtain signed receipt from Owner.

3.3 DEMOLITION

A. Conduct demolition to minimize interference with adjacent and occupied building areas.

B. Maintain protected egress from and access to adjacent existing buildings at all times.

C. Do not close or obstruct roadways or sidewalks without permits.

D. Cease operations immediately when structure appears to be in danger and notify Owner and Architect/Engineer.

E. Disconnect and remove designated utilities within demolition areas.

F. Cap and identify abandoned utilities at termination points when utility is not completely removed. Annotate Record Drawings indicating location and type of service for capped utilities remaining after demolition.

G. Demolish in orderly and careful manner. Protect existing improvements, supporting structural members and items not in either sequence of the work or slated to remain.

H. Carefully remove building components indicated to be reused.

1. Disassemble components as required to permit removal.
2. Package small and loose parts to avoid loss.
3. Mark components and packaged parts to permit reinstallation.
4. Store components, protected from construction operations, until reinstalled.

I. Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.

J. Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.

K. Remove temporary Work.

SECTION 030130 REPAIR OF CONCRETE

PART 1 - GENERAL

1.1 DESCRIPTION

A. Provide labor, materials, equipment, and incidentals necessary to repair concrete that has been damaged during construction or is defective as determined by the Engineer. Engineer may require total replacement of damaged or defective structures or parts of structures rather than repair, the determination of which is solely at the Engineer's discretion.

B. Precast Concrete: Repair of new precast concrete shall be performed according to a written repair plan submitted by the precast supplier. Engineer may require total replacement of damaged or defective precast structures or parts of precast structures rather than repair, the determination of which is solely at the Engineer's discretion.

1.2 SUBMITTALS

A. Repair Plan: For each repair, submit a written repair plan with the following:

1. A drawing showing the location(s) of the repair to be made.

2. A written description of the repair.

3. An annotated sketch of the repair.

4. A list of materials to be used in the repair and a product data sheet for each.

1.3 QUALITY ASSURANCE

A. Manufacturer Qualifications: Each product shall be used only as recommended by the manufacturer.

B. Comply with manufacturer's written instructions for minimum and maximum temperature requirements and other conditions for storage.

C. Store cementitious materials off the ground, under cover, and in a dry location and as otherwise directed by the manufacturer's instructions.

D. Store aggregates covered and in a dry location; maintain grading and other required characteristics and prevent contamination.

1.4 FIELD CONDITIONS

A. Environmental Limitations for Epoxies: Do not apply when air and substrate temperatures are outside limits permitted by manufacturer. During hot weather, cool

epoxy components before mixing, store mixed products in shade, and cool unused mixed products to retard setting. Do not apply to wet substrates unless approved by manufacturer.

1. Use only Class A epoxies when substrate temperatures are below or are expected to go below 40 deg F within eight hours.

2. Use only Class A or B epoxies when substrate temperatures are below or are expected to go below 60 deg F within eight hours.

3. Use only Class C epoxies when substrate temperatures are above and are expected to stay above 60 deg F for eight hours.

B. Ambient Temperature Requirements for Cementitious Materials: Comply with the following procedures:

1. When air temperature is below 40 deg F, heat patching-material ingredients and existing concrete to produce temperatures between 40 and 90 deg F.

2. When mean daily air temperature is between 25 and 40 deg F, cover completed Work with weather-resistant insulating blankets for 48 hours after repair or provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 48 hours after repair.

3. When mean daily air temperature is below 25 deg F, provide enclosure and heat to maintain temperatures above 32 deg F within the enclosure for 48 hours after repair.

C. Hot-Weather Requirements for Cementitious Materials: Protect repair work when temperature and humidity conditions produce excessive evaporation of water from patching materials. Provide artificial shade and wind breaks, and use cooled materials as required. Do not apply to substrates with temperatures of 90 deg F and above.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Source Limitations: For repair products, obtain each color, grade, finish, type, and variety of product from single source and from single manufacturer with resources to provide products of consistent quality in appearance and physical properties.

2.2 BONDING AGENTS

A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Manufactured product that consists of water-insensitive epoxy adhesive, portland cement, and water-

based solution of corrosion-inhibiting chemicals that forms a protective film on steel reinforcement.

B. Epoxy Bonding Agent: ASTM C 881/C 881M, bonding system Type II and free of VOCs.

C. Latex Bonding Agent, Non-Redispersible: ASTM C 1059/C 1059M, Type II for use at structural and exterior locations.

D. Mortar Scrub Coat: Mix consisting of 1 part portland cement and 1 part fine aggregate complying with ASTM C 144 except 100 percent passing a No. 16 sieve.

2.3 PATCHING MORTAR

A. Patching Mortar Requirements:

1. Only use patching mortars that are recommended by manufacturer for each applicable horizontal, vertical, or overhead use orientation.

2. Color and Aggregate Texture: Provide patching mortar and aggregates of colors and sizes necessary to produce patching mortar that matches existing, adjacent, exposed concrete. Blend several aggregates if necessary to achieve suitable matches.

3. Coarse Aggregate for Patching Mortar: ASTM C 33/C 33M, washed aggregate, Size No. 8, Class 5S. Add to patching-mortar mix only as permitted by patching-mortar manufacturer.

B. Job-Mixed Patching: 1 part portland cement and 2-1/2 parts fine aggregate complying with ASTM C 144, except 100 percent passing a No. 16 sieve.

C. Cementitious Patching Mortar: Packaged, dry mix for repair of concrete.

1. Compressive Strength: Not less than 4500 psi at 28 days when tested according to ASTM C 109/C 109M.

D. Rapid-Strengthening, Cementitious Patching Mortar Packaged, dry-mix, ASTM C 928/C 928M, for repair of concrete.

1. Compressive Strength: Not less than 3000 within three hours and 4500 psi at 28 days when tested according to ASTM C 109/C 109M.

E. Polymer-Modified, Cementitious Patching Mortar Packaged, dry mix for repair of concrete and that contains a latex additive as either a dry powder or a separate liquid that is added during mixing.

1. Compressive Strength: Not less than 4500 psi at 28 days when tested according to ASTM C 109/C 109M.

F. Polymer-Modified, Silica-Fume-Enhanced, Cementitious Patching Mortar: Packaged, dry mix for repair of concrete and that contains silica fume complying with ASTM C 1240 and a latex additive as either a dry powder or a separate liquid that is added during mixing.

1. Compressive Strength: Not less than 4500 psi 28 days when tested according to ASTM C 109/C 109M.

2.4 EPOXY CRACK-INJECTION MATERIALS

A. Epoxy Crack-Injection Adhesive: ASTM C 881/C 881M, bonding system, Type I

1. Capping Adhesive: Product manufactured for use with crack-injection adhesive by same manufacturer.

2. Color: Provide epoxy crack-injection adhesive and capping adhesive to match existing concrete as closely as possible.

2.5 MISCELLANEOUS MATERIALS

A. Portland Cement: ASTM C 150/C 150M, Type I, II, or III unless otherwise indicated.

B. Water: Potable.

2.6 MIXES

A. General: Mix products, in clean containers, according to manufacturer's written instructions.

1. Do not add water, thinners, or additives unless recommended by manufacturer.

2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.

3. Do not mix more materials than can be used within time limits recommended by manufacturer. Discard materials that have begun to set.

B. Mortar Scrub Coat: Mix dry ingredients with enough water to provide consistency of thick cream.

C. Dry-Pack Mortar: Mix required type(s) of patching-mortar dry ingredients with just enough liquid to form damp cohesive mixture that can be squeezed by hand into a ball but is not plastic.

D. Concrete: Shall be 4500 psi @ 28 days when tested according to ASTM C 109/C109M.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect persons, motor vehicles, surrounding surfaces of building being repaired, building site, plants, and surrounding buildings from harm resulting from concrete repair work.

1. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.

2. Use only proven protection methods appropriate to each area and surface being protected.

3. Provide temporary barricades, barriers, and directional signage to exclude public from areas where concrete maintenance work is being performed.

4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of concrete maintenance work.

5. Contain dust and debris generated by concrete maintenance work and prevent it from reaching the public or adjacent surfaces.

6. Use water-mist sprinkling and other wet methods to control dust only with adequate, approved procedures and equipment that ensure that such water will not create a hazard or adversely affect other building areas or materials.

7. Protect floors and other surfaces along haul routes from damage, wear, and staining.

8. Provide supplemental sound-control treatment to isolate removal and dismantling work from other areas of the building.

9. Protect adjacent surfaces and equipment by covering them with heavy polyethylene film and waterproof masking tape. If practical, remove items, store, and reinstall after potentially damaging operations are complete.

10. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.

11. Dispose of debris and runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.

B. Existing Drains, if present:

1. Prevent solids such as aggregate or mortar residue from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from concrete maintenance work.

2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.

C. Preparation for Concrete Removal: Examine construction to be repaired to determine best methods to safely and effectively perform concrete maintenance work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed in the course of repair.

1. Verify that affected utilities have been disconnected and capped.

2. Inventory and record the condition of items to be removed for reinstallation or salvage.

3. Provide and maintain shoring, bracing, and temporary structural supports as required to preserve stability and prevent unexpected or uncontrolled movement, settlement, or collapse of construction being demolished and construction and finishes to remain. Strengthen or add new supports when required during progress of removal work.

D. Surface Preparation for Corrosion-Inhibiting Treatment: Clean concrete to remove dirt, oils, films, and other materials detrimental to treatment application.

1. Use low-pressure water cleaning

2. Allow surface to dry before applying corrosion-inhibiting treatment.

3.2 BONDING AGENT APPLICATION

A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Apply to concrete by stiff brush or hopper spray according to manufacturer's written instructions. Apply to reinforcing bars in two coats, allowing first coat to dry two to three hours before applying second coat. Allow to dry before placing patching mortar or concrete.

B. Epoxy Bonding Agent: Apply to concrete by brush, roller, or spray according to manufacturer's written instructions, leaving no pinholes or other uncoated areas Place patching mortar or concrete while epoxy is still tacky. If epoxy dries, recoat before placing patching mortar or concrete.

C. Latex Bonding Agent, Type I: Apply to concrete by brush roller or spray. Allow to dry before placing patching mortar or concrete.

D. Latex Bonding Agent, Type II: Mix with portland cement and scrub into concrete surface according to manufacturer's written instructions. Place patching mortar or

concrete while bonding agent is still wet. If bonding agent dries, recoat before placing patching mortar or concrete.

E. Mortar Scrub Coat for Job-Mixed Patching Mortar and Concrete: Dampen repair area and surrounding concrete 6 inches beyond repair area. Remove standing water and apply scrub coat with a brush, scrubbing it into surface and thoroughly coating repair area. If scrub coat dries, recoat before placing patching mortar or concrete.

F. Slurry Coat for Cementitious Patching Mortar: Wet substrate thoroughly and then remove standing water. Scrub a slurry of neat patching mortar (mixed with latex bonding agent) into substrate, filling pores and voids.

3.3 PATCHING MORTAR APPLICATION

A. Place patching mortar as specified in this article unless otherwise recommended in writing by manufacturer.

1. Provide forms where necessary to confine patch to required shape.

2. Wet substrate and forms thoroughly and then remove standing water.

B. Pretreatment: Apply specified pre-treatment product as required.

C. General Placement: Place patching mortar by troweling toward edges of patch to force intimate contact with edge surfaces. For large patches, fill edges first and then work toward center, always troweling toward edges of patch. At fully exposed reinforcing bars, force patching mortar to fill space behind bars by compacting with trowel from sides of bars.

D. Multiple Lifts: Where multiple lifts are used, score surface of lifts to provide a rough surface for placing subsequent lifts. Allow each lift to reach final set before placing subsequent lifts.

E. Finishing: Allow surfaces of lifts that are to remain exposed to become firm and then finish to a smooth surface with a wood or sponge float

F. Curing: Wet-cure cementitious patching materials, including polymer-modified cementitious patching materials, for not less than seven days by water-fog spray or water-saturated absorptive cover.

3.4 DRY-PACK-MORTAR APPLICATION

A. Use dry-pack mortar for deep cavities. Place as specified in this article unless otherwise recommended in writing by manufacturer.

1. Provide forms where necessary to confine patch to required shape.

2. Wet substrate and forms thoroughly and then remove standing water.

B. Pretreatment: Apply pretreatment product as required.

C. Place dry-pack mortar into cavity by hand, and compact tightly into place. Do not place more material at a time than can be properly compacted. Continue placing and compacting until patch is approximately level with surrounding surface.

D. After cavity is filled and patch is compacted, trowel surface to match profile and finish of surrounding concrete. A thin coat of patching mortar may be troweled into the surface of patch to help obtain required finish.

E. Wet-cure patch for not less than seven days by water-fog spray or water-saturated absorptive cover covered with non-permeable cover.

3.5 CONCRETE PLACEMENT

A. Place concrete according to type of application dictates.

B. Pretreatment: Apply pretreatment product as required.

C. Standard Placement: Place concrete by form-and-pump method unless otherwise indicated.

1. Use vibrators to consolidate concrete as it is placed.

2. At unformed surfaces, screed concrete to produce a surface that when finished with patching mortar will match required profile and surrounding concrete.

D. Form-and-Pump Placement: Place concrete by form-and-pump method where indicated.

1. Design and construct forms to resist pumping pressure in addition to weight of wet concrete. Seal joints and seams in forms and where forms abut existing concrete.

2. Pump concrete into place from bottom to top, releasing air from forms as concrete is introduced. When formed space is full, close air vents and pressurize to 14 psi.

E. Wet-cure concrete for not less than seven days by leaving forms in place or keeping surfaces continuously wet by water-fog spray or water-saturated absorptive cover covered with non-permeable cover.

F. Fill placement cavities with dry-pack mortar and repair voids with patching mortar. Finish to match surrounding concrete.

3.6 GROUTING PREPLACED AGGREGATE CONCRETE

A. Design and construct forms to resist pumping pressure in addition to weight of wet grout. Seal joints and seams in forms and where forms abut existing concrete.

B. Apply bonding agent.

C. Place aggregate in forms, consolidating aggregate in lifts as it is placed. Pack aggregate into upper areas of forms to achieve intimate contact with concrete surfaces.

D. Fill forms with water to thoroughly dampen aggregate and substrates. Drain water from forms before placing grout.

E. Pump grout into place at bottom of preplaced aggregate, forcing grout upward. Release air from forms at top as grout is introduced. When formed space is full and grout flows from air vents, close vents and pressurize to 14 psi.

F. Wet-cure concrete for not less than seven days by leaving forms in place or keeping surfaces continuously wet by water-fog spray or water-saturated absorptive cover.

G. Repair voids with patching mortar and finish to match surrounding concrete.

3.8 EPOXY CRACK INJECTION

A. Clean cracks with oil-free compressed air or low-pressure water to remove loose particles.

B. Clean areas to receive capping adhesive of oil, dirt, and other substances that would interfere with bond.

C. Place injection ports as recommended by epoxy manufacturer, spacing no farther apart than thickness of member being injected. Seal injection ports in place with capping adhesive.

D. Seal cracks at exposed surfaces with a ribbon of capping adhesive at least 1/4 inch thick by 1 inch wider than crack.

E. Inject cracks wider than 0.003 inch to a depth of 8 inches.

F. Inject epoxy adhesive, beginning at widest part of crack and working toward narrower parts. Inject adhesive into ports to refusal, capping adjacent ports when they extrude epoxy. Cap injected ports and inject through adjacent ports until crack is filled.

G. After epoxy adhesive has set, remove injection ports and grind surfaces smooth.

END OF SECTION

SECTION 051200-STRUCTURAL STEEL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Structural steel framing.

B. Section does NOT include:

1. Miscellaneous metals, e.g. handrails, brick lintels, soffit framing, standard metal stairs, and other non-structural metal fabrications.

C. Provide all labor, materials, equipment, and services required to furnish and install all structural steel framing as indicated on the Drawings and specified herein.

1.3 ACTION SUBMITTALS

A. The Contractor shall submit the following data for Architect's review in accordance with Specifications Division 1 requirements.

B. Product Data: For each type of product indicated.

C. Shop Drawings.

1. Shop drawings shall consist of both erection drawings and part detail drawings.
2. Erection drawings shall show the layout and piece mark of all structural steel members and/or assemblies and sections and details sufficient to erect the fabricated steel correctly independent of the structural drawings.
3. Erection drawings shall include setting drawings for all plates, embedments and anchorages of structural steel to supporting structure, e.g. walls, foundations etc.
4. Erection drawings shall include erection instructions sufficient to alert the erector to any special erection requirements for temporary bracing, cribbing, field bolting that may be required after shipping but prior to erection, and shoring for safe erection of the structural steel in all phases of erection and construction.
5. Detail drawings shall contain multi-view drawings of each fabricated part or assembly in its ready-to-ship stage and shall contain sufficient information for the shop to fabricate the part or assembly completely independently of the erection drawings or structural drawings.

6. Shop drawings shall indicate welds by standard AWS symbols, distinguishing between shop welds on the detail drawings and field welds on the erection drawings, and show size, length, and type of each weld.
7. Shop drawings shall indicate type, size, and length of bolts, distinguishing between shop and field bolts.
8. Shop drawings shall identify pretensioned and slip-critical high-strength bolted connections.
9. Shop drawings shall indicate shop preparations for finishing and finishing as are required by the finishing requirements of the Contract Documents.
10. Fabrication drawings shall not be reproductions of Contract Drawings, they shall be independently prepared by referencing the Contract Drawings.
11. Auditorium Alternate: If auditorium alternate is approved, the shop drawings for the structural steel framing of the auditorium shall be prepared using computerized 3-D steel detailing software such as Tekla or SDS/2 or equal. The fabricator's 3-D model shall be prepared independently of any model provided by the Architect or Engineer by referencing the Contract Documents.

1.4 QUALITY ASSURANCE

A. Fabricator Qualifications: Fabricator shall have minimum 3 years of successful past performance of contracts for similar structures or shall be subject to approval based on successful past performance of contracts on similar structures.

B. Installer Qualifications: Installer shall have minimum 3 years of successful past performance of contracts for similar structures or shall be subject to approval based on successful past performance of contracts on similar structures.

C. Welding Procedure Qualifications: Must be in accordance with AWS D1.4/D1.4M.

D. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

E. Comply with applicable provisions of the following specifications and documents:

1. AISC 303 "Code of Standard Practice for Steel Buildings and Bridges".
2. AISC 360 "Specification for Structural Steel Buildings".
3. RCSC's "Specification for Structural Joints Using ASTM A 325 or A 490 Bolts."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Store materials to permit easy access for inspection and identification. Keep steel members off ground and spaced by using pallets, dunnage, or other supports and spacers. Protect steel members and packaged materials from corrosion and deterioration.

1. Do not store materials on structure in a manner that might cause distortion, damage, or overload to members or supporting structures. Repair or replace damaged materials or structures as directed.

B. Store fasteners in a protected place in sealed containers with manufacturer's labels intact.

1. Fasteners may be repackaged provided Owner's testing and inspecting agency observes repackaging and seals containers.
2. Clean and relubricate bolts and nuts that become dry or rusty before use.
3. Comply with manufacturers' written recommendations for cleaning and lubricating ASTM F 1852 fasteners and for retesting fasteners after lubrication.

PART 2 - PRODUCTS

2.1 STRUCTURAL-STEEL MATERIALS

A. Structural Steel Shapes shall conform to the ASTM specifications indicated on the drawings.

B. Welding Electrodes: Comply with AWS requirements.

2.2 BOLTS, CONNECTORS, AND ANCHORS

A. High-strength structural bolts, nuts and washers shall conform to the requirements indicated on the drawings.

2.3 PRIMER

A. Primer: Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

B. Coat all completed column bases below top-of-slab level with Wohl "Pile Paint" mastic coating or approved equal after erection.

2.4 GROUT

A. Nonmetallic, Shrinkage-Resistant Grout: ASTM C 1107, factory-packaged, nonmetallic aggregate grout, noncorrosive and nonstaining, mixed with water to consistency suitable for application and a 30-minute working time.

2.5 FABRICATION

A. Structural Steel: Fabricate and assemble in shop to greatest extent possible. Fabricate according to AISC's "Code of Standard Practice for Steel Buildings and Bridges" and AISC 360.

1. Camber structural-steel members where indicated.
2. Fabricate beams with rolling camber up.
3. Identify high-strength structural steel according to ASTM A 6/A 6M and maintain markings until structural steel has been erected.

4. Mark and match-mark materials for field assembly.
5. Complete structural-steel assemblies, including welding of units, before starting shop-priming operations.

B. Thermal Cutting: Perform thermal cutting by machine to greatest extent possible.

1. Plane thermally cut edges to be welded to comply with requirements in AWS D1.1/D1.1M.

C. Bolt Holes: Cut, drill, or punch standard bolt holes perpendicular to metal surfaces.

D. Finishing: Accurately finish ends of columns and other members transmitting bearing loads.

E. Holes: Provide holes required for securing other work to structural steel and for other work to pass through steel framing members.

1. Cut, drill, or punch holes perpendicular to steel surfaces. Do not thermally cut bolt holes or enlarge holes by burning.
2. Baseplate Holes: Cut, drill, mechanically thermal cut, or punch holes perpendicular to steel surfaces.
3. Weld threaded nuts to framing and other specialty items indicated to receive other work.

2.6 SHOP CONNECTIONS

A. Weld Connections: Comply with AWS D1.1/D1.1M for tolerances, appearances, welding procedure specifications, weld quality, and methods used in correcting welding work.

2.7 SHOP PRIMING

A. Shop prime steel surfaces except the following:

1. Surfaces embedded in concrete or mortar
2. Surfaces to be field welded.
3. 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 3, "Power Tool Cleaning."

C. 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.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.
2. Apply two coats of shop paint to surfaces that are inaccessible after assembly or erection.

2.8 GALVANIZING

A. Galvanize steel where indicated on plans.

B. Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123 or ASTM A 153, as applicable.

C. Galvanize after fabrication where practicable. Do not substitute electrogalvanizing for material that is indicated to be hot-dipped galvanized.

D. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC Paint 20.

2.9 SOURCE QUALITY CONTROL

A. Testing Agency: Owner may engage an independent testing and inspecting agency to perform shop tests and inspections and prepare test reports.

1. Provide testing agency with access to places where structural-steel work is being fabricated or produced to perform tests and inspections.

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

PART 3 - EXECUTION

3.1 FABRICATION

A. Structural material shall be fabricated and assembled in the shop to the greatest extent possible.

B. Shearing, flame cuttings, and chipping shall be done carefully and accurately. Sheared and flame cut edges shall be finished smooth by grinding, chipping, or planing.

C. The radii of reentrant flame cut fillets shall be not less than one inch and as much larger as practicable.

D. Sole plates of beams and girders shall have full contact with the flanges.

E. Where shown or required, stiffeners shall be fitted neatly between the flanges of beams and girders and, where tight fits are required to transmit bearing, the ends of stiffeners shall be milled or ground to secure an even bearing against the flanges or shall be grooved and fully buttwelded to the flanges. The corners of stiffener plates shall be cut to clear fillets of beams.

F. The clearance between the ends of spliced web plates shall not exceed ¼ inch.

G. Assembled pieces shall be taken apart, if necessary, for the removal of burrs and shavings produced by the reaming operation.

H. Steel work to be encased in concrete, including surfaces of top flanges of members supporting concrete slabs shall, after fabrication, be cleaned of all oil or grease by solvent cleaners and, after erection, be cleaned of dirt and foreign material by thoroughly sweeping with a stiff fiber brush or other approved method.

3.2 EXAMINATION

A. Verify, with steel Erector present, elevations of concrete- and masonry-bearing surfaces and locations of anchor rods, bearing plates, and other embedments for compliance with requirements.

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

3.3 PREPARATION

A. Templates shall be furnished, together with instructions for the setting of anchors, anchor bolts, and bearing plates. The Contractor shall ascertain that the items are properly set during the progress of the work.

B. Provide temporary shores, guys, braces, and other supports during erection to keep structural steel secure, plumb, and in alignment against temporary construction loads and loads equal in intensity to design loads. Remove temporary supports when permanent structural steel, connections, and bracing are in place unless otherwise indicated.

1. Do not remove temporary shoring supporting composite deck construction until cast-in-place concrete has attained its design compressive strength.

3.4 ERECTION

A. Prior to erection, members shall be identified by a painted erection mark. Connecting parts assembled in the shop for reaming holes in field connections shall be match marked with scratch and notch marks. Do not locate erection markings on areas to be welded (or on surfaces of weathering steels that will be exposed in the completed structure). Do not locate match markings in areas that will decrease member strength or cause stress concentrations

B. Set structural steel accurately in locations and to elevations indicated and according to AISC 303 and AISC 360.

C. Base Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

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.

D. Maintain erection tolerances of structural steel within AISC's "Code of Standard Practice for Steel Buildings and Bridges."

E. Align and adjust various members that form part of complete frame or structure before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with members. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.

F. Splice members only where indicated.

G. Do not use thermal cutting during erection unless approved by Structural Engineer. Finish thermally cut sections within smoothness limits in AWS D1.1/D1.1M.

H. Do not enlarge unfair holes in members by burning or using drift pins. Ream holes that must be enlarged to admit bolts.

3.5 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: As-indicated on drawings.

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.

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.

3.6 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to inspect steel construction, high-strength bolt connections and welded connections and to perform and prepare test reports.

B. Correct deficiencies in Work that test reports and inspections indicate does not comply with the Contract Documents or with requirements.

3.7 REPAIRS AND PROTECTION

A. Touchup Painting: Immediately after erection, clean exposed areas where primer is damaged or missing and paint with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Clean and prepare surfaces by SSPC-SP 2 hand-tool cleaning or SSPC-SP 3 power-tool cleaning.

B. Touchup Painting:

1. Cleaning and touchup painting are specified in Division 09 painting Sections.
2. Repair damaged galvanized coatings in accordance with ASTM A 780.

END OF SECTION 051200

SECTION 05310 - STEEL DECKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Roof deck.

B. Related Requirements:

1. Division 5 Section "Metal Fabrications" for framing deck openings with miscellaneous steel shapes.
2. Division 5 Section "Cold-Formed Metal Framing".

1.3 ACTION SUBMITTALS

A. The Contractor shall submit the following data for Architect's review in accordance with the Division 01 submittal requirements.

B. Product Data: For each type of product indicated.

C. Shop Drawings:

1. Include plans, layout and types of deck panels, locations and sequence of connections, bearing on supports, methods of anchoring, attachment of accessories, adjusting plate details, size and location of holes to be cut and reinforcement to be provided, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction. Provide the manufacturer's erection instructions and other pertinent details.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

B. Certification of Powder-Actuated Tool Operator: Manufacturer's certificate attesting that the operators are authorized to use the low velocity powder-actuated tool.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Do not use decking for storage or as working platform until units have been fastened into position. Exercise care not to damage material or overload decking during construction. The maximum uniform distributed storage load must not exceed the design live load.

C. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation. Maintain deck finish at all times to prevent formation of rust. Repair deck finish using touch-up paint. Replace damaged material.

PART 2 - PRODUCTS

2.2 ROOF DECK

A. Roof Deck: Fabricate panels, with integrally embossed or raised pattern ribs and lapped side laps, if composite is indicated, to comply with "Standard for Steel Roof Deck," in ANSI/SDI RD-2017, and with the following:

1. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, primed with manufacturer's standard gray baked-on, rust-inhibitive primer.
2. Deck Profile, Depth and Thickness: As indicated
3. Span Condition: As indicated.

2.3 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated. Provide accessories of the same material as deck, unless specified otherwise.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 12 minimum diameter.

D. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inchdesign uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

E. Pour Stops and Girder Fillers: Steel sheet, minimum yield strength of 33,000 psi, of same material and finish as deck, and of thickness and profile recommended by SDI Publication No. 31 for overhang and slab depth.

F. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck unless otherwise indicated. Support and retain concrete at each

floor level. Provide edge closures at all edges of the slab of sufficient strength and stiffness to support the wet concrete. Provide metal closures for all openings in Non-composite steel deck ¼-inch and over.

G. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

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

3.2 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 31, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing deck panels if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

3.3 ROOF DECK INSTALLATION

A. Fasten roof deck panels to steel supporting members by self-drilling and tapping sheet metal screws as indicated.

B. Fasten deck side laps with self-drilling and tapping sheet metal screws as indicated.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped 3 inches.

D. Miscellaneous Roof Deck Accessories: Provide & Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Fasten to substrate to provide a complete deck system installation.

1. Fasten cover plates at changes in direction of roof-deck panels unless otherwise indicated.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections of installation of deck. Testing Agency shall report inspection results promptly and in writing to the Contractor and the Architect.

B. Remove and replace work that does not comply with specified requirements.

C. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

D. Inspect deck not receiving concrete for distortion after installation.

3.5 PROTECTION

A. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION 053100

SECTION 054000 - COLD-FORMED STEEL FRAMING

PART 1 – GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:

1. Non-Load-bearing wall framing.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of cold-formed steel framing product and accessory.

1.04 INFORMATIONAL SUBMITTALS

A. Evaluation Reports: For dimpled steel studs and runners and firestop tracks, from ICC-ES AC46.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Protect cold-formed steel framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling.

B. Cover Cemco Sure-Board panels with waterproof material and ventilate to avoid condensation before installation. Store board panels off ground with one end elevated for moisture drainage. Do not bend steel sheet or break gypsum board sheet while handling.

PART 2 – PRODUCTS

2.01 PERFORMANCE REQUIREMENTS

A. Cold-Formed Steel Framing Design Standards:

1. Wall Studs: AISI S211.

2. Headers: AISI S212.

3. Lateral Design: AISI S213.

B. AISI Specifications and Standards: Unless more stringent requirements are indicated, comply with AISI S100 and AISI S200.

C. Fire-Resistance Ratings: Comply with ASTM E 119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.02 FRAMING SYSTEMS

A. Framing Members, General: Comply with ASTM C754 for conditions indicated.

1. Steel Sheet components: Comply with ASTM C645 requirements for steel sheet unless indicated otherwise.

2. Protective Coating: ASTM A653/A653M, G40 (Z120), hot-dip galvanized, unless otherwise indicated.

B. Studs and runners: ASTM C645. Use either steel studs and runners or dimpled steel studs and runners.

1. Minimum Base-Metal Thickness: 0.033 inch.

2. Depth: As indicated.

C. Products: Subject to compliance with requirements, available products that may be incorporated into the work include, but are not limited to, the following:

1. Dietrich Metal Framing, SLP-TRK Slotted Deflection Track.

2. MBA Building Supplies: FlatSteel Deflection Track or Slotted Deflecto Track.

3. Steel Network, Inc. (The); VertiClip SLD or VertiTrack VTD Series.

4. Telling Industries; Vertical Slip Track or Vertical Slip Track II.

5. Equivalent by other manufacturer.

D. Firestop Tracks: Top runner manufactured to allow partition heads to expand and contract with movement of the structure while maintaining continuity of fire-resistance-rated assembly indicated; in thickness not less than indicated for studs and in width to accommodate depth of studs.

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

1. Fire Trak Corp.; Fire Trak System attached to studs with Fire Trak Posi Klip.

2. Grace Construction Products; FlameSafe FlowTrak System.

3. Metal-Lite, Inc.; The System.

4. Equivalent by other Manufacturer.

F. Flat Strap and Backing Plate: Steel sheet for blocking and bracing in length and width indicated.

1. Minimum Base-Metal Thickness: 0.033 inch.

2.03 FRAMING ACCESSORIES

A. General: Provide auxiliary materials that comply with referenced installation standards.

B. Fasteners for Metal Framing: Of type, material, size, corrosion resistance, holding power, and other properties required to fasten steel members to substrates.

2.04 ANCHORS, CLIPS, AND FASTENERS

A. Welding Electrodes: Comply with AWS standards.

2.05 CEMCO SURE BOARD SHEET STEEL PANELS

A. Each panel shall consist of 5/8 inch thick square or tapered-edge fire rated and fiber reinforced panels complying with ASTM C 1278 as well as glassmat gypsum substrate complying with ASTM C 1177, laminated with water soluble non-combustible type adhesive to steel sheet. The steel sheet is No. 22 gage /0.027 inch minimum base-metal thickness, complying with ASTM A 653 CS, Grade 33, and is provided with G40 minimum hot-dipped galvanized coating conforming with ASTM A 924.

B. Fastening: As indicated on the Drawings.

C. Handling and Installation: Per manufacturer's handling care and installation instructions.

2.06 FABRICATION

A. Fabricate cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.

1. Fabricate framing assemblies using jigs or templates.

2. Cut framing members by sawing or shearing; do not torch cut.

3. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, pneumatic pin fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.

   a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

   b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by no fewer than three exposed screw threads.

4. Fasten other materials to cold-formed steel framing by welding, bolting, pneumatic pin fastening, or screw fastening, according to Shop Drawings.

B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.

C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

2. Squareness: Fabricate each cold-formed steel framing assembly to a maximum out-of-square tolerance of 1/8 inch.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

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

3.02 INSTALLATION, GENERAL

A. Cold-formed steel framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed steel framing according to AISI S200 and to manufacturer's written instructions unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.

1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.

D. Install cold-formed steel framing and accessories plumb, square, and true to line, and with connections securely fastened.

1. Cut framing members by sawing or shearing; do not torch cut.

2. Fasten cold-formed steel framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.

   a. Comply with AWS D1.3/D1.3M requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.

   b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.

E. Install framing members in one-piece lengths unless splice connections are indicated for track or tension members.

F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.

G. Do not bridge building expansion joints with cold-formed steel framing. Independently frame both sides of joints.

H. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's approved or standard punched openings.

I. Erection Tolerances: Install cold-formed steel framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:

1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

J. Install studs so flanges within framing system point in same direction.

K. Fire-Resistance-Rated Partitions: Install framing to comply with fire-resistance-rated assembly indicted and support closures and to make partitions continuous from floor to underside of solid structure.

1. Firestop Track: Where indicted, install to maintain continuity of fire-resistance-rated assembly indicated.

3.03 FIELD QUALITY CONTROL

A. Testing: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field and shop welds will be subject to testing and inspecting.

C. Testing agency will report test results promptly and in writing to Contractor and Architect.

D. Remove and replace work where test results indicate that it does not comply with specified requirements.

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

3.04 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed steel framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, which ensure that cold-formed steel framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 055000 - METAL FABRICATIONS

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:

1. Steel framing and supports for mechanical and electrical equipment.
2. Steel framing and supports for applications where framing and supports are not specified in other Sections.

B. Related Specifications:

1. Section "Cast-in-Place Concrete"
2. Section " Concrete Unit Masonry"
3. Section "Cold-Formed Steel Framing."

1.3 COORDINATION

A. Coordinate selection of shop primers with topcoats to be applied over them. Comply with paint and coating manufacturers' written recommendations to ensure that shop primers and topcoats are compatible with one another.

B. Coordinate installation of metal fabrications that are anchored to or that receive other work. 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.

1.4 ACTION SUBMITTALS

A. Product Data: For all manufactured items:

B. Shop Drawings: Show fabrication and installation details. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide Shop Drawings for all fabricated items:

1.5 INFORMATIONAL SUBMITTALS

A. See Specification Section "Structural Special Inspection" for informational submittals required by that section.

1.6 QUALITY ASSURANCE

A. See Specification Section "Structural Special Inspection" for fabricator qualification certification requirements.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication.

PART 2 - PRODUCTS

2.1 METALS

A. Metal Surfaces, General: Provide materials with smooth, flat surfaces unless otherwise indicated. For metal fabrications exposed to view in the completed Work, provide materials without seam marks, roller marks, rolled trade names, or blemishes.

B. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.

C. Steel Tubing: ASTM A 500/A 500M, Grade B hollow structural sections.

2.2 FASTENERS

A. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 325, Type 3; with hex nuts, ASTM A 563, Grade C3; and, where indicated, flat washers.

B. Anchor Bolts: ASTM F 1554, Grade 36, of dimensions indicated; with nuts, ASTM A 563; and, where indicated, flat washers.

1. Hot-dip galvanize or provide mechanically deposited, zinc coating where item being fastened is indicated to be galvanized.

C. Anchors, General: Anchors capable of sustaining, without failure, a load equal to six times the load imposed when installed in unit masonry and four times the load imposed when installed in concrete, as determined by testing according to ASTM E 488/E 488M, conducted by a qualified independent testing agency.

D. Cast-in-Place Anchors in Concrete: Either threaded type or wedge type unless otherwise indicated; galvanized ferrous castings, either ASTM A 47/A 47M malleable iron or

ASTM A 27/A 27M cast steel. Provide bolts, washers, and shims as needed, all hot-dip galvanized per ASTM F 2329.

E. Post-Installed Anchors: chemical anchors.

1. Material for Interior Locations: Carbon-steel components zinc plated to comply with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, unless otherwise indicated.

2.3 MISCELLANEOUS MATERIALS

A. Universal Shop Primer: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with MPI#79 and compatible with topcoat.

1. Use primer containing pigments that make it easily distinguishable from zinc-rich primer.

B. Shop Primer for Galvanized Steel: Primer formulated for exterior use over zinc-coated metal and compatible with finish paint systems indicated.

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. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187/D 1187M.

E. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.4 FABRICATION, GENERAL

A. Shop Assembly: Preassemble items in the shop to greatest extent possible. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

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

C. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

D. Form exposed work with accurate angles and surfaces and straight edges.

E. Weld corners and seams continuously to comply with the following:

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 welding flux immediately.

4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

F. Form exposed connections with hairline joints, flush and smooth, using concealed fasteners or welds where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) fasteners unless otherwise indicated. Locate joints where least conspicuous.

G. Fabricate seams and other connections that are exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.

H. Cut, reinforce, drill, and tap metal fabrications as indicated to receive finish hardware, screws, and similar items.

I. Provide for anchorage of type indicated; coordinate with supporting structure. Space anchoring devices to secure metal fabrications rigidly in place and to support indicated loads.

2.5 MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide steel framing and supports not specified in other Sections as needed to complete the Work.

B. Fabricate units from steel shapes, plates, and bars of welded construction unless otherwise indicated. Fabricate to sizes, shapes, and profiles indicated and as necessary to receive adjacent construction.

C. Galvanize miscellaneous framing and supports where indicated.

2.6 LOOSE STEEL LINTELS

A. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated.

B. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than 6 inches unless otherwise indicated.

C. Galvanize (and prime if indicated) loose steel lintels located in exterior walls.

2.7 FINISHES, GENERAL

A. Finish metal fabrications after assembly.

B. Finish exposed surfaces to remove tool and die marks and stretch lines, and to blend into surrounding surface.

2.8 STEEL AND IRON FINISHES

A. Galvanizing: Hot-dip galvanize items as indicated to comply with ASTM A 153/A 153M for steel and iron hardware and with ASTM A 123/A 123M for other steel and iron products.

1. Do not quench or apply post galvanizing treatments that might interfere with paint adhesion.

B. Preparation for Shop Priming Galvanized Items: After galvanizing, thoroughly clean railings of grease, dirt, oil, flux, and other foreign matter, and treat with metallic phosphate process.

C. Shop prime iron and steel items not indicated to be galvanized unless they are to be embedded in concrete, sprayed-on fireproofing, or masonry, or unless otherwise indicated.

D. Shop prime with:

1. Fabricator's standard lead- and chromate-free, nonasphaltic, rust-inhibiting primer complying with MPI#79 and compatible with topcoat.

E. Preparation for Shop Priming: Prepare surfaces to comply with SSPC-SP 3, "Power Tool Cleaning."

F. Shop Priming: Apply shop primer to comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

1. Stripe paint corners, crevices, bolts, welds, and sharp edges.

G. Field Coating Below Slab:

1. Coat structural steel below slab level where indicated after erection with one coat of Coal Tar Mastic conforming to ASTM D490 and SPC SPCC 33.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing metal fabrications. Set metal fabrications accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

B. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

C. Field Welding: Comply with the following requirements:

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 welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so no roughness shows after finishing and contour of welded surface matches that of adjacent surface.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where metal fabrications are required to be fastened to in-place construction. Provide threaded fasteners for use with concrete and masonry inserts, toggle bolts, through bolts, lag screws, wood screws, and other connectors.

E. Provide temporary bracing or anchors in formwork for items that are to be built into concrete, masonry, or similar construction.

3.2 INSTALLING MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Install framing and supports to comply with requirements of items being supported, including manufacturers' written instructions and requirements indicated on Shop Drawings.

B. Anchor supports for miscellaneous framing securely to, and rigidly brace from, building structure.

3.3 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports. See specification Section "Structural Special Inspection" for more information.

3.4 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas. Paint uncoated and abraded areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

1. Apply by brush or spray to provide a minimum 2.0-mil dry film thickness.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780/A 780M.

END OF SECTION 055000

3.4 SCHEDULES

A. Remove, store and protect the following materials and equipment:

1. Blinds in the conference rooms.
2. Any wall mounted plaques, signage or other items.
3. Doors, hardware fixtures or other misc items as noted in the documents.

B. Protect the following materials and equipment remaining:

1. Wall Mounted furnishings components (locate items to middle of room and cover with plastic to protect from harm unit time for contractor to reinstall at end of phase).

C. Demolish the following materials and equipment:

1. As required by the construction of new work.

END OF SECTION 024119.13

SECTION 055213 - PIPE AND TUBE RAILINGS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Steel pipe railings.

1.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design railings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Railings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated:

1. Handrails and Top Rails of Guards:

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

2. Infill of Guards:

a. Concentrated load of 50 lbf (0.22 kN) applied horizontally on an area of 1 sq. ft. (0.093 sq. m).
b. Infill load and other loads need not be assumed to act concurrently.

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

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Manufacturer's product lines of mechanically connected railings.
2. Railing brackets.
3. Grout, anchoring cement, and paint products.

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

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

D. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, according to ASTM E 894 and ASTM E 935.

PART 2 - PRODUCTS

2.1 METALS, GENERAL

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

2.2 STEEL AND IRON

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.

B. Pipe: ASTM A 53/A 53M, Type F or Type S, Grade A, Standard Weight (Schedule 40), unless another grade and weight are required by structural loads.

C. Plates, Shapes, and Bars: ASTM A 36/A 36M.

2.3 MISCELLANEOUS MATERIALS

A. Fasteners: Provide the following:
1. Hot-Dip Galvanized Railings: Type 304 stainless-steel or hot-dip zinc-coated steel fasteners complying with ASTM A 153/A 153M or ASTM F 2329 for zinc coating.

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

C. Low-Emitting Materials: Paints and coatings shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

D. Etching Cleaner for Galvanized Metal: Complying with MPI#25.

E. Galvanizing Repair Paint: High-zinc-dust-content paint complying with SSPC-Paint 20 and compatible with paints specified to be used over it.

F. Epoxy Zinc-Rich Primer: Complying with MPI#20 and compatible with topcoat.

G. Epoxy Intermediate Coat: Complying with MPI #77 and compatible with primer and topcoat.

H. Polyurethane Topcoat: Complying with MPI #72 and compatible with undercoat.

I. Nonshrink, Nonmetallic Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107. Provide grout specifically recommended by manufacturer for interior and exterior applications.

2.4 FABRICATION

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

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

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

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

D. Form changes in direction by bending.

E. Bend members in jigs to produce uniform curvature without buckling or otherwise deforming exposed surfaces.

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

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

2.5 STEEL AND IRON FINISHES

A. Galvanized Railings:

1. Hot-dip galvanize exterior steel railings, including hardware, after fabrication.
2. Comply with ASTM A 123/A 123M for hot-dip galvanized railings.
3. Comply with ASTM A 153/A 153M for hot-dip galvanized hardware.

B. 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.

C. Primer Application: Apply shop primer to prepared surfaces of railings unless otherwise indicated. Comply with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.

D. High-Performance Coating: Apply epoxy intermediate and polyurethane topcoats to prime-coated surfaces. Comply with coating manufacturer's written instructions and with requirements in SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting. Apply at spreading rates recommended by coating manufacturer.

1. Color: As selected by Architect from manufacturer's full range.

PART 3 - EXECUTION

3.1 INSTALLATION

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

1. Do not weld, cut, or abrade surfaces of railing components that have been coated or finished after fabrication and that are intended for field connection by mechanical or other means without further cutting or fitting.
2. Set posts plumb within a tolerance of 1/16 inch in 3 feet (2 mm in 1 m).
3. Align rails so variations from level for horizontal members and variations from parallel with rake of steps and ramps for sloping members do not exceed 1/4 inch in 12 feet (5 mm in 3 m).

3.2 ADJUSTING AND CLEANING

A. Touchup Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with the same material as used for shop painting to comply with SSPC-PA 1 for touching up shop-painted surfaces.

B. Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and repair galvanizing to comply with ASTM A 780.

END OF SECTION 055213

SECTION 061000 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Rough Carpentry.
2. Preservative treatment of wood.
3. Fire-retardant treatment of wood.
4. Miscellaneous framing and sheathing.
5. Wood Furring and grounds.
6. Concealed wood blocking for support of wall mounted items as required, including, but not limited to electronics and other equipment as well as parapet and roof blocking, trim and supports.
7. Synthetic/Moisture resistant wood for blocking, furring and trim.

1.2 REFERENCE STANDARDS

A. American National Standards Institute / American Hardboard Association:

1. ANSI/AHA A135.4 - Basic Hardboard.

B. American Wood Protection Association:

1. AWPA M4 - Standard for the Care of Preservative-Treated Wood Products.
2. AWPA U1 - Use Category System: User Specification for Treated Wood.

C. APA - The Engineered Wood Association:

1. APA - Plywood Design Specification, including supplements.
2. APA AFG-01 - Adhesives for Field-Gluing Plywood to Wood Framing.
3. APA PS 1 - Voluntary Product Standard - Structural Plywood.

D. ASTM International:

1. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
2. ASTM B695 - Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel.
3. ASTM C1177 - Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
4. ASTM C1280 - Standard Specification for Application of Exterior Gypsum Panel Products for Use as Sheathing.
5. ASTM C1396 - Standard Specification for Gypsum Board.
6. ASTM D2559 - Standard Specification for Adhesives for Bonded Structural Wood Products for Use Under Exterior Exposure Conditions.

7. ASTM D3498 - Standard Specification for Adhesives for Field-Gluing Plywood to Lumber Framing for Floor Systems.
8. ASTM D5456 - Standard Specification for Evaluation of Structural Composite Lumber Products.
9. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
10. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
11. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

E. California Department of Health Care Services:

1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers.

F. Forest Stewardship Council:

1. FSC Guidelines.

G. Green Seal:

1. GS-36 - Green Seal Standard for Adhesives for Commercial Use.

H. National Lumber Grades Authority:

1. NLGA - Standard Grading Rules for Canadian Lumber.

I. Northeastern Lumber Manufacturers Association:

1. NELMA - Standard Grading Rules for Northeastern Lumber.

J. Redwood Inspection Service:

1. RIS - Standard Specifications for Grades of California Redwood Lumber.

K. South Coast Air Quality Management District:

1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

L. Southern Pine Inspection Bureau:

1. SPIB - Standard Grading Rules for Southern Pine Lumber.

M. U.S. Department of Commerce National Institute of Standards and Technology:

1. DOC PS 1 - Structural Plywood.
2. DOC PS 2 - Performance Standard for Wood-Based Structural-Use Panels.
3. DOC PS 20 - American Softwood Lumber Standard.

N. West Coast Lumber Inspection Bureau:

1. WCLIB Standard 17 - Grading Rules for West Coast Lumber.

O. Western Wood Products Association:

1. WWPA - Western Lumber Grading Rules.

1.3 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

1.5 QUALITY ASSURANCE

A. Perform Work according to:

1. Lumber Grading Agency: Certified by DOC PS 20.
2. Wood Structural Panel Grading Agency: Certified by APA - The Engineered Wood Association.
3. Lumber: DOC PS 20.

B. Fire-Rated Wall Construction:

1. Rating: As indicated on Drawings
2. Tested Rating: Determined according to ASTM E119.

C. Surface-Burning Characteristics:

1. Fire-Retardant-Treated Materials: Maximum 25/450 flame-spread/smoke-developed index when tested according to ASTM E84.

D. Apply label from agency approved by authority having jurisdiction to identify each preservative-treated and fire-retardant-treated material.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Store materials according to manufacturer instructions.

PART 2 - PRODUCTS

2.1 FIREBLOCKING AND DRAFTSTOPPING (as required)

A. Fireblocking:

1. Solid Lumber:

a. Two layers, each with nominal thickness of 1 inch.
b. Joints: Broken lapped.

2. Structural Wood Panel:

a. Thickness: 23/32 inch.
b. Joints: Backed by structural wood panel.

3. Particleboard:

a. Thickness: 3/4 inch.
b. Joints: Backed by particleboard.

B. Draftstopping:

1. Gypsum Board: 5/8 inch thick, Type X.

2.2 MATERIALS

A. Lumber:

1. Equipment and Electrical Panel Boards: APA plywood. Refer to Mechanical and Electrical drawings and specifications for details.

2. Lumber Grading Rules: Comply with APA.

3. PS 20; graded in accordance with established Grading rules; maximum moisture content of 13 percent; of following species and grades:
a. Structural Light Framing: Stress group S4S; select structural; No. 2 grade.
b. Non-structural Light Framing: Stress group S4S; structural grade.
c. Studding: Stress group S4S; stud grade.
d. Structural Joists: Stress group S4S; select structural; No. 2 grade.
e. Beams and Stringers: Stress group S4S; structural; No. 1 grade.

4. Douglas Fir Plywood: Sheathing grade.

5. Softwood Plywood: PS 1; sheathing grade

2.3 FACTORY WOOD TREATMENT

A. Wood Preservative (Pressure Treatment): AWPA U1, Commodity Specifications A-Sawn Products or F-Wood Composites, using waterborne preservative. Marine grade.

B. Wood Preservative (Surface Application):

1. Type: Clear.

C. Fire-Retardant Treatment:

1. Chemically treated and pressure impregnated.
2. Flame Spread: 25 or less when tested according to ASTM E84 and showing no evidence of significant progressive combustion when test is continued for an additional 20 minutes.
3. Type: Interior.

2.4 ACCESSORIES

A. Fasteners and Anchors:

1. Fasteners:

a. High-Humidity and Treated Wood Locations: ASTM A153, hot-dip galvanized steel.

2. Drywall Screws:

a. Description: Bugle head, hardened steel, power-driven.
b. Length: Three times thickness of sheathing.

3. Anchors: Toggle bolt type for anchorage to hollow masonry; Expansion shield and lag bolt type for anchorage to solid masonry or concrete; Bolt or ballistic fastener for anchorages to steel.

4. Nails, Spikes and Staples: Galvanized for exterior locations, high humidity locations and treated wood; plain finish for other interior locations; size and type to suite application.

5. Bolts, Nuts, Washers, Lags, Pins and Screws: Medium, carbon steel; size to suit application; galvanized for exterior locations, high humidity locations and treated wood; plain finish other interior locations.

B. Lumber for shimming and blocking: Softwood lumber of species.

C. Wood filler: Solvent base, tinted to match surface finish color.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and openings are ready to receive work and field measurements are as shown on shop drawings.

B. Verify mechanical, electrical and building items affecting work of this section are placed and ready to receive this work.

C. Beginning of installation means acceptance of conditions.

3.2 INSTALLATION OF ROUGH CARPENTRY ITEMS

A. Plumb, level, true to line or grade, secured in precise position to receive support and engage the several parts of the work.

B. General: Erect framing true and plumb. Provide temporary bracing as required to maintain lines and levels until permanent supporting members are in place.

C. Cutting: Avoid extra cutting after fabrication.

D. Install miscellaneous steel connectors, anchors and accessories as needed.

E. Replace or protect members as directed.

F. For exposed wall veneer, panels shall be free of warp twist, with exposed fasteners 12" o.c. arranged at perimeter and aligned with adjacent fasteners.

3.3 APPLICATION

A. Framing:

1. Select individual pieces such that knots and defects will not interfere with placement of bolts when nailing or making connections.
2. Discard defective pieces.
3. Set structural members level, plumb, and in correct position.
4. Fasten framing according to applicable code.
5. Make provisions for erection loads and for sufficient temporary bracing to maintain that structure is safe, plumb, and in alignment until completion of erection and installation of permanent bracing.
6. Place horizontal members crown side up.
7. Construct framing and curb members full length without splices.

B. Fireblocking and Draftstopping (as required):

1. Install fireblocking to cut off concealed draft openings.

2. Concealed Framed Wall and Furred Spaces: Install fireblocking vertically at floor and ceiling levels and horizontally at maximum 10 feet o.c.
3. Install fireblocking between:

   a. Vertical walls and partitions.
   b. Horizontal floor and roof framing.
   c. Soffits, dropped ceilings, cove ceilings, and other horizontal concealed spaces.
   d. Provide mineral wool and fire caulk as required.

3.4 TOLERANCES

A. Section 014000 - Quality Requirements: Requirements for tolerances.

B. Framing and Furring Members to Receive a Finished Wall or Ceiling: Align finish surface to vary not more than 1/8 inch from a theoretical plane or surface of the room or space.

3.5 SCHEDULE:

A. Wood blocking as required for wall or ceiling mounted items.

B. Concealed wall blocking, not fire-treated.

C. Blocking/framing as required (typical), for all components requiring blocking including but not limited to trim, chases, equipment, accessories, door and window door installation, roof and parapet work and trim/coping installation.

D. Roof + Parapet Blocking: pressure-treated for moisture resistance, all locations. To be provided to meet roof manufacturer's warranty requirements.

E. Sheathing: ¾" marine grade plywood, typ.

F. At any areas exposed to high moisture (landscaping, rising damp), provide 4/4" paintable synthetic lumber with stainless steel anchors and treated wood blocking as req. Synthetic lumber to be stabilized, non-warping, Aztek 4/4 thick or approved equal.

END OF SECTION 061000

SECTION 072113 - BOARD INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:
   1. Board insulation at roof and as shown on drawings.

B. To include all areas shown and described, including but not limited to the above.

1.2 REFERENCES

A. ASTM International:
   1. ASTM C240 - Standard Test Methods of Testing Cellular Glass Insulation Block.
   2. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation.
   3. ASTM C578 - Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
   4. ASTM C612 - Standard Specification for Mineral Fiber Block and Board Thermal Insulation.
   5. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
   6. ASTM D2842 - Standard Test Method for Water Absorption of Rigid Cellular Plastics.
   7. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   8. ASTM E970 - Standard Test Method for Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source.

B. California Department of Health Care Services:
   1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers.

C. Green Seal:
   1. GS-36 - Green Seal Standard for Adhesives for Commercial Use.

D. South Coast Air Quality Management District:
   1. SCAQMD Rule 1168 - Adhesive and Sealant Applications.

1.3 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with all sections of work as required including but not limited to 072726 – Applied Air Barrier System for air seal materials.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on product characteristics, performance criteria, limitations, and adhesives.

C. Manufacturer's Installation Instructions: Submit special environmental conditions required for installation, and installation techniques.

D. Materials Resources Certificates:
1. Certify recycled material content for recycled content products.
2. Certify source for regional materials and distance from Project Site.

E. Indoor Air Quality Certificates:
1. Certify VOC content for each interior adhesive and sealant and related primer.

1.5 QUALITY ASSURANCE

A. Surface Burning Characteristics of Insulation Installed in Concealed Locations:
1. Foam Plastic Insulation: Maximum 75/450 flame-spread/smoke-developed index when tested according to ASTM E84.
2. According to IBC, surface burning rating is not required for insulation facings installed in Construction Types III, IV, and V. Facing must be in substantial contact with ceiling, wall, or floor finish.

B. Other Insulation: Maximum 25/450 flame-spread/smoke-developed index when tested according to ASTM E84.
1. Surface Burning Characteristics of Insulation Installed in Exposed Locations:
2. Maximum 25/450 flame-spread/smoke-developed index when tested according to ASTM E84.

C. Apply label from agency approved by authority having jurisdiction to identify each foam plastic insulation board.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Store according to manufacturer instructions.

D. Protection:
1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Remove insulation that becomes wet or damp.
3. Provide additional protection according to manufacturer instructions.

1.7 AMBIENT CONDITIONS

A. Section 015000 - Temporary Facilities and Controls: Requirements for ambient condition control facilities for product storage and installation.

B. Minimum Conditions: Do not install adhesives when temperature or weather conditions are detrimental to successful installation.

PART 2 PRODUCTS

2.1 SYSTEM DESCRIPTION

A. Continuity of Thermal Barrier at Building Enclosure Elements: In conjunction with thermal insulating materials as specified.

2.2 BOARD INSULATION – roofs

A. Manufacturers:
1. Atlas Energy Products – AC Foam II, Polyisocyanurate Insulation.
2. NRG / Johns Manville – E'NRG'Y 3, Polyisocyanurate Insulation.
3. Hunter Panels LLC – H-Shield, Polyisocyanurate Insulation.
4. Substitutions: Section 016000 - Product Requirements

B. Closed cell, rigid Polyisocyanurate Insulation: ASTM C1289 Type II closed cell, rigid foam core material, integrally laminated between glass fiber facers conforming to the following:
1. Board Size: to fit application and reinforcement/framing dimensional requirements.
2. Board Thickness: as indicated on drawings.
3. Thermal Resistance: minimum R of 5.0 per inch.
4. Installed as req. to meet ICC energy code.

2.3 ACCESSORIES

A. Adhesive: Type recommended by insulation manufacturer for application.

B. Tape: Polyester self-adhering type, mesh reinforced, 2-inch-wide; as recommended and approved by Board Insulation manufacturer and by Air & Moisture-Resistive Barrier manufacturer.

C. Insulation Fasteners: Impaling clip of galvanized steel with washer retainer and clips, to be mechanically fastened to surface to receive board insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate, adjacent materials, and insulation boards are dry and ready to receive insulation and adhesive.

B. Verify substrate surface is flat, free of honeycomb, fins, irregularities, materials or substances affecting adhesive bond.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 017000 - Execution and Closeout Requirements: Protecting installed construction.

B. Do not permit damage to insulation prior to covering.

3.7 SCHEDULES

A. Roof Insulation approx. 5- inch Polyisocyanurate or as required to meet required min R-value (R-30) with joints staggered and taped. No large joints between boards. Refer to Roof Section 075200 and Section 076103. A roof cover board between roof membrane and thermal insulation shall be provided. Use roof manufacturer's recommendations, and submit for approval.

B. Deck flutes to be swept clean and to be dry prior to installation

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Replacement of all batt insulation in exterior walls, min R-19.

2. All insulation with exposed faces (above gyp in interstitial areas) shall be faced and meet flame spread requirements.

B. Related Requirements:

1. Section 072113 - Board Insulation: Boards of polystyrene, polyurethane, or polyisocyanurate foam, cellular glass, or rigid or semi-rigid glass fiber.
2. Section 078400 - Firestopping: Products for closing openings in and penetrations through fire-rated construction.
3. Section 072129 – Sprayed Insulation.

1.2 REFERENCE STANDARDS

A. ASTM International:

1. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
2. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
3. ASTM E970 - Standard Test Method for Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source.

1.3 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with Section 074213 Metal Wall Panels, Section 074243 Metal Insulated Wall Panels.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer data on product characteristics, performance criteria and limitations.

C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

D. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.

1.5 QUALITY ASSURANCE

A. Surface Burning Characteristics of Insulation Installed in Concealed Locations:

1. Batt Insulation: Maximum 25/450 flame-spread/smoke-developed index when tested according to ASTM E84.

B. Surface Burning Characteristics of Insulation Installed in Exposed Locations:

1. Maximum 25/450 flame-spread/smoke-developed index when tested according to ASTM E84.

C. Perform Work according to 2018 Kentucky Building Code standards.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Store according to manufacturer instructions.

D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Remove insulation that becomes wet or damp.
3. Provide additional protection according to manufacturer instructions.

PART 2 - PRODUCTS

2.1 BATT INSULATION

A. Manufacturers:

1. CertainTeed LLC; Saint-Gobain North America.

2. Johns Manville; a Berkshire Hathaway company.
3. Knauf Insulation.
4. Owens Corning.
5. ROCKWOOL.
6. Substitutions: As specified in Section 016000 - Product Requirements

2.2 MATERIALS

A. Batt Insulation:

1. Description: Preformed glass or mineral-fiber batt, faced with staple flanges or unfaced as required to match existing conditions, flame/fire rating requirements.
2. Comply with ASTM C665, Type I.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for application examination.

B. Verify that substrate, adjacent materials, and insulation are dry and ready to receive insulation.

3.2 INSTALLATION

A. If required due to current conditions, install in exterior wall spaces without gaps or voids.

B. Do not compress insulation.

C. Trim insulation neatly to fit spaces.

D. Insulate miscellaneous gaps and voids.

E. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within plane of insulation.

END OF SECTION 072116

SECTION 072129 - SPRAYED INSULATION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes
1. Preparation and cleaning of existing and new surfaces to receive spray-on insulation.
2. Preparation work on surfaces additional pre-finish applications per manufacturer's recommendations for providing best adhesion and installation of new work.
3. Surface Sealer.
4. Cellulose insulation to fill all perimeter gaps / crevices in the exterior building envelope tops of wall and in shim spaces and perimeter of all window systems.
5. Temporary controls: provide ventilation as required to cure installed insulation.

1.2 RELATED SECTIONS

A. Section 061000 – Rough Carpentry

B. Section 099000 - Painting and Coating

C. Section 0854113 – Aluminum Windows

1.3 REFERENCES

A. ASTM International:
1. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
2. ASTM C518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
3. ASTM C739 - Standard Specification for Cellulosic Fiber (Wood-Base) Loose-Fill Thermal Insulation.
4. ASTM C1014 - Standard Specification for Spray-Applied Mineral Fiber Thermal or Acoustical Insulation.
5. ASTM D1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.
6. ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 Degrees C.
7. ASTM E970 - Standard Test Method for Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source.

B. California Department of Health Services:
1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

C. Green Seal:
1. GS-11[-1st Edition, May 20, 1993] - Product Specific Environmental Requirements.

D. Intertek Testing Services (Warnock Hersey Listed):
1. WH - Certification Listings.

E. Underwriters Laboratories, Inc.:
1. UL - Fire Resistance Directory.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: submittal procedures.

B. Product Data: Submit data on materials.

C. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

E. Manufacturer's written certification that product contains no asbestos, fiberglass or other man-made mineral fibers, and free of ammonium based additives.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum five years documented successful experience.

B. Applicator Qualifications: Company specializing in performing the work of this section with minimum ten years documented successful experience on projects of this size.

1.6 PERFORMANCE REQUIREMENTS

A. Conform to Kentucky Building Code for non-combustibility, flame and smoke ratings, and sealer requirements.

1.6 ENVIRONMENTAL REQUIREMENTS

A. Section 016000 – Product Requirements: Environmental conditions affecting products on site.

B. Do not install insulation, sealer, and overcoat when ambient and surface temperatures are lower than 40 degrees F.

C. Maintain acceptable ambient and substrate surface temperatures 24 hours prior to, during, and after installation of primer and insulation materials and overcoat sealer.

1.7 PROJECT CONDITIONS

A. Section 013000 Administrative Requirements: Coordination and Meetings.

B. Apply insulation to juncture where wall meets roof at perimeter of spaces. In areas to be exposed, maintain neat even application, removing any overspray and trimming back neatly to vertical surface prior to finish priming and painting. Sequence to be established by General Contractor.

PART 2 PRODUCTS

2.1 SPRAYED INSULATION

A. Manufacturers:
1. International Cellulose Corporation
a. Cellbar [thermal barrier on building envelope – closed cell]
2. Thermocon, Inc. - Tex-Ceil Thermo Tuff.
3. Substitutions: Section 016000 - Product Requirements

2.2 COMPONENTS

A. Cellulose Fiber Insulation: ASTM C739, treated cellulose fiber, white color; conforming to the following test requirements:
1. R Value: R= 3.8 per inch
2. Minimum Thickness: 2", and as required in specific applications.
3. NRC: 0.65 for 1/2".
4. Flame Spread Index: Class 1 ASTM E-84/UL 723.
5. Smoke Developed: Class 1 ASTM E-84/UL 723.
6. Bond Strength: >900/psf ASTM E-736.
7. Compression Strength: >600/psf ASTM E-761.
8. Color: as noted on Schedule at end of this section.

2.4 ACCESSORIES

A. Primer/Sealer: As required by insulation manufacturer or as required for conditions specific to existing conditions and approved by manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces are clean, dry, and free of matter that may inhibit adhesion.

B. Verify other work on and within spaces to receive insulation is complete prior to application.

3.2 PREPARATION

A. Mask and protect adjacent surfaces, mechanical and electrical equipment from overspray or damage.

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Lexington Fayette Urban County Government
LFUCG RFP No. 78-2024

Tate Hill Jacobs Architects
Construction Documents
May 3, 2024

B. Apply primer, sealer, or other coating in accordance with manufacturer's instructions as required to render the substrate ready to receive acoustic insulation.

C. Apply insulation, building up to required thickness in as many passes as necessary to achieve monolithic appearance.

3.3 APPLICATION

A. Apply insulation in accordance with manufacturer's instructions.
B. Apply insulation to a uniform monolithic density without voids.
C. Apply to a minimum cured thickness of as specified.
D. Tamp wet insulation surface to improve adhesion and to achieve a smooth surface.
E. Apply sealer to minimize particle disturbance by moving air.

3.4 FIELD QUALITY CONTROL

A. Inspection will include verification of insulation and overcoat thickness.

3.5 PROTECTION OF FINISHED WORK

A. Do not permit subsequent construction work to disturb applied insulation.

3.6 SCHEDULE - Refer to Room Finish Sheet, Plan Sheets and Overall Reflected Ceiling Sheets and Wall Sections and Details.

A. Building Envelope: Cellbar [closed cell]; Fill all gaps, crevices and voids at parapet wall, intersection of roof and wall, around windows, doors, between top of wall & roof, around MEP penetrations, etc. Provide full enclosure of building envelope, typical.
B. Building Envelope and canopy: Provide Tyvek building wrap and spray insulation as required to maintain continuity of building envelope.
C. Refer to 016000 Product Information: substitution requests for low expansion cyanurate based sprays.

END OF SECTION

SECTION 072700 – WEATHER RESISTANT BARRIERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes air leakage criteria for primary air seal building enclosure materials and assemblies; materials and installation methods supplementing other, primary air seal materials and assemblies; and air seal materials to connect and seal openings, joints, and junctions between other air seal materials and assemblies.

B. Related Sections:

1. Section 072600 - Vapor Retarders: Vapor retarders.
2. Section 079000 - Joint Protection: Sealant materials and installation techniques.

1.2 REFERENCES

A. American Society of Civil Engineers:

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

B. ASTM International:

1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
3. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
4. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.

C. Sealant, Waterproofing and Restoration Institute:

1. SWRI - Sealant Specification.

1.3 DEFINITIONS

A. Air Barrier: Continuous network of materials and joints providing air tightness, with adequate strength and stiffness to not deflect excessively under air pressure differences, to which it will be subjected in service. It can be comprised of single material or combination of materials to achieve performance requirements.

1.4 DESIGN REQUIREMENTS

A. Perform design work in accordance with ASCE 7.

1.5 PERFORMANCE REQUIREMENTS

A. Provide continuity of air seal materials and assemblies in conjunction with materials described in Section 074213, 074243, and 072129.

1.6 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Design Data: Submit design calculations.

C. Product Data: Submit data on material characteristics, performance criteria and limitations.

D. Manufacturer's Installation Instructions: Submit preparation, installation requirements and techniques, product storage and handling criteria.

1.7 QUALITY ASSURANCE

A. Perform Work in accordance with SWRI - Sealant and Caulking Guide Specification requirements for materials and installation.

B. Perform Work in accordance with current Kentucky State Building Code standards.

1.8 PRE-INSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing work of this section.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section 016000 - Product Requirements.

B. Maintain temperature and humidity recommended by materials manufacturers before, during and after installation.

1.10 SEQUENCING

A. Section 011000 - Summary: Work sequence.

B. Sequence Work to permit installation of materials in conjunction with related materials and seals.

1.11 COORDINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Coordinate the Work of this section with sections referencing this section.

PART 2 - PRODUCTS

2.1 AIR BARRIERS

A. Manufacturers:
1. DuPont de Nemours, Inc.
2. Substitutions: Section 016000 - Product Requirements.

2.2 COMPONENTS

A. TYVEK Building wrap system including all manufacturers recommended fasteners.

B. Joints to be taped tight.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean and prime substrate surfaces per manufacturers recommendations.

3.2 INSTALLATION

A. Install per manufacturers recommendations.

3.3 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 017000 - Execution and Closeout Requirements: Protecting installed construction.

B. Do not permit adjacent work to damage work of this section.

3.4 SCHEDULES

A. Wall Air Seal Over Exterior Surface of Plywood Sheathing not sealed by IMP. Seal tight to IMP and adjacent components as required to maintain continuous barrier.

B. Window Frame Perimeter: Lap sheet seal with full contact over firm bearing to window frame with 25 mm of full contact. Edge seal with sealant.

C. Wall and Roof Junction: Lap sheet seal from wall seal material over firm bearing to roof air seal membrane. Seal as required.

D. Canopy and IMP wall interface.

E. At wall base at building rear behind synthetic wood base or where IMP does not extend past wall to provide weather barrier.

END OF SECTION 072700

SECTION 072726 - FLUID-APPLIED AIR & WATER-RESISTIVE BARRIER SYSTEM

PART 1 GENERAL

1.1 SUMMARY

A. Work of this section includes window and door flashing, air and water-resistive barrier, vapor-permeable membrane system, and accessory materials for application to exterior building envelope substrates as indicated on the drawings and as specified herein.

B. Systems to meet NPFA 285 requirements with certification.

C. Related Sections:
1. Section 054000 – Cold-Formed Metal Framing
2. Section 061000 – Rough Carpentry: plywood substrate for fluid applied barrier
3. Section 074213 - Metal Panels (Flush Soffit Panels)
4. Section 074213.1 - Insulated Metal Panels
5. Section 074243 -Composite Wall Panels
6. Section 076103 – Manufactured Sheet Metal Roofing: continuity of air/vapor barrier between top of wall and edge of modified bitumen roofing
7. Section 076200 – Sheet Metal Flashing and Trim
8. Section 079000 – Joint Protection
9. Section 084113 – Aluminum-Framed Entrances and Storefronts: application of fluid applied barrier continuously around wall openings scheduled to receive aluminum-framed entrances and storefronts.
10. Section 085113 – Aluminum Windows: application of fluid applied barrier continuously around wall openings scheduled to receive aluminum windows.
11. Section 092116 – Gypsum Board Assemblies: exterior gypsum sheathing as substrate for fluid applied barrier.

1.2 DESIGN REQUIREMENTS

A. Refer to Section 011000 - Building Envelope Requirements.

1.3 PERFORMANCE REQUIREMENTS

A. Performance requirements: Comply with the specified performance requirements and characteristics as herein specified.

B. Performance description:
1. The building envelope shall be constructed with a continuous, air and water-resistive barrier to control water and air leakage into and out of the conditioned space with a maximum air leakage rate of 0.25 CFM/SF at a pressure differential of 75 Pa in accordance with ASTM E779, "Standard Test Method for Determining Air Leakage Rate by Fan Pressurization".
2. Joints, penetrations and paths of water and air infiltration shall be made watertight and airtight.
3. System shall be capable of withstanding positive and negative combined wind, stack and HVAC pressures on the envelope without damage or displacement.

4. System shall be installed in an airtight and flexible manner, allowing for the relative movement of systems due to thermal and moisture variations.

1.4 SUBMITTALS

A. Product data: Submit manufacturer's product data including membrane and accessory material types, technical and test data, composition, descriptions and properties, installation instructions and substrate preparation requirements.

B. Shop Drawings: Provide Installation Guideline Illustrations.

1.5 QUALITY ASSURANCE

A. Manufacturer's qualifications: Air and water-resistive barrier systems shall be manufactured and marketed by a firm with a minimum of five (5) years experience in the production and sales of air and water-resistive barrier system. Manufacturers proposed for use, but not named in these specifications, shall submit evidence of ability to meet all requirements specified, and include a list of projects of similar design and complexity completed within the past five years.

B. Installer's qualifications: The installer shall demonstrate qualifications to perform the work of this section by submitting the following:
1. Verification that installer has been trained by and is approved to perform work as herein specified by air and water-resistive barrier system manufacturer.
2. A firm experienced in applying similar materials on similar size and scoped projects.
3. Evidence of proper equipment and trained field personnel to successfully complete the project.

C. Inspection and testing: Cooperate and coordinate with the Owner's inspection and testing agency. Do not cover installed products or assemblies until they have been inspected, tested and approved.

D. Sole source: Obtain materials from a single manufacturer.

E. Regulations: Provide products which comply with all state and local regulations controlling use of volatile organic compounds (VOC).

F. Pre-installation conference: Prior to beginning installation of air and water-resistive barrier system, hold a pre-installation conference to review work to be accomplished.
1. Contractor, Architect, installing subcontractor, membrane system manufacturer's representative, and all subcontractors who have materials penetrating membrane system or finishes covering membrane system shall be present.
2. Contractor shall notify Architect at least seven days prior to time for conference.
3. Contractor shall record minutes of meeting and distribute to attending parties.
4. Agenda: As a minimum discuss:
   a. Surface preparation.
   b. Substrate condition and pretreatment.
   c. Minimum curing period.
   d. Special details and sheet flashing.

e. Sequence of construction, responsibilities, and schedule for subsequent operations.
f. Installation procedures.
g. Inspection procedures.
h. Protection and repair procedures.
i. Review and approval of all glazing applications.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials and products in labeled packages. Store and handle in strict compliance with manufacturer's instructions and recommendations. Protect from damage, weather, excessive temperatures and construction operations. Remove damaged material from site and dispose of in accordance with applicable regulations.

B. Protect air and water-resistive barrier components from freezing and extreme heat. Store materials at temperatures of 40 degrees Fahrenheit to 100 degrees Fahrenheit.

C. Sequence deliveries to avoid delays, and to minimize on-site storage.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Weather conditions: Perform work only when existing and forecasted weather conditions are within the limits established by the manufacturer of the materials used.
1. Apply at surface and ambient temperatures recommended by the manufacturer. See manufacturer's product data for best practices.
2. Proceed with installation only when the substrate construction and preparation work are complete and in condition to receive the membrane system.
3. Exposure limitations: Schedule work to ensure that air and water-resistive barrier system is covered and protected from UV exposure within 180 days of installation. If air and water-resistive barrier membrane system cannot be covered within 180 days after installation, apply temporary UV protection as recommended by membrane manufacturer.

1.8 WARRANTY

A. Manufacturer's warranty requirements: Submit manufacturer's written warranty stating that installed air and water-resistive barrier materials are watertight, vapor-permeable, free from defects in material and workmanship, and agreeing to replace defective materials and components.

B. Warranty period: Five years from Date of Substantial Completion.

PART 2 PRODUCTS

2.1 FLUID APPLIED AIR AND WATER RESISTIVE BARRIER SYSTEM [vapor permeable]

A. Manufacturers:
1. PROSOCO, Inc. – R-Guard System (basis of design)
2. Tremco – equivalent system

3. Dupont – equivalent system
4. BASF – equivalent system
5. Carlisle Coatings & Waterproofing – equivalent system
6. WR Meadows – equivalent system
7. Substitutions: Section 016000 - Product Requirements. Substitutions for this section must be approved and listed by addendum.

2.2 JOINT AND SEAM FILLER FIBER REINFORCED FILL COAT AND SEAM FILLER:

A. Basis of design product: PROSOCO, Inc. R-GUARD Joint & Seam Filler

B. Description: Joint & Seam Filler is a high modulus, gun-grade, crack and joint filler, adhesive and detailing compound that combines the best silicone and polyurethane properties. This single-component, 99% solids, fiber-reinforced, Silyl-Terminated-Poly-Ether (STPE) is easy to gun, spread and tool.

C. Characteristics:
1. Thickness: Apply according to manufacturer's instructions.
2. Hardness: Shore A, 45-50 when tested in accordance with ASTM C661.
3. Water vapor permeability: Minimum 14 perms when tested in accordance with ASTM E-96.
4. Tensile strength: 225 psi when tested in accordance with ASTM D412.
5. Lap shear strength: 275 psi when tested in accordance with ASTM D1002.
6. Elongation at break: 275% when tested in accordance with ASTM D412.
7. Peel strength: 30 pli when tested in accordance with ASTM D1781.
8. Volatile organic content (VOC): 30 g/L.
9. Shrinkage: None.
10. Form: Pale Red, Gun Grade.

2.3 FASTFLASH LIQUID APPLIED FLASHING MEMBRANE

A. Basis of design product: PROSOCO, Inc. R-GUARD FastFlash.

B. Description: FastFlash is a gun-grade waterproofing, adhesive and detailing compound that combines the best of silicone and polyurethane properties. This single component, 99% solids, Silyl-Terminated-Poly-Ether (STPE) is easy to gun, spread and tool to produce a highly durable, seamless, elastomeric flashing membrane in rough openings of structural walls.

C. Characteristics:
1. Thickness: Apply according to manufacturer's instructions.
2. Water vapor permeability: Minimum 14 perms when tested in accordance with ASTM E96.
3. Water penetration (cyclical static air pressure difference): No uncontrolled water penetration when tested in accordance with ASTM E547.
4. Hardness: Shore A, 40-45 when tested in accordance with ASTM C661.
5. Tensile strength: 180 psi when tested in accordance with ASTM D412.
6. Elongation at break: 400% when tested in accordance with ASTM D412.
7. Peel strength: 25 pli when tested in accordance with ASTM D1781.
8. Volatile organic content (VOC): 30 g/L.

9. Form: Brick Red, Gun Grade Sealant.

2.4 FLUID APPLIED AIR AND WATER-RESISTIVE BARRIER

A. Basis of design product: PROSOCO, Inc. R-GUARD Spray Wrap MVP

B. Description: Spray Wrap MVP is a fluid-applied air and water-resistive barrier that stops air and water leakage in cavity wall, masonry veneer construction, as well as in stucco, EIFS and most other building wall assemblies. Once on the substrate, the easily applied liquid quickly dries into a rubberized, highly durable, water-resistant, vapor-permeable membrane.

C. Characteristics:
1. Thickness: Apply according to manufacturer's instructions.
2. Air infiltration: Less than 0.004 cfm per square foot (0.02 L/s/sq m) when tested in accordance with ASTM E2178 or ASTM E283.
3. Air Barrier Assembly: pass when tested in accordance with ASTM E-2357.
4. Water vapor permeability: 10.5 perms when tested in accordance with ASTM E96.
5. Structural performance: Air and water-resistive barrier system shall withstand positive and negative wind pressure loading when tested in accordance with ASTM E330.
6. Water penetration (static pressure): No uncontrolled water penetration when tested in accordance with ASTM E331.
7. Flexibility: No cracking or de-lamination using 1/8 inch mandrel at 14 degrees Fahrenheit before and after aging when tested in accordance with ASTM D522.
8. Tensile strength: Greater than 15 psi or exceeds strength of substrate when tested in accordance with ASTM C297.
9. Nail Sealability: pass when tested in accordance with ASTM D1970.
10. Surface Burning: pass when tested in accordance with ASTM E84.
11. Volatile organic content (VOC): less than 100 g/L.
12. Color: Light Red.

2.5 AIR AND WATERPROOF SEALANT FOR WINDOW AND DOORS

A. Basis of design product: PROSOCO, Inc. AirDam

B. Description: AirDam is a medium modulus sealant that combines the best silicone and polyurethane properties. This single component, 98% solids Silyl-Terminated-Poly-Ether (STPE) is easy to gun and tool in all weather conditions. AirDam cures quickly to produce a durable, high performance, high movement elastomeric interior air sealant

C. Characteristics:
1. Hardness: Shore A, 20-25 when tested in accordance with ASTM C661.
2. Tensile strength: 110 psi when tested in accordance with ASTM D412.
3. Elongation at break: 1300% when tested in accordance with ASTM D412.
4. Peel strength: 30 pli when tested in accordance with ASTM D1781.
5. Type: Type S, Grade NS, Class 50 when tested in accordance with ASTM C920.
6. Volatile organic content (VOC): 30 g/L.
7. Shrinkage: None.

8. Form: heavy white paste, mild odor

D. Backer rod: Compressible, closed cell rod stock as recommended by manufacturer for compatibility with sealant. Provide size and shape of rod to control joint depth.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and conditions are ready to accept the work of this section. Notify architect in writing of any discrepancies. Commencement of the Work or any parts thereof shall mean acceptance of the prepared substrates.

B. All surfaces must be sound, dry, clean, and free of grease, dirt, excess mortar or other contaminants. Fill voids, gaps, and spalled areas with R GUARD Joint & Seam Filler in substrate to create an even plane. Masonry head joints should be fully filled and tooled.

C. Where curing materials are used they must be clear resin based without oil, wax or pigments

D. Condition materials to room temperature prior to application to facilitate extrusion and handling.

3.2 SURFACE PREPARATION:

A. Air, water-resistive and waterproofing membrane and accessories may be applied to green concrete 16 hours after removal of forms.

B. Refer to manufacturer's product data for requirements for condition of and preparation of substrates.
1. Surfaces shall be sound and free of voids, spalled areas, loose aggregate and sharp protrusions.
2. Remove contaminants such as grease, oil and wax from exposed surfaces.
3. Remove dust, dirt, loose stone and debris.
4. Use repair materials and methods that are acceptable to manufacturer of the air and water-resistive barrier system.

C. Exterior sheathing:
1. Ensure that sheathing is properly installed with ends, corners and edges properly fastened.
2. Mechanical fasteners used to secure sheathing boards or penetrate sheathing boards shall be set flush with sheathing, fastened and spotted with R-GUARD Joint & Seam Filler and fastened into solid backing.
3. Fill sheathing end and prime edge joints with R-GUARD Joint + Seam filler and GypPrime as herein specified.

D. Masonry and concrete substrates:
1. Masonry shall have smooth trowel-cut mortar joints.
2. Mechanically remove loose mortar fins, snots and debris.

3.3 INSTALLATION OF JOINT TREATMENT(PREPARE):

A. Apply R-GUARD Joint and Seam Filler for seams, joints, cracks, gaps, primed rough edges at sheathing, rough openings:
1. Fill or repair cracks larger than one-half inch.
2. Fill surface defects and over driven fasteners with R-GUARD Joint & Seam Filler.
3. Using a dry knife, trowel or spatula, tool and spread the product. Spread one inch beyond seam at each side to manufacturer's recommended thickness.
4. Allow to skin before installing other waterproofing or air barrier components.
5. Apply in accordance with manufacturer's Application Guideline illustrations.

3.4 FLASHING AT WINDOWS, DOORS, OPENINGS AND PENETRATIONS (PREPARE):

A. Apply R-GUARD FastFlash over surfaces prepared with R-GUARD Joint & Seam Filler to seal and waterproof rough openings:
1. Apply a thick bead of R-GUARD FastFlash over any visible gaps in the prepared rough opening.
2. Immediately press and spread the wet product into gaps.
3. Allow treated surface to skin.
4. Starting at the top, apply a thick bead of R-GUARD FastFlash in a zigzag pattern to the structural wall surrounding the rough opening.
5. Spread the wet product to create an opaque, monolithic flashing membrane which surrounds the rough opening and extends 4 to 6 inches over the face of the structural wall. Apply and spread additional product as needed to create an opaque, monolithic flashing membrane free of voids and pin holes.
6. Apply additional product in a zigzag pattern over a structural framing inside the rough opening.
7. Apply R-GUARD FastFlash within temperature and weather limitations as required by manufacturer.
8. Apply R-GUARD FastFlash to perimeters, sills and adjacent sheathing and building face, in accordance with manufacturer's product data and installation instructions.
9. At sills, extend flexible flashing on building face a minimum of 4 to 6 inches beyond and 3 inches above sill-jamb intersection.
10. Install preparation products in accordance with manufacturer's Application Guideline illustrations.

3.5 AIR & WATER-RESISTIVE BARRIER INSTALLATION (PROTECT)

A. Apply appropriate R-GUARD air and water-resistive barrier to a clean, dry substrate (clean, dry, and/or damp substrates – R-GUARD Cat 5), within temperature and weather limitations as required by manufacturer.
1. Seal masonry ties and other penetrations as work progresses.
2. Apply to recommended thickness. Proper thickness is achieved when coating is opaque.
3. Allow product to cure and dry.

4. Inspect membrane before covering. Repair any punctures, translucent or damaged areas by applying additional material.
5. On CMU wall construction apply back rolling may be necessary to achieve a pinhole free surface.

3.6 FLASHING TRANSITIONS (TRANSITION)

A. Apply R-GUARD Joint and Seam Filler and R GUARD FastFlash as a liquid flashing membrane to waterproof the transitions in rough opening and between dissimilar materials.
1. Fill any voids between the top of the flashing leg and the vertical wall with R-GUARD Joint & Seam Filler. Tool to direct water from the vertical wall to the flashing.
2. Apply a generous bead of FastFlash to the top edge of the flashing leg.
3. Spread the wet products to create a monolithic "cap-flash" flashing membrane extending 2 inches up the vertical face of the structural wall and 1 inch over the flashing membrane extending. Apply additional product as needed to achieve a void and pinhole free surface. This "liquid termination bar" helps secure the flashing and ensures positive drainage from the wall surface to the flashing.
4. Allow treated surfaces to skin before installing other wall assembly, waterproofing or air barrier components.

3.7 AIR AND WEATHER BARRIER SEALANT FOR WINDOWS AND DOORS INSTALLATION

A. Install R GUARD Air Dam with professional grade caulking gun in continuous beads without air gaps or air pockets.
1. Apply R GUARD AirDam to a clean, dry or damp surface
2. Install Backer rod: Compressible, closed cell rod stock as recommended by manufacturer for compatibility with sealant. Provide size and shape of rod to control joint depth
3. Install AirDam to provide uniform, continuous ribbons without gaps or air pockets, with complete wetting of the joint bond surfaces.
4. Tool sealant immediately to ensure complete wetting of joint bond surface and to produce a smooth, concave joint profile flush with the edges of the adjacent surfaces. Where horizontal and vertical surfaces meet, tool sealant to create a slight cove so as to not trap moisture or debris.
5. Do not allow materials to overflow onto adjacent surfaces. Prevent staining of adjacent surfaces.
6. Remove excess and misplaced materials as work progresses. Clean the adjoining surfaces to remove misplaced materials, without damage to adjacent surfaces or finishes.

END OF SECTION

SECTION 074213 - METAL PANELS (Flush Soffit)

PART 1 GENERAL

1.1 SUMMARY

A. Section includes preformed metal exterior soffit panels with wood finish, related flashings and accessory components.

B. Same Manufacturer – Installer to be used for both this section and Section 074213 – Insulated Meal Wall Panels and 074243 – Composite Wall Panels.

C. Related Sections:
1. Section 055400 – Cold-Formed Metal Framing
2. Section 072116 – Batt Insulation.
3. Section 072129 – Sprayed Insulation
4. Section 076200 - Sheet Metal Flashing and Trim.
5. Section 078400 - Firestopping.
6. Section 079000 – Joint Sealers.

1.2 REFERENCES

A. American Society of Civil Engineers:
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

B. ASTM International:
1. ASTM A666 - Standard Specification for Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
2. ASTM A755/A755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
3. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
4. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
5. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).
6. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
7. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
8. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
9. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.

1.3 SYSTEM DESCRIPTION

A. Soffit Panel System: Preformed and prefinished metal panel system of flat profile, site assembled; with subgirt framing assembly. Wood finish.

1.4 PERFORMANCE REQUIREMENTS

A. Components: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as calculated in accordance with applicable code.

B. Maximum Allowable Deflection of Panel: 1/90 of span.

C. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; deflection of structural support framing.

D. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.

E. Products: Provide continuity of thermal barrier at building enclosure elements in conjunction with thermal insulating materials.

F. Vapor Retarder: Provide continuity of vapor retarder at building enclosure elements in conjunction with vapor retarders.

G. Air and Vapor Seal: Provide continuity of air barrier seal at building enclosure elements in conjunction with air seal materials. Provide spray foam insulation to seal all voids, gaps and crevices.

1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate dimensions, layout, joints, expansion joints, construction details, methods of anchorage, and interface with adjacent materials.

C. Product Data: Submit data on panels.

D. Samples: Submit two samples of siding to demonstrate profile and finish color, sheen, and texture

E. Manufacturer's Installation Instructions: Submit special procedures.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum ten years documented experience.

B. Installer: Company specializing in performing Work of this section with minimum ten years documented experience.

1.7 QUALITY ASSURANCE

A. Manufacturer and Installer of work of this section shall be responsible for all work of Specification Sections 076200 – Sheet Metal Flashing and Trim; 074213.1 – Insulated Wall Panels, 074243 – Composite Wall Panels.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Project Requirements: Product storage and handling requirements.

B. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

C. Store prefinished material off ground protected from weather, to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

D. Prevent contact with materials capable of causing discoloration or staining.

1.9 COORDINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work for installation of any required building wrap at Composite Wall Panels and canopy, insulation, metal furring and framing and aluminum venting.

C. Coordinate Work with installation of storefront windows and adjacent components or materials.

1.10 WARRANTY

A. Section 017000 - Execution Requirements: Product warranties and product bonds.

B. The Contractor shall provide a two-year installation warranty for all materials and workmanship.

C. Furnish ten-year manufacturer warranty for protection against structural failure and/or uncontrolled water penetration.

PART 2 PRODUCTS

2.1 MANUFACTURED METAL SIDING

A. Manufacturers:
1. Dimensional Metals (basis of design): FP-10 Flush Soffit Panel, concealed fastener, wood grain finish, smooth
2. Imetco
3. Centria
4. MBCI
5. PAC CLAD
6. Substitutions: Section 01600 - Product Requirements

2.2 COMPONENTS

A. Soffit Panels: Minimum 22 gage thick pre-coated steel, flat profile with single groove in 10 inch wide panels; lapped edges fitted with continuous gaskets.

1. Precoated aluminum-zinc alloy Galvanized Steel: ASTM A924/A924M, Grade D, Coating Designation G90 (Z275). Shop precoated with 2-coat fluoropolymer finish, nominal .50 mil thickness, both sides. Wood finish color as selected from manufacturer's full range by Architect.

B. Miscellaneous Sheet Materials: Minimum 22 gage thick steel stock.
1. aluminum-zinc alloy coated steel sheet: ASTM A924/A924M, Grade D, Coating Designation G90 (Z275). Precoated Surfaces: 2-coat fluoropolymer finish, nominal 1.0 mil thickness, both sides. Color as selected from manufacturer's standard range by Architect.

C. Subgirts: 16 gage steel, galvanized, profile as recommended by manufacturer to attach panel system to framing. Thickness as required to support specified loads within specified deflection limitations.

D. Expansion Joints: Same material, thickness and finish as exterior sheets; manufacturer's standard brake formed type, of profile to suit system. Exposed fasteners same finish as panel system.

E. Trim, Closure Pieces, Caps, Flashings, and Infills: Same material, thickness and finish as exterior sheets; brake formed to required profiles. No pop rivets allowed.

F. Anchors: same type and finish as sheet metal material.

2.3 ACCESSORIES

A. Cleats: 16 gage min. galv. steel cleats, 48" o.c. max. spacing.

B. Gaskets: Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant; color as selected to match siding.

C. Sealants: Specified in Section 079000 suitable for use with installation of system; non-staining, non-skinning, non-shrinking and non-sagging; ultra-violet and ozone resistant; color as selected to match siding.

D. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, steel, hot dip galvanized; fastener cap same color as exterior panel. Exposed fasteners same finish as panel system. No pop rivets allowed.

E. Power Actuated Fasteners: Steel, hot dip galvanized; with soft neoprene washers, fastener cap same color as exterior panel.

F. Field Touch-up Paint: As recommended by panel manufacturer.

G. Framing, Z-channel, hat attachments, as shown on the Drawings.

2.4 FABRICATION

A. Form sections to shape indicated on Drawings, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest practicable lengths without lapped joints. Provide expansion joints at intersection.

C. Panel Profile: Manufacturer's standard profile as indicated on Drawings for specified system.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify building framing members are ready to receive panel system.

3.2 INSTALLATION

A. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.

B. Fasten siding to structural supports; aligned, level, and plumb.

C. Locate joints over supports. Provide expansion covers at end of panel run. Do not lap panel ends.

D. Install expansion joints where indicated.

E. Use concealed fasteners unless otherwise approved by Architect/Engineer.

F. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.3 ERECTION TOLERANCES

A. Section 017000 – Execution and Closeout: Tolerances.

B. Maximum Offset from Indicated Alignment Between Adjacent Members Butting or In Line: 1/16 inch.

C. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch.

3.4 CLEANING

A. Section 017000 - Execution Requirements: Final cleaning.

B. Remove site cuttings from finish surfaces.

C. Clean and wash prefinished surfaces with mild soap and water; rinse with clean water.

3.5 SCHEDULES

A. Soffit panels as indicated on Drawings.

B. Refer to the Reflected Ceiling Plan, the Building Sections, Wall Sections, and the Roof Plan / Details. Coordinate with electrical documents.

END OF SECTION

SECTION 074213.1 – INSULATED METAL WALL PANELS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Foamed-insulation-core concealed fastener metal wall panels, with related metal trim and accessories.

1.2 RELATED REQUIREMENTS

A. Division 05 Section "Cold-Formed Metal Framing" for cold-formed metal framing supporting metal panels.

B. Division 06 Rough Carpentry. Reference plywood requirements for ¾" marine grade plywood backup and blocking required for Alternate 2 – Wall Graphic on standoffs.

C. Division 07 Section "Sheet Metal Flashing and Trim" for sheet metal flashing items in addition to items specified in this Section.

D. Division 07 Section "Metal Wall and Roof Panels" for factory-formed metal wall, roof, and soffit panels.

1.3 REFERENCES

A. American Architectural Manufacturer's Association (AAMA): www.aamanet.org:

1. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.

B. American Society of Civil Engineers (ASCE): www.asce.org/codes-standards:

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International (ASTM): www.astm.org:

1. ASTM A 653 - Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM A 755 - Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
3. ASTM A 792 - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.
4. ASTM A 240 – Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
5. ASTM C 518 - Standard Test Method for Steady State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
6. ASTM C 1363 - Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus
7. ASTM D 1621 - Compressive Properties of Rigid Cellular Plastics.
8. ASTM D 1622 - Apparent Density of Rigid Cellular Plastics.
9. ASTM D 2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
10. ASTM D 4214 - Test Methods for Evaluating Degree of Chalking of Exterior Paint Films.

11. ASTM D 6226 - Standard Test Method for Open Cell Content of Rigid Cellular Plastics
12. ASTM E 72 - Standard Test Methods of Conducting Strength Tests of Panels for Building Construction.
13. ASTM E 84 - Test Methods for Surface Burning Characteristics of Building Materials.
14. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
15. ASTM E 331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
16. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.

D. National Fire Protection Association (NFPA)

1. NFPA 259 – Test Method for Potential Heat of Building Materials.
2. NFPA 285 – Evaluation of Fire Propagation Characteristics of Exterior Non-Load Bearing Wall Assemblies.
3. NFPA 286 – Fire Test of Evaluating Conditions of Wall and Ceiling Finish to Roof Fire Growth.

E. FM Global (FM): www.fmglobal.com:

1. FM 4880 American National Standard for Evaluating Insulated Wall and Roof/Ceiling Assemblies
2. FM 4881 Approval Standard for Class 1 Exterior Wall Systems.

F. Canadian Standards Association (CSA)

1. CAN/ULC S102 – Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
2. CAN/ULC S101 – Fire Endurance Tests of Building Construction and Materials.
3. CAN/ULC S134 – Fire Test of Exterior Wall Assemblies.
4. CAN/ULC S138 – Fire Growth of Insulated Building Panels in a Full-Scale Room Configuration.

G. Green Seal (GS) www.greenseal.org

1. GS-11 – Green Seal Standard for Paints and Coatings, Edition 3.2, October 26, 2015.

H. US Green Building Council (USGBC): www.usgbc.org:

1. Leadership in Energy and Environmental Design (LEED) Green Building Rating System.

1.4 QUALITY ASSURANCE

A. Manufacturer/Source: Provide metal panel assemblies and accessories from a single manufacturer approved under an accredited third-party quality control program

B. Manufacturer Qualifications: Approved manufacturer listed in this Section with minimum ten years' experience in the manufacturing of similar products and successful use in similar applications.

C. Installer Qualifications: Experienced Installer [certified by metal panel manufacturer] with minimum of five years' experience with successfully completed projects of a similar nature and scope.

1. Installer's Field Supervisor: Experienced mechanic certified by metal panel manufacturer supervising work on site whenever work is underway.

2. Metal Panel Manufacturer inspection and certification of installed conditions.

1.5 MOCKUP

1. Construct 10'x10' mockup, including IMP siding system, composite panel and attachments to building frame, and air seal materials, sealants, gaskets, and related insulation, flashings and accessory components including window, joinery and weather resistant barriers.

PART 2 - PRODUCTS

2.1 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Prior to erection of framing, conduct preinstallation meeting at site attended by Owner, Architect, metal panel installer, metal panel manufacturer's technical representative, inspection agency and related trade contractors.

1. Coordinate building framing in relation to metal panel system.
2. Coordinate openings and penetrations of metal panel system.

2.2 ACTION SUBMITTALS

A. Product Data: Manufacturer's data sheets for specified products.

B. Shop Drawings: Show layouts of metal panels. Include details of each condition of installation, panel profiles, and attachment to building. Provide details at a minimum scale 1-1/2-inch per foot of edge conditions, joints, fastener and sealant placement, flashings, openings, penetrations, and special details. Make distinctions between factory and field assembled work.

1. Include data indicating compliance with performance requirements.
2. Indicate points of supporting structure that must coordinate with metal panel system installation.
3. Include structural data indicating compliance with performance requirements and requirements of local authorities having jurisdiction.
4. Include elevation drawings with joints, alignment and widths.

C. Samples for Initial Selection: For each exposed product specified including sealants. Provide representative color charts of manufacturer's full range of colors.

D. Color selections to be exact matches to Centria colors as follows or from manufacturers full range of colors:

1. 9962 XL Silver Gray
2. 9960 XL Medium Gray
3. 9926 Arabian Blue or color match owner's custom color

E. Samples for Verification:

1. Provide 12-inch long section of each metal panel profile.

2. Provide color chip verifying color selection.
3. Provide 12-inch long section of panel with mitered corner.

2.3 INFORMATIONAL SUBMITTALS

A. Product Test Results: Indicating compliance of products with requirements.

B. Qualification Information: For Installer.

1. Accreditation Certificate: Indicating that manufacturer is accredited under an accredited third-party Quality Control Program, including IAS AC472 and based upon chapter 17 of the International Building Code (IBC).

C. Warranty:

1. Submit manufacturer's written two (2) year limited warranty providing panels to be free from defects in materials and workmanship, beginning from the date of substantial completion excluding coil coatings (paint finishes) that are covered under a separate warranty.
2. The installation contractor shall issue a separate warranty against defects in installed materials and workmanship, beginning from the date of substantial completion of the installation.

2.4 CLOSEOUT SUBMITTALS

A. Maintenance data.

B. Manufacturer's Warranty: Executed copy of manufacturer's warranty.

2.5 DELIVERY, STORAGE, AND HANDLING

A. Protect products of metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage. Protect panels and trim bundles during shipping. Protect painted surfaces with a protective covering before shipping.

1. Deliver, unload, store, and erect metal panels and accessory items without deforming panels or exposing panels to surface damage from weather or construction operations.
2. Store in accordance with Manufacturer's written instructions.
3. Shield foam insulated metal panels from direct sunlight until all components are installed.

2.6 WARRANTY

A. Special Manufacturer's Warranty: Submit Manufacturer's two (2) year limited warranty providing panels to be free from defects in materials and workmanship, beginning from the date of substantial completion excluding coil coatings (paint finishes) that are covered under a separate warranty.

B. The installation contractor shall issue a separate warranty against defects in installed materials and workmanship, beginning from the date of substantial completion of the installation.

C. Special Panel Finish Warranty: Submit Manufacturer's limited warranty on the exterior paint finish for adhesion to the metal substrate and limited warranty on the exterior paint finish for chalk and fade.

1. Fluoropolymer Two-Coat System:
   a. Color fading in excess of [5] or [10] for copper, silver metallic and bright red; Hunter units per ASTM D 2244.
   b. Chalking in excess of [6] for copper, silver metallic and bright red or [8] rating per ASTM D 4214.
   c. Failure of adhesion, peeling, checking, or cracking.
2. Modified Silicone-Polyester Two-Coat System:
   a. Color fading in excess of [5] or [7] for crimson red; Hunter units per ASTM D 2244.
   b. Chalking in excess of [7] for crimson red or [8] rating per ASTM D 4214.
   c. Failure of adhesion, peeling, checking, or cracking.

PART 3 - PRODUCTS

3.1 MANUFACTURER

A. Metl-Span

B. Centria

C. Substitutions, refer to 016000 – Product Requirements.

3.2 PERFORMANCE REQUIREMENTS

A. General: Provide metal panel system meeting performance requirements as determined by application of specified tests by a qualified testing facility on manufacturer's standard assemblies.

B. Structural Performance: Provide metal panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated, as determined by ASTM E 72 or ASTM E 1592 applied in accordance with ICC AC 04, Section 4, Panel Load Test Option or Section 5, Panel Analysis Option:

1. Wind Loads: Determine loads based on applicable building code, wind speed, importance factor, exposure category, and internal pressure coefficient indicated on drawings.
   a. Wind Negative Pressure: Certify capacity of metal panels by testing of proposed assembly.
2. Deflection Limits: Withstand inward and outward wind-load design pressures in accordance with applicable building code with maximum deflection of 1/120 of the span with no evidence of failure.

C. Fire Performance Characteristics: Provide metal panel systems with the following fire-test characteristics determined by indicated test standard as applied by testing and inspection agency acceptable to authorities having jurisdiction.

1. Surface-Burning Characteristics: The insulating core shall have been tested per ASTM E 84. The core shall have:

a. Flame spread index: 25 or less.
b. Smoke developed index: 450 or less.

2. Fire Propagation: The fire assembly shall meet the requirements of the standard for NFPA 285
3. Fire Growth: The fire assembly shall meet the requirements of the standard for NFPA 286
4. Potential Heat: Determined in accordance with NFPA 259
5. IBC Chapter 26: Panel Performance under the above test methods, shall meet the requirements of IBC, Chapter on foam plastics.

D. Air Infiltration, ASTM E 283:

1. Maximum 0.0002 cfm/sq. ft. at static air pressure difference of 1.57 lbf/sq. ft.
2. Maximum 0.0009 cfm/sq. ft. at static-air-pressure difference of 6.24 lbf/sq. ft.
3. Maximum 0.01 cfm/sq. ft. at static-air-pressure difference of 20 lbf/sq. ft.

E. Water Penetration Static Pressure:

1. ASTM E 331: No uncontrolled water penetration at a static pressure of 20 lbf/sq. ft..
2. ASTM E 331 Modified (2-hour duration): No uncontrolled water penetration at a static pressure of 6.24 lbf/sq. ft.

F. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction. Allow for deflection and design for thermal stresses caused by temperature differences from one side of the panel to the other.

G. Thermal Performance: When tested in accordance with ASTM C 518, Measurement of Steady State thermal Transmission, the panels shall provide a k factor of 0.114 btu/sf/hr/deg F at a 35° F (1.67° C) mean temperature.

3.3 INSULATED METAL WALL PANELS

A. Concealed Fastener, Insulated Metal Panel with foam core: Structural metal panel consisting of flush, smooth exterior metal sheet, and interior metal sheet with a Light Mesa profile, with factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.

1. Basis of Design: Metl-Span, CF Architectural; Centria Formawall, Versawall or comparable smooth faced panels.
2. G-90 galvanized coated steel conforming to ASTM A 653 or AZ-50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, pre-painted by the coil-coating process per ASTM A 755/A 755M.
   (1) Exterior Face Sheet: 22 gauge thickness, with smooth unembossed surface and 1/2 inch reveals.
   (2) Finish: Fluoropolymer two-coat system.
   (3) Color: As required to match Centria colors listed below, exactly.
      (a) 9960 XL Medium Gray (MPT-2: flat IMP)
      (b) 9926 Arabian Blue (MPT-3: flat IMP)
   (4) Interior Face Sheet: 26 gauge thickness, with smooth unembossed Light Mesa profile.
   (5) Finish: Manufacturer's standard.
3. Panel Width: As shown on drawings.
4. Panel Thickness: 2-inch min or as indicated on drawings.

5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent
   a. Closed Cell Content: 90% or more as determined by ASTM D 6226
   b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 22 psi as determined by ASTM D 1621
   c. Shear Strength: As required to meet structural performance requirements and with a minimum of 36 psi as determined by ASTM C 273
   d. Tensile Strength: As required to meet structural performance requirements and with a minimum of 41 psi ASTM D 1623
   e. Minimum Density: 2.0 pcf (32 kg/m3) as determined by ASTM D 1622
   f. Thermal Resistance R-Value:
      2" = 17.5
      3" = R-26.2
      4" = R-35.0

B. Concealed Fastener, Insulated Metal Wall Panels with foam core: Structural metal panels consisting of flat exterior metal sheet with 7.2 rib pattern, and interior metal sheet with mesa profile, with factory foamed-in-place polyurethane core in thermally-separated profile, with tongue-and-groove panel edges, attached to supports using concealed fasteners.

1. Basis of Design: Metl-Span, CF 7.2 Insul-Rib; Centria comparable product.
2. G-90 galvanized coated steel conforming to ASTM A 653 or AZ-50 aluminum-zinc alloy coated steel, conforming to ASTM A 792/A 792M, minimum grade 33, pre-painted by the coil-coating process per ASTM A 755/A 755M.
   (1) Exterior Face Sheet: 22 gauge thickness, with smooth unembossed surface.
   (2) Finish: Fluoropolymer two-coat system.
   (3) Color: Match Centria color listed below, exactly.
      (a) 9962 XL Silver Gray (MPT-4) (ribbed IMP)
   (4) Interior Face Sheet: 26 gauge thickness, with smooth unembossed surface Mesa profile.
      (a) Finish: Manufacturers Standard.
3. Panel Width: 36 inches or as shown on drawings.
4. Panel Thickness: 3 and 5 inch.
5. Insulating Core: Polyurethane with zero ozone depletion potential blowing agent
   a. Closed Cell Content: 90% or more as determined by ASTM D 6226
   b. Compressive Strength: As required to meet structural performance requirements and with a minimum of 22 psi as determined by ASTM D 1621
   c. Shear Strength: As required to meet structural performance requirements and with a minimum of 36 psi as determined by ASTM C 273
   d. Tensile Strength: As required to meet structural performance requirements and with a minimum of 41 psi ASTM D 1623
   e. Minimum Density: 2.0 pcf (32 kg/m3) as determined by ASTM D 1622
   f. Thermal Resistance R-Value:

3″= 15.2
4″ = 23.3

3.4 METAL WALL PANEL ACCESSORIES

A. General: Provide complete metal panel assemblies incorporating trim, copings, fasciae, gutters and downspouts, and miscellaneous flashings. Provide required fasteners, closure strips, and sealants as indicated in manufacturer's written instructions.

B. Flashing and Trim: Match material, thickness, and finish of metal panels.

C. Panel Clips: ASTM A 653/A 653M, G90 (Z180) hot-dip galvanized zinc coating, one-piece, configured for concealment in panel joints, and identical to clips utilized in tests demonstrating compliance with performance requirements.

D. Panel Fasteners: Self-drilling or Self-tapping screws and other acceptable fasteners recommended by metal panel manufacturer. Where exposed fasteners cannot be avoided, supply corrosion-resistant fasteners with heads matching color of metal panels by means of factory-applied coating, with weathertight resilient washers.

E. Joint Sealers:

1. Sealants: Provide Tape Mastic Sealants, Non-skinning sealants, and Urethane Sealants in accordance with manufacturers standards
2. Vertical Joint Gasket: Manufacturers standard EPDM gasket.

3.5 FABRICATION

A. General: Provide factory fabricated and finished metal panels, trim, and accessories meeting performance requirements, indicated profiles, and structural requirements. Meet design as shown on elevations.

B. Fabricate metal panel joints configured to accept sealant providing weathertight seal.

C. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions, approved shop drawings, and project drawings.

D. Provide Miter panels for building corners, typical.

3.6 FINISHES

A. Finishes, General: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturer's written instructions.

B. Exterior Face Sheet Coil-Coated Finish System

1. Fluoropolymer Two-Coat System: 0.2 – 0.3 mil primer with 0.7 - 0.8 mil 70 percent PVDF fluoropolymer color coat, [meeting solar reflectance index requirements].

a. Basis of Design: Metl-Span, Fluoropolymer. Full range of available colors and to match referenced centria colors or custom provided.

C. Interior Face Sheet Coil-Coated Finish System

1. Polyester Two-Coat System: 0.20 – 0.25 mil primer with 0.7 – 0.8 mil color coat

a. Basis of Design: Metl-Span, Igloo White

PART 4 - EXECUTION

4.1 EXAMINATION

A. Examine metal panel system substrate with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal panels.

1. Inspect framing that will support insulated metal panels to determine if support components are installed as indicated on approved shop drawings and are within tolerances acceptable to metal panel manufacturer and installer. Confirm presence of acceptable framing members at recommended spacing to match installation requirements of metal panels.

2. Panel Support Tolerances: Confirm that metal panel supports are within tolerances acceptable to metal panel manufacturer but not greater than the following:

a. 1/4 inch in 20 foot in any direction.
b. 3/8 inch over any single wall plane.
c. Girt Spacing 8 feet or more: 1/4 inch out only.
d. Girt Spacing Less Than 8 feet: 1/8 inch out only.
e. CF Architectural girt spacing less than 4 feet: 1/16 inch out only.

B. Correct out-of-tolerance work and other deficient conditions prior to proceeding with insulated metal panel installation.

C. Ensure walls are plumb straight and in alignment as required for well executed mitered corners.

4.2 METAL PANEL INSTALLATION

A. Concealed-Fastener Insulated Metal Panels with foam core: Install metal panel system in accordance with manufacturer's written instructions, approved shop drawings, and project drawings. Install metal panels in orientation, sizes, and locations indicated. Anchor panels and other components securely in place. Provide for thermal and structural movement.

B. Attach panels to metal framing using screws, fasteners, sealants, and adhesives recommended for application by metal panel manufacturer.

1. Fasten metal panels to supports with fasteners at each location indicated on approved shop drawings, at spacing and with fasteners recommended by manufacturer.
2. Cut panels in field where required using manufacturer's recommended methods.
3. Provide weatherproof jacks for pipe and conduit penetrating metal panels.
4. Dissimilar Materials: Where elements of metal panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by metal panel manufacturer

C. Attach panel flashing trim pieces to supports using recommended fasteners and joint sealers

D. Joint Sealers: Install sealants where indicated and where required for weatherproof performance of metal panel assemblies

1. Seal panel base assembly, openings, panel head joints, and perimeter joints using sealants indicated in manufacturer's instructions

2. Seal wall panel joints; apply continuously without gaps in accordance with manufacturer's written instructions, approved shop drawings, and project drawings
3. Prepare joints and apply sealants per requirements of Division 07 Section.

4.3 ACCESSORY INSTALLATION

A. General: Install metal panel accessories with positive anchorage to building and weather tight mounting; provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel assembly, including trim, copings, flashings, sealants, closure strips, and similar items.
2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.
3. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.
4. Provide prefinished metal trim or finished edges at all panel transitions where exposed or there is a change in the panel thickness or face plane.

4.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage an independent testing and inspecting agency acceptable to Architect to perform field tests and inspections and to prepare test reports.

B. Water-Spray Test: After completing portion of metal panel assembly including accessories and trim, test 2-bay area selected by Architect for water penetration, according to AAMA 501.2.

4.5 CLEANING AND PROTECTION

A. Remove temporary protective films immediately in accordance with metal panel manufacturer's instructions. Clean finished surfaces as recommended by metal panel manufacturer.

B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the Architect.

4.6 SCHEDULE

A. Refer to elevations for panel type and changes in color and pattern.

B. See finish schedule for additional details.

END OF SECTION

SECTION 074243 - COMPOSITE WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Preformed composite metal panel system for walls and soffits.
2. Sub-framing and furring components.
3. Flashings.
4. Accessory components.
5. Aluminum Composite Fascia panels and related components on new for fascia, soffit and canopy.
6. Preformed soffit panels.
7. Finish and install all necessary associated sealants, flashing, trim, parapet caps, gasket and fasteners required for a weather tight enclosure system.

B. Related Requirements:

1. Section 054000 - Cold-Formed Metal Framing.
2. Section 061000 - Rough Carpentry.
3. Section 072113 - Board Insulation.
4. Section 076200 - Sheet Metal Flashing and Trim.
5. Section 078400 – Firestopping.
6. Section 079000 - Joint Protection.

1.2 REFERENCE STANDARDS

A. Aluminum Association:

1. AA ASM35 - Specifications for Aluminum Sheet Metal Work in Building Construction.

B. American Society of Civil Engineers:

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International:

1. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
2. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

4. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
5. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

D. National Fire Protection Association:

1. NFPA 285 - Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.

1.3 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with:

1. Placement of anchors.
2. Installation of vapor retarder and air barrier seals.
3. Installation of firestopping, windows, and adjacent components and materials.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data:

1. Submit panel profile characteristics, dimensions, and structural properties. Submit design calculations.
2. Submit manufacturer information on assembled panel structural capabilities.
3. For fire-resistance-rated assemblies, submit data showing assembly rating is maintained.

C. Shop Drawings: Indicate dimensions, panel profile and layout, spans, joints, expansion joints, construction details, methods of anchorage, method and sequence of installation, and interface with adjacent materials.

D. Samples: Submit two samples of panel, 12 inch by 12 inch in size, illustrating panel joinery, finish color, sheen, and texture.

E. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

F. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for design of metal panels.

G. Manufacturer Instructions: Submit special handling criteria, installation sequence, and cleaning procedures.

H. Qualifications Statements:

1. Submit qualifications for manufacturer, installer, and licensed professional.
2. Submit manufacturer's approval of installer.

1.5 QUALITY ASSURANCE

A. Surface-Burning Characteristics:

1. Maximum Flame-Spread/Smoke-Developed Index: 25/450.
2. Testing: Comply with ASTM E84.

B. Full-Scale Fire Tests: Comply with NFPA 285 when testing maximum thickness intended for use.

1.6 MOCKUP

A. Construct 10'x10' mockup, including IMP siding system, composite panel and attachments to building frame, and air seal materials, sealants, gaskets, and related insulation, flashings and accessory components including window, joinery and weather resistant barriers.

B. Demonstrate component assembly including panel materials, weep drainage system, attachments, anchors, and perimeter sealant.

C. Remove mockup at substantial completion.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum ten years' documented experience.

B. The composite metal panel manufacturer shall have a minimum 10 years documented experience. The composite panel system shall have been tested and certified for compliance with requirements as specified herein and designed in accordance with accepted practices of the Curtainwall Manufacturer's Association utilizing the rain screen principle.

C. Installer: Company specializing in performing Work of this Section with minimum three years' documented experience and approved by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Storage:

1. Store panels according to manufacturer and fabricator instructions.

2. Store prefinished material off ground with weather protection to provide ventilation and to prevent twisting, bending, or abrasion.
3. Slope metal sheets to ensure drainage.

C. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
3. Prevent contact with materials capable of causing discoloration or staining.
4. Provide additional protection according to manufacturer instructions.

1.9 EXISTING CONDITIONS

A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

1.10 WARRANTY

A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.

B. Furnish 10-year manufacturer's warranty for delaminated or defective composite panels.

C. Furnish 20-year finish warranty for composite panels.

PART 2 - PRODUCTS

2.1 PERFORMANCE AND DESIGN CRITERIA

A. Dead and Live Loads:

1. Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall as measured according to ASTM E330.
2. Design Wind Pressure: Minimum 25 inward and 25 psf outward. At maximum design wind pressure, the perimeter panel framing shall be designed to provide a deflection normal to the plane of the wall between supports not to exceed L/173 or ¾", whichever is less. Maximum composite material deflection between perimeter framing and stiffeners, normal to the plane of the wall, shall not exceed L/60.

B. Maximum Allowable Deflection of Panel: 1/180.

C. Bond Integrity: Bond Strength – 214 psi [vertical pull per ASTM C297]. Peel Strength – 26.9 in-lb/in.

D. Air Leakage: Not more than 0.06 cfm/sq. ft. when tested according to ASTM E283 at test-pressure difference of 1.57 lbf/sq. ft. System shall have been tested to demonstrate permanent resistance to leakage as follows with a minimum test pressure differential of 10 percent of the design wind pressure.

E. Water Penetration under Static Pressure: None when tested according to ASTM E331 at test-pressure difference of 6.24 lbf/sq. ft.

F. Movement:

1. Description:

a. Movement between system and perimeter components when subjected to seasonal temperature cycling.
b. Dynamic loading and release of loads.
c. Deflection of structural support framing.

2. Accommodate movement within system without damage to system, components, or deterioration of seals.

3. Systems shall be designed to provide for expansion and contraction resulting from ambient temperature range of 120 degrees F.

G. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.

H. Tolerances: Accommodate specified tolerances of building structural framing.

I. Product Continuity: Provide continuity of thermal barrier at building enclosure elements in conjunction with adjacent thermal insulating materials.

J. Air Seal: Provide continuity of air barrier seal at building enclosure elements in conjunction with air seal materials as specified.

K. Fire Propagation Characteristics: Metal composite material wall panel system passes NFPA 285 testing.

2.2 COMPOSITE METAL EXTERIOR BUILDING PANELS

A. Manufacturers:
1. Alpolic by Mitsubishi Chemical.
2. Alucobond by Alusuisse Composites.
3. Reynolds Aluminum.
4. Substitutions: Section 01600 - Product Requirements.

B. Metal Composite Material Wall Panel Systems:

1. Description:

a. Factory-formed and assembled prefinished metal composite material wall panels fabricated from two metal facings that are bonded to a solid, extruded thermoplastic core. System to have horizontal and vertical profile; shp assembled; with subgirt framing assembly.
b. Furnish attachment assembly components and accessories as required for weathertight system.
c. Provide concealed fasteners.

2. Aluminum-Faced Composite Wall Panels:

a. Comply with ASTM B209 (B209M).
b. Facings:

1) Material: Coil-coated aluminum sheet.
2) Thickness: 0.020 inch skins, both sides.
3) To provide ultra-flat material, aluminum skins shall be bonded in tension to an extruded thermoplastic core formed in a continuous process without the use of glues or adhesives. Laminated panel construction will not be acceptable.

c. Panel Thickness: 5/32" thick.
d. Exterior Finish:

1) Two-coat fluoropolymer, min. 70 percent resin conforming to AAMA 605.2 and shall include Megaflon, Kynar 500 or Hylar 5000.
2) Color: Match blue of IMP panels, a custom color to be provided by owner or to be selected from full range of manufacturers colors.

C. Attachment Assembly Components: Formed from extruded aluminum.

D. Attachment Assembly: Manufacturer's standard.

E. Miscellaneous Sheet Materials:

1. Aluminum:

a. Comply with ASTM B209 (B209M).
b. Alloy and Temper: Manufacturer's standard.
c. Precoated Surfaces Color: To match existing system.

F. Furring and Sub-girts:

1. Material: Steel.
2. Profile: Manufacturer's standard.
3. Attachment: To building wall and structural components/mtl studs.
4. Gage: As required to support specified loads within specified deflection limits.

G. Internal and External Corners:

1. Description: Match material, thickness, and finish of exterior sheets.
2. Profile: As required by system.

3. Provide Mitred corners as req.
4. Color from Full Range and to match Centria 9926 Arabian Blue or color match owner's custom color.

H. Expansion Joints:

1. Description: Match material, thickness, and finish of exterior sheets.
2. Type: Manufacturer's standard, brake formed, Concealed.
3. Profile: As indicated on Drawings.

I. Trim, Closure Pieces, Caps, Flashings, Copings, and Gravel stops:

1. Description: Brake formed to required profiles.
2. Match material, thickness, and finish of exterior sheets.

J. Firestopping: As specified in Section 078400 - Firestopping.

K. Air Barrier: Tyvek or approved equal air and moisture barrier behind all panel areas.

L. Sheathing: Provide any marine grade plywood, blocking or sheathing as recommended by manufacturer.

2.3 FABRICATION

A. To establish the level of quality and method of attachment to the building, drawings and specifications are based on details on the existing building.

B. Fabrication of component profiles on Site is not permitted. Panel system shall be completely factory fabricated utilizing the rout and return method with continuous or offset extrusion and clips at the perimeter and ready for field installation. All metal panel returns, corners or changes in plane, shall be reinforced and factory sealed.

C. Forming:

1. Form sections to shape as indicated on Drawings, accurate in size, square, and free from distortion or defects.
2. Form pieces in longest practicable lengths.

D. Panel Joints: Fabricate 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. Provide black structural silicone sealant as req.

E. Sheet Metal Flashing and Trim: Comply with manufacturer's recommendations and recommendations in SMACNA Architectural Sheet Metal Manual that apply to design, dimensions, metal, and other characteristics of item as indicated.

F. System Thickness: as required.

G. Panel Stiffeners: Extruded aluminum stiffeners shall be shop attached to the perimeter extrusions and adhered to the back side of the composite material with structural silicone.

Stiffeners shall be used wherever panels exceed 4' x 6' or more frequently as deemed necessary by the panel fabricators.

H. The completed wall system shall comply with the performance requirements specified herein.

I. Comply with dimensions, panel sizes, thickness and fabrication details as shown on the bid documents.

J. Apply protective strippable film to finished surfaces for protection during fabrication, shipment and installation

2.4 ACCESSORIES

A. Sealants:

1. Description:

a. Manufacturer's standard type suitable for use with installation of panel system.
b. Nonstaining.
c. Nonshrinking and nonsagging.

2. UV and ozone resistant.
3. Color: Custom based on blue of IMP panels and owner provided color.

B. Fasteners:

1. Description: Concealed. Manufacturer's standard type to suit application.
2. Material: Stainless steel.
3. Washers: Soft neoprene

C. Paint:

1. Touchup: As recommended by panel manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that walls and framing members are ready to receive panel system.

3.2 INSTALLATION

A. Panel Systems:

1. Permanently fasten to structural supports.
2. Align, level, and plumb within specified tolerances.
3. Joints:

a. Locate panel joints over supports and lap per manufacturers recommendations.

B. Use concealed fasteners.

C. Seal and place gaskets to prevent weather penetration.

D. Protect panel surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.

E. Remove masking film (if used) as soon as possible after installation.

F. Ensure weep holes and drainage channels are unobstructed and free of dirt and sealants.

3.3 TOLERANCES

A. Section 014000 - Quality Requirements: Requirements for tolerances.

B. Maximum Variation from Plane or Location Indicated on Drawings: 1/8 inch.

C. Maximum Offset from Indicated Alignment between Adjacent Members Butting or In Line: 1/16 inch.

3.4 CLEANING

A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.

B. Clean exposed surfaces of wall panels that are not protected by temporary covering to remove fingerprints and soil during construction period.

3.5 PROTECTION

A. Protect wall panels from damage during construction. Use temporary protective coverings where needed as approved by the wall panel manufacturer.

B. Clean and touch up minor abrasions in finish with air-dried coating that matches color and gloss and is compatible with factory-applied finish coating.

3.6 SCHEDULE

A. Refer to drawings for details on locations (Canopies) and other information.

B. Work of this section to be completed by Insulated Metal Wall Panel Installer.

END OF SECTION 074243

SECTION 075200 - MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Demolition and removal of existing approx. 6" thick modified system.
2. Installation of new 2-Ply Modified Roofing System with 20-year NDL warranty.
3. Preparation of Substrate to Receive Roofing Materials.
4. Roof Manufacturer walk pads.
5. Roof Insulation Application to Prepared Substrate.
6. Roof Membrane Application.
7. Roof Flashing Application.
8. Installation of 1-layer of red rosin paper on existing metal roof deck.
9. ½" coverboard.

B. Roof is a flat structure with tapered insulation in areas of curbs, crickets, intersection with existing wall, etc. Refer to Roof Plan and Detail Drawing sheets for the different conditions.

C. Incorporation of Sheet Metal Flashing Components and Roofing Accessories into the Roof System.

1.2 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

A. Sheet Metal Flashing and Trim (material to be provided by IMP supplier)

B. Sheet Metal Roofing Specialties.

1.3 Related Requirements:

1. Section 061000 - Rough Carpentry: Wood nailers/Wood Blocking and Curbing - roofing contractor to review Bid Documents to determine if additional areas of wood blocking are needed to meet manufacturer's warranty.
2. Section 072113 – Board Insulation.
3. Section 076200 – Sheet Metal Flashing and Trim.

1.4 REFERENCE STANDARDS

A. ASTM International:

1. ASTM C177 - Standard Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus.
2. ASTM C208 - Standard Specification for Cellulosic Fiber Insulating Board.
3. ASTM C552 - Standard Specification for Cellular Glass Thermal Insulation.

4. ASTM C1002 - Standard Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
5. ASTM C1289 - Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board.
6. ASTM C1371 - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
7. ASTM C1549 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
8. ASTM D41 - Standard Specification for Asphalt Primer Used in Roofing, Dampproofing, and Waterproofing.
9. ASTM D312 - Standard Specification for Asphalt Used in Roofing.
10. ASTM D2178 - Standard Specification for Asphalt Glass Felt Used in Roofing and Waterproofing.
11. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.
12. ASTM D6162 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
13. ASTM D6163 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Glass Fiber Reinforcements.
14. ASTM D6164 - Standard Specification for Styrene Butadiene Styrene (SBS) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
15. ASTM D6222 - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using Polyester Reinforcements.
16. ASTM D6223 - Standard Specification for Atactic Polypropylene (APP) Modified Bituminous Sheet Materials Using a Combination of Polyester and Glass Fiber Reinforcements.
17. ASTM D6298 - Standard Specification for Fiberglass Reinforced Styrene-Butadiene-Styrene (SBS) Modified Bituminous Sheet with a Factory Applied Metal Surface.
18. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
19. ASTM E96 - Standard Test Methods for Water Vapor Transmission of Materials.
20. ASTM E108 - Standard Test Methods for Fire Tests of Roof Coverings.
21. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
22. ASTM E408 - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
23. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
24. ASTM E1918 - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
25. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

B. FM Global:

1. FM DS 1-28 - Wind Design.
2. FM 4450 - Approval Standard for Class 1 Insulated Steel Deck Roofs.

C. Intertek Testing Services (Warnock Hersey Listed):

1. WH - Certification Listings.

D. National Roofing Contractors Association:

1. NRCA - The NRCA Roofing and Waterproofing Manual.

E. Single Ply Roofing Institute:

1. SPRI ES-1 - Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems.

F. Underwriters Laboratories Inc.:

1. UL - Fire Resistance Directory.
2. UL 790 - Standard Test Methods for Fire Tests of Roof Coverings.
3. UL 1256 - Fire Test of Roof Deck Construction.
4. UL 1897 - Uplift Tests for Roof Covering Systems.

G. U.S. Environmental Protection Agency:

1. ENERGY STAR - ENERGY STAR Voluntary Labeling Program.

1.5 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work of this Section with installation of associated metal flashings, as Work of this Section proceeds.

1.6 PRE-INSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Requirements for preinstallation meeting.

B. Convene minimum one week prior to commencing Work of this Section.

C. Review installation procedures and coordination required with related Work.

1.7 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. All submittals which do not conform to the following requirements will be rejected.

C. SUBMITTALS OF EQUALS. Submit primary roof systems to be considered as equals to the specified roof system no less than 10 days prior to bid date. Primary roof systems which have been reviewed and accepted as equals to the specified roof system will be listed in an addendum prior to bid date; only then will equals be accepted at bidding.

D. Product Data: Submit edited data specific to materials to be used.
   1. Submittals containing random product data for items not in the scope of the work will not be reviewed and the entire submittal marked as 'Revise and Resubmit'.
   2. Descriptive list of the materials proposed for use.
   3. Complete list of material physical and mechanical properties for each sheet including: weights and thicknesses; low temperature flexibility; maximum load; elongation @ 5% maximum load; dimensional stability; high temperature stability; granule embedment and resistance to thermal shock (foil faced products).

E. Submittals shall include the following:
   1. Two 3 inch x 5 inch samples of the primary roofing and flashing sheets.

F. Shop Drawings: Indicate setting plan for tapered insulation, layout of seams, direction of laps, and base flashing details.

G. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

H. Manufacturer's Instructions: Submit latest edition of the roofing system manufacturer's specifications and installation instructions including any special precautions required for seaming membrane.

I. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.

J. Manufacturer Reports: Indicate procedures followed, ambient temperatures and humidity, wind velocity during application, supplementary instructions given.
   1. Sample copy of the specified guarantee

K. Qualifications Statements:

   1. Submit qualifications for manufacturer and applicator.

   2. Submit manufacturer's approval of applicator.

   3. Letter from the proposed primary roofing manufacturer confirming the number of years it has directly manufactured the proposed primary roofing system under the trade name and/or trademarks as proposed.

   4. List of 3 of the proposed primary roofing manufacturer's projects, located in the United States, of equal size and degree of difficulty which have been performing successfully for a period of at least 5 years.

   5. Evidence and description of manufacturer's quality control/quality assurance program for the primary roofing products supplied. The quality assurance program description shall include all methods of testing for physical and mechanical property values. Provide confirmation of manufacturer's certificate of analysis for reporting the tested values of the actual material being supplied for the project prior to issuance of the specified guarantee.

   6. Evidence of Underwriters' Laboratories Class A acceptance of the proposed roofing system (including mopping asphalt or cold adhesive) without additional requirements for gravel or coatings. No other testing agency approvals will be accepted

L. Submittals Prior to Contract Award:
   1. Letter from the proposed primary roofing manufacturer confirming that the bidder is an acceptable Contractor authorized to install the proposed system.
   2. Letter from the primary roofing manufacturer stating that the proposed application will comply with the manufacturer's requirements in order to qualify the project for the specified guarantee.

M. Submittals Prior to Project Close-out:
   1. Manufacturer's printed recommendations for proper maintenance of the specified roof system including inspection frequencies, penetration addition policies, temporary repairs, and leak call procedures.

1.8 QUALITY ASSURANCE

A. Installer of work of this section shall be responsible for all work of Specification Sections 076200 – Sheet Metal Flashing and Trim with preference given to those who are certified to install 074213 Insulated Metal wall Panels and 074243 Composite Wall Panels.

B. Acceptable Products: Primary roofing products, including each type of sheet, all manufactured in the United States, shall be supplied by a single manufacturer which has been successfully producing the specified types of primary products for not less than 10 years. The primary roofing products shall have maintained a consistent composition for a minimum of five years.

C. Agency Approvals: The proposed roof system shall conform to the following requirements. No other testing agency approvals will be accepted.

D. Underwriters Laboratories Class A acceptance of the proposed roofing system (including mopping asphalt or cold adhesive) without additional requirements for gravel or coatings.

E. Factory Mutual Approval Standard 4470 listing for the proposed membrane system. The roof and membrane configuration shall be approved by FM for minimum IA-90 windstorm construction.

F. Acceptable Contractor: Contractor shall have a minimum of 5 years experience in successfully installing the same or similar roofing materials and be certified in writing by the roofing materials manufacturer to install the primary roofing products. Contractor must be certified by a minimum of two of the approved manufacturers to install primary roofing materials, and have at least 5 projects of similar size and scope for review by Architect. Must have office within 90 mile radius of this project.

G. Scope of Work: The work to be performed under this specification shall include but is not limited to the following: Attend necessary job meetings and furnish competent and full-time supervision, experienced roof mechanics, all materials, tools, and equipment necessary to complete, in an acceptable manner, the roof installation in accordance with this specification. Comply with the latest written application instructions of the manufacturer of the primary roofing products. In addition, application practice shall comply with requirements and recommendations contained in the latest edition of the Handbook of Accepted Roofing Knowledge (HARK) as published by the National Roofing Contractor's Association, amended to include the acceptance of a phased roof system installation.

H. Local Regulations: Conform to regulations of public agencies, including any specific requirements of the city and/or state of jurisdiction.

I. Manufacturer Requirements: Ensure that the primary roofing materials manufacturer provides direct trained company personnel to attend necessary job meetings, perform periodic inspections as necessary including pre-cap sheet, and conducts a final inspection upon successful completion of the project.

J. Perform Work according to NRCA Roofing and Waterproofing Manual.

K. Fire-Rated Roof Construction:

1. Rating as indicated on Drawings.
2. Tested Rating: Determined according to ASTM E119.

L. Roof Assembly Fire Classification:

1. Minimum Class A when tested according to ASTM E108 or UL 790.
2. Roof Assembly with Foam Insulation: Passes FM 4450 or UL 1256.

M. Surface-Burning Characteristics:

1. Foam Insulation: Maximum 75/450 flame-spread/smoke-developed index when tested according to ASTM E84.

N. Apply label from agency approved by authority having jurisdiction to identify each roof assembly component.

O. Maintain copy of each standard affecting the Work of this Section on-Site.

1.9 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum ten years' documented experience.

B. Applicator: Company specializing in performing Work of this Section with minimum five years' documented experience and approved by manufacturer.

1.10 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Deliver products in manufacturer's original containers, dry, undamaged, with seals and labels intact; include application instructions.

C. Inspection: Accept materials on-Site and inspect for damage.

D. Store products in weather-protected environment, clear of ground and moisture, and according to manufacturer's instructions. Store materials out of direct exposure to the elements. Store roll goods on a clean, flat and dry surface. All material stored on the roof overnight shall be stored on pallets. Rolls of roofing must be stored on ends. Store materials on the roof in a manner so as to preclude overloading of deck and building structure. Store materials such as solvents, adhesives and asphalt cutback products away from open flames, sparks or excessive heat. Cover all material using a breathable cover such as a canvas. Polyethylene or other non-breathable plastic coverings are not acceptable.

E. Stand roll materials on end.

F. HANDLING. Handle all materials in such a manner as to preclude damage and contamination with moisture or foreign matter. Handle rolled goods to prevent damage to edges or ends.

G. Any materials that are found to be damaged or stored in any manner other than stated above will be automatically rejected, removed and replaced at the Contractor's expense.

1.11 REQUIREMENTS PRIOR TO JOB START

A. NOTIFICATION. Give a minimum of 5 days notice to the Owner and manufacturer prior to commencing any work and notify both parties on a daily basis of any change in work schedule.

B. PERMITS. Obtain all permits required by local agencies and pay all fees which may be required for the performance of the work.

C. SAFETY. Familiarize every member of the application crew with all fire and safety regulations recommended by OSHA, NRCA and other industry or local governmental groups.

1.12 AMBIENT CONDITIONS

A. Section 015000 - Temporary Facilities and Controls: Requirements for ambient condition control facilities for product storage and installation.

B. Do not apply roofing membrane without proper weather protection meeting manufacturers recommendations.

C. Do not apply roofing membrane to damp or frozen deck surface.

D. PRECIPITATION: Do not apply roofing materials during precipitation or in the event there is a probability of precipitation during application. Take adequate precautions to ensure that materials, applied roofing, and building interiors are protected from possible moisture damage or contamination.

E. TEMPERATURE RESTRICTIONS: COLD ADHESIVE. At low temperatures, the specified cold adhesive becomes more viscous, making even distribution more difficult. Store cold adhesive in a warm place immediately prior to use. Use a shop squeegee to assist in an even distribution of the adhesive (cut notches out of the rubber blade of the squeegee). Suspend application in situations where the adhesive cannot be kept at temperatures allowing for even distribution.

F. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed on same day.

1.13 PROTECTION REQUIREMENTS

A. MEMBRANE PROTECTION. Provide protection against staining and mechanical damage for newly applied roofing and adjacent surfaces throughout this project.

B. TORCH SAFETY: Designate one person on each crew to perform a daily fire watch. The designated crew member shall watch for fires or smoldering materials on all areas of roof construction. Continue the fire watch for one hour after roofing material application has been suspended for the day.

C. LIMITED ACCESS. Prevent access by the public to materials, tools and equipment during the course of the project.

D. DEBRIS REMOVAL. Remove all debris daily from the project site and take to a legal dumping area authorized to receive such materials.

E. SITE CONDITION. Complete, to the owner's satisfaction, all job site clean-up including building interior, exterior and landscaping where affected by the construction.

1.14 WARRANTY

A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.

B. Furnish twenty-year NDL manufacturer's material and labor warranty to cover failure to prevent penetration of water.

C. Cutting and Patching work performed on newly installed roof areas shall have no adverse impact on the full Roofer or Manufacturer warranty.

D. All areas of new construction/new roofing shall be provided with the following:
1. The Roofing Contractor shall provide a two-year unconditional guarantee for all materials and workmanship, to start at Substantial Completion of total project.

2. Upon project completion and Manufacturer acceptance the Manufacturer shall deliver to the Owner a twenty (20) year, NO DOLLAR LIMIT, manufacture Roofing Warranty for labor and materials to start at Substantial Completion of total project. The Systems warranty shall include all components of the roof located above the metal or concrete deck, including, but not necessarily limited to, insulation, fasteners, roofing membranes, base flashing, asphalt, adhesives and sealants.

3. All penetrations or low flashing details will be covered in the roofing system 20-yr NDL. Use manufacturer's approved liquid-applied flashing as needed to meet this requirement.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

A. The basic work descriptions (components, layering and attachment methods) required in this specification are referenced below.
1. Project Type: New construction
2. Specification #: 2030 IH-A (or) 2 FID
3. Deck: corrugated metal deck, flutes dry and clean.
4. Slope: none.
5. Insulation - bottom layers: Polyisocyanurate, to meet R-30, mechanically attached.
6. Insulation – cover board: High Density Wood Fiber Board or JM RetroPlus, having a thickness of 1/2 inch, installed in Hot Type IV Asphalt.
7. Roof System: Paradiene 20 or JM DynaBase, applied in Hot Type IV Asphalt; Paradiene 30 FR applied in PA-311 Adhesive, or JM DynaGlass FR applied in JM MBR Cold Adhesive.
8. Flashing System: Veral Aluminum, torch applied or cold, adhesive -applied; Johns Manville DynaClad, Torch Applied or cold adhesive-applied.

2.2 PERFORMANCE AND DESIGN CRITERIA

A. Low-Slope Membrane Roof Edge Securement: Conform to SPRI ES-1 for wind speeds determined from applicable code.

B. Roof Assembly Classification:

1. Comply with FM Class 1 Construction.
2. Windstorm classification of 1-90, according to FM DS 1-28.

2.3 MODIFIED BITUMINOUS ROOFING

MANUFACTURERS:

1. Siplast: Paradiene 2030 IH-A
2. Johns Manville Roofing: 2 FID
3. Tremco
4. Soprema
5. No Additional Substitutions Accepted

B. Vapor Retarder Materials:

1. Dry Sheathing Paper: Red rosin paper, unsaturated. (above deck/ below insul.)

C. Insulation:

1. Polyisocyanurate:

a. Comply with ASTM C1289, Type II, Class 4. Roof insulation shall be UL and/or FM approved. All panels must possess adequate rigidity to span conditions if required. Insulation shall be approved in writing by the insulation manufacturer for intended use and for use with the specified roof assembly.

b. A closed cell, rigid polyisocyanurate foam core material, integrally laminated between glass fiber facers, in full compliance with ASTM C 1289, Type II. Panels shall have a thickness required to meet an R-value = 30. Acceptable types are as follows:
   1) ACFoam II, by Atlas Energy Products; Atlanta, GA (800) 933-1476.
   2) E'NRG'Y 3 by NRG/Johns Manville, Inc.; Denver, CO (800) 922-5922.
   3) H-Shield by Hunter Panels, LLC: Portland, ME (888) 746-1114.

2. COVERBOARD: A high density panel composed of interlocking wood fibers and waterproofing binders, having a top surface that is pre-treated with an asphalt coating. Fiberboard panels shall be in full compliance with ASTM C 208, Type II, Grade 2, and ASTM C 209 (water absorption- 10% volume maximum) requirements.
   a. Panels shall be in full compliance with ASTM C 728 and compliant with ASTM C 209 test methods. Factory Manual Class I approval per FMRC Standard 4450/4470. Panels shall have a nominal thickness of 1/2 inch.

   b. Acceptable types are as follows:
      1) G-P Roof Fiberboard by Georgia Pacific Corp.; Atlanta, GA.
      2) >Paratherm Fiberboard by Siplast, Irving, TX
      3) >Retro-Plus Board by Johns Manville Inc. Denver, CO

D. MEMBRANE:

1. Description: Two-ply roof membrane assembly consisting of, base plies of a prefabricated, reinforced, homogeneous Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane, secured to a prepared. All reinforcement mats shall be impregnated and coated each side with a high quality SBS modified bitumen blend.

2. MODIFIED BITUMEN BASE PLY - ASTM D 6163, Type I, Grade S.
   a. Thickness (avg): 132 mils (3.4 mm) (ASTM D 5147).
   b. Thickness (min): 126 mils (3.2 mm) (ASTM D 5147).
   c. Weight (min per 100 ft² of coverage): 90 lb (4.1 kg/m²)
   d. Maximum filler content in elastomeric blend: 35% by weight
   e. Low temperature flexibility @ -13° F (-25° C) - PASS (ASTM D 5147)
   f. Peak Load (avg) @ 73°F (23°C): 30 lbf/inch (5.3 kN/m) (ASTM D 5147)
   g. Peak Load (avg) @ 0°F (-18°C): 75 lbf/inch (13.2 kN/m) (ASTM D 5147)
   h. Ultimate Elongation (avg.) @ 73°F (23°C): 100% (ASTM D 5147)
   i. Dimensional Stability (max): 0.1% (ASTM D 5147)
   j. Compound Stability (min): 250°F (121°C) (ASTM D 5147)
   k. Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
   l. Reinforcement: Fiberglass mat or other meeting the performance and dimensional stability criteria.

3. MODIFIED BITUMEN – 2nd PLY – ASTM D 6163, type 1, Grade G.

   a. Thickness (avg): 130 mils (3.3 mm) (ASTM D 5147)
   b. Thickness at selvage (coating thickness) (avg): 98 mils (2.5 mm) (ASTM D 5147)
   c. Thickness at selvage (coating thickness) (min): 94 mils (2.4 mm) (ASTM D 5147)
   d. Weight (min per 100 ft² of coverage): 90 lb (4.4 kg/m²)
   e. Maximum filler content in elastomeric blend: 35% by weight
   f. Low temperature flexibility @ -15° F (-26° C): PASS (ASTM D 5147)
   g. Peak Load (avg) @ 73°F (23°C): 30 lbf/inch (5.3 kN/m) (ASTM D 5147)
   h. Peak Load (avg) @ 0°F (-18°C): 75 lbf/inch (13.2 kN/m) (ASTM D 5147)
   i. Ultimate Elongation @ 73°F (23°C): 55% (ASTM D 5147)
   j. Dimensional Stability (max): 0.1% (ASTM D 5147)
   k. Compound Stability (min): 250°F (121° C) (ASTM D 5147)
   l. Approvals: UL Class listed, FM Approved (products shall bear seals of approval)
   m. Reinforcement: Fiberglass mat or other meeting the performance and dimensional stability criteria.
   n. Surfacing: ceramic granules.

E. FLASHING MEMBRANE ASSEMBLY.

1. A flashing membrane assembly consisting of a prefabricated, fiberglass scrim-mat reinforced, Styrene-Butadiene-Styrene (SBS) block copolymer modified asphalt membrane with a continuous, channel-embossed metal-foil surfacing. A low softening point asphalt shall be incorporated into the membrane between the metal foil surfacing and the SBS modified bitumen asphalt membrane, at the channels, in order to preclude foil delamination during daily thermal cycling.

2. METAL-CLAD MODIFIED BITUMEN FLASHING SHEET – ASTM D 6298.
   a. Thickness (avg): 150 mils (3.8 mm) (ASTM D 5147)
   b. Thickness (min): 146 mils (3.7 mm) (ASTM D 5147)
   c. Weight (min per 100 ft² of coverage): 96 lb (4.6 kg/m²)
   d. Coating Thickness – back surface (min): 40 mils (1 mm) (ASTM D 5147)
   e. Maximum filler content in elastomeric blend: 35% by weight
   f. Low temperature flexibility @ 0° F (-18° C): PASS (ASTM D 5147)
   g. Peak Load (avg) @ 73°F (23°C): 85 lbf/inch (15 kN/m) (ASTM D 5147)
   h. Peak Load (avg) @ 0°F (-18°C): 180 lbf/inch (31.7 kN/m)
   i. (ASTM D 5147)
   j. Ultimate Elongation @ 73°F (23°C): 45% (ASTM D 5147)
   k. Tear-Strength (avg): 120 lbf (0.54 kN) (ASTM D 5147)
   l. Dimensional Stability (max): 0.2% (ASTM D 5147)
   m. Compound Stability (min): 225°F (107°C) (ASTM D 5147)
   n. Cyclic Thermal Shock Stability (maximum): 0.2% (ASTM D 6298)
   o. Approvals: UL Approved, FM Approved
   p. (products shall bear seals of approval)
   q. Reinforcement: Fiberglass scrim mat or other meeting the performance and dimensional stability criteria

3. REINFORCING OR FLASHING BACKER PLY - (Same as roof system base ply)

2.4 SUSTAINABILITY CHARACTERISTICS

A. Section 018113 - Sustainable Design Requirements: Requirements for sustainable design compliance.

1. Roof Surface: ENERGY STAR compliant with the following performance:

a. Emissivity: Minimum 0.9 for 75 percent of roof area according to ASTM E408.

B. Material and Resource Characteristics:

1. Recycled Content Materials: Furnish materials with maximum available recycled content.

2.5 ACCESSORIES

A. ROOFING ADHESIVES
1. MEMBRANE COLD ADHESIVE. A blend of special adhesive asphalts and safe, high-flash, quick drying solvents that meets or exceeds ASTM D 3019, TYPE III, Grade 2 requirements.

B. BITUMINOUS CUTBACK MATERIALS
1. PRIMER. A high flash, quick drying, asphalt solvent blend which meets or exceeds ASTM D 41 requirements.
2. MASTICS. An asphalt cutback mastic, reinforced with non-asbestos fibers, used as a base for setting metal flanges conforming to ASTM D 4586 Type I requirements.

C. Sealant: A moisture-curing, non-slump elastomeric sealant designed for roofing applications. The sealant shall be approved by the roof membrane manufacturer for use in conjunction with the roof membrane materials. Acceptable types are as follows:

D. CERAMIC GRANULES. No. 11 Grade Specification Ceramic granules (white) with high reflectance.

E. INSULATION FASTENERS. Insulation fasteners and plates shall be FM Approved, and/or approved by the manufacturer of the primary roofing products. The insulation fasteners shall provide attachment required to meet the specified uplift performance and to restrain the insulation panels against the potential for ridging, etc. The fastening pattern for each insulation panel to be used shall be as recommended by the insulation manufacturer and approved by the manufacturer of the primary roofing products. Acceptable insulation fastener manufacturers for specific deck types are listed below.

F. ROOF PENETRATIONS / LOW FLASHING CONDITIONS: As these conditions will be covered by the 20-yr NDL warranty, use material(s) required by the manufacturer to cover these conditions, such as manufacturer approved liquid-applied flashing.

G. PARAPET FLASHING CONDITIONS: The metal faced flashing to be used on this project may be installed in one piece for heights up to maximum 48 inches, or where the flashing is extended over the top of the parapet. Provide metal faced flashing as required where roof conditions abut vertical walls. If circumstances differ from 48", intermediary mechanical supports may be used.

2.6 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for application examination.

B. Verify that surfaces and Site conditions are ready to receive Work.

C. Verify that deck is supported and secure.

D. Verify that deck is clean, smooth, and flat; free of depressions, waves, and projections; properly sloped to drains, valleys, or eaves; and suitable for installation of roof system.

E. Verify that deck surfaces are dry and free of snow or ice.

F. Confirm dry deck by moisture meter, with reading of moisture content acceptable to roofing manufacturer.

G. Verify that roof openings, curbs, pipes, conduit, sleeves, ducts, and vents through roof are solidly set, and that wood cant strips, wood nailing strips and reglets are in place.

2.7 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for application preparation.

B. Protect building surfaces against damage from roofing work.

C. Sweep or vacuum all surfaces, removing all loose aggregate and foreign substances prior to commencement of roofing.

D. Construct tie-ins to the existing roof in a watertight manner at the end of each day.

E. perimeter edge flashing must be cleaned and primed with asphaltic primer as required in order to ensure a good seal between the metal and the roofing membrane.

F. No membrane roofing work shall be performed over areas occupied by students or school staff.

G. Fume recovery systems shall be utilized for all hot asphalt roof work.

2.8 APPLICATION

A. Membrane:

1. Apply membrane and primer.
2. Lap and seal edges and ends permanently waterproof.
3. Apply membrane smooth and free from air pockets, wrinkles, or tears.
4. Ensure full bond of membrane to substrate.
5. Extend membrane up cant strips and minimum of 12 inches onto vertical surfaces.
6. Extend membrane over vapor retarder and air barrier of wall construction and seal.

7. Mop and seal membrane around roof protrusions and penetrations.
8. Cutoff:
   a. Provide waterproof cutoff to membrane at end of day's operation.
   b. Remove cutoff before resuming roofing.

B. ROOF MEMBRANE INSTALLATION

1. MEMBRANE APPLICATION. Apply roofing in accordance with roofing system manufacturer's instructions and the following requirements. Application of roofing membrane components shall immediately follow application of base sheet and/or insulation as a continuous operation.

2. AESTHETIC CONSIDERATIONS. An aesthetically pleasing overall appearance of the finished roof application is a standard requirement for this project. Make necessary preparations, utilize recommended application techniques, apply the specified materials (i.e. granules, metallic powder, etc.), and exercise care in ensuring that the finished application is acceptable to the Owner.

3. PRIMING. Prime metal flanges (all jacks, edge metal, lead drain flashings, etc.) and concrete and masonry surfaces with a uniform coating of ASTM D 41 asphalt primer.

4. MEMBRANE ADHESIVE APPLICATION. Apply cold adhesive in a smooth, even, continuous layer without breaks or voids at the rate of 1 1/2 gallons per square per ply. (The porosity of some substrates may require a heavier application to ensure full adhesion.)

5. BITUMEN CONSISTENCY. Cutting or alterations of bitumen, primer, and sealants will not be permitted.

6. ROOFING APPLICATION. Apply all layers of roofing free of wrinkles, creases or fishmouths. Exert sufficient pressure on the roll during application to ensure prevention of air pockets. Stagger the lap seams between the base ply layer and the finish ply layer. Stagger the courses to ensure this.

   a. Apply all layers of roofing perpendicular to the slope of the deck.

   b. Fully bond the base ply to the prepared substrate, utilizing minimum 3-inch side and end laps. Apply each sheet directly behind the hot asphalt applicator. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger end laps a minimum of 3 feet.

   c. Fully bond the finish ply to the base ply, utilizing minimum 3 inch side and end laps. Apply each sheet directly behind the cold adhesive applicator. Stagger end laps of the finish ply a minimum 3 feet. Cut a dog ear angle at the end laps on overlapping selvage edges. Using a clean trowel, apply top pressure to top seal T-laps immediately following sheet application. Stagger side laps of the finish ply a minimum 12 inches from side laps in the underlying base ply. Stagger end laps of the finish ply a minimum 3 feet from end laps in the underlying base ply.

   d. Maximum sheet lengths and special fastening of the specified roof membrane system may be required at various slope increments where the roof deck slope exceeds 1/2 inch per foot. The manufacturer shall provide acceptable sheet lengths and the required fastening schedule for all roofing sheet applications to applicable roof slopes.

   e. GRANULE EMBEDMENT. Broadcast mineral granules over all bitumen overruns on the finish ply surface, while the bitumen is still soft, to ensure a monolithic surface color.

B. FLASHING APPLICATION –

1. Flash parapet walls and curbs using the reinforcing sheet and the metal foil flashing membrane. After the base ply has been applied to the top of the cant, fully adhere the reinforcing sheet, utilizing minimum 3 inch side laps and extend a minimum of 3 inches onto the base ply surface and 3 inches up the parapet wall above the cant. After the final roofing ply has been applied to the top of the cant, prepare the surface area that is to receive flashing coverage by torch heating granular surfaces or by application of asphalt primer; allowing primer to dry thoroughly. Torch apply the metal foil-faced flashing into place using three foot widths (cut off the end of roll) always lapping the factory selvage edge. Stagger the laps of the metal foil flashing layer from lap seams in the reinforcing layer. Extend the flashing sheet a minimum of 4 inches beyond the toe of the cant onto the prepared surface of the finished roof and up the wall to the desired flashing height. Exert pressure on the flashing sheet during application to ensure complete contact with the wall/roof surfaces, preventing air pockets; this can be accomplished by using a damp sponge or shop rag. Check and seal all loose laps and edges. Nail the top edge of the flashing on 9 inch centers. (See manufacturer's schematic for visual interpretation)..

C. WATER CUT-OFF. At end of day's work, or when precipitation is imminent, construct a water cut-off at all open edges. Cut-offs can be built using asphalt or plastic cement and roofing felts, constructed to withstand protracted periods of service. Cut-offs must be completely removed prior to the resumption of roofing.

2.9 ROOF SYSTEM INTERFACE WITH RELATED COMPONENTS

1. The following is a list of verbal descriptions for correct installation of components integrated into the roof membrane assembly. In all cases, unless otherwise approved, incorporate flanged components into the system between the application of the base ply and the finish ply. The flange must be primed with a uniform coating of approved ASTM D 41 asphalt primer and allowed to dry thoroughly; all flanges must be set in approved mastic.
   a. EDGE METAL. Completely prime metal flanges and allow to dry prior to installation. Turn the base ply down 2 inches past the roof edge and over the nailer. After the base ply and continuous cleat (if applicable) have been installed, set the flange in mastic and stagger nail every 3 inches on center. Strip-in the flange using the stripping-ply material, extending a minimum of 4 inches beyond the edge of the flange. Terminate the finish ply at the gravel-stop rise of the edge metal. SEE ITEM: SEALANT, for finish of this detail.

b. LEAD PIPE FLASHINGS. Completely prime the lead flanges and allow to dry prior to installation. After the base ply has been applied, set the flange in mastic and strip-in the flange using the stripping-ply material, extending a minimum of 4 inches beyond the edge of the flange. Terminate the finish ply at the flange-sleeve juncture of the pipe flashing. SEE ITEM: SEALANT for finish of this detail.

c. LEAD DRAIN FLASHINGS - SUMPED ROOF DRAINS. Completely prime the lead drain flashing and allow to dry prior to installation. After the base ply has been applied, set the lead flashing sheet in mastic and form to turn down inside the drain bowl. Ply-in the perimeter of the lead flashing using a 39 inch by 39 inch additional layer of the base ply material, overlapping the perimeter of the lead a minimum of 4 inches. Apply a 48 inch by 48 inch piece of the metal-clad flashing sheet in a two ply configuration, centered over the drain opening, extending beyond the clamping ring seal, lapping the pieces through the center of the drain opening. Prime 4 inches around the perimeter of the metal-clad sheet. Fully adhere the finish ply; tie in to the metal clad sheet by setting the finish ply in mastic over the primed area. Install the clamping ring with all clamps, bolts etc., in place. (See manufacturer's schematic for visual interpretation).

d. METAL PIPE FLASHINGS. Completely prime the metal pipe flanges and allow to dry prior to installation. After the base ply has been applied, set the flanges in mastic and strip-in the flange using the stripping-ply material, extending a minimum of 4 inches beyond the edge of the flange. Terminate the finish ply at the flange-sleeve juncture of the pipe flashing. Install a watertight umbrella to the penetration, completely covering the opening of the pipe flashing. SEE ITEM: SEALANT for finish of this detail.

e. SEALANT. Caulk all exposed finish ply edges at gravel stops, waste stacks, pitch pans, vent stacks, etc..., with a smooth continuous bead of approved sealant.

2.10 FIELD QUALITY CONTROL

A. Section 014000 - Quality Requirements: Requirements for inspecting and testing.

B. Correct identified defects or irregularities.

C. Leave all areas around job site free of debris, roofing materials, equipment and related items after completion of job.

D. NOTIFICATION OF COMPLETION. Notify the manufacturer by means of manufacturer's printed Notification of Completion form of job completion in order to schedule a final inspection date.

E. PROVIDE MANUFACTURER FIELD REPRESNTATIVE periodically during installation and manufacturers field inspections of installed construction prior to cap sheet installation.

F. POST-INSTALLATION MEETING. Hold a meeting at the completion of the project, attended by all parties that were present at the pre-job conference. A punch list of items required for completion shall be compiled by the Contractor and the manufacturer's representative with the

architect in attendance. Complete, sign, and mail the punch list form to the manufacturer's headquarters.

G. ISSUANCE OF THE GUARANTEE. Complete all post installation procedures and meet the manufacturer's final endorsement for issuance of the specified guarantee.

2.11 CLEANING

A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.

B. In areas where finished surfaces have been soiled by bitumen or other source of soiling caused by Work of this Section, consult manufacturer of surfaces for cleaning advice, and conform to their documented instructions.

C. Repair or replace defaced or disfigured finishes caused by Work of this Section.

2.12 PROTECTION

A. Section 017000 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Do not permit traffic over unprotected surfaces.

END OF SECTION

SECTION 076200 - SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SUMMARY

A. Section includes prefabricated flashings and counter-flashings, miscellaneous fabricated sheet metal items.

B. Related Sections:
1. Section 061000 – Rough Carpentry: Wood blocking.
2. Section 077300 – Aluminum Canopies
3. Section 074213 – Insulated Metal Wall Panels
4. Section 074243 - Composite Wall Panels
5. Section 079000 – Joint Protection.
6. Section 23 - Mechanical

1.2 REFERENCES

A. American Architectural Manufacturers Association:
1. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
2. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
3. AAMA 2604 - Voluntary specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
4. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

B. ASTM International:
1. ASTM A240/A240M - Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications.
2. ASTM A625/A625M - Standard Specification for Tin Mill Products, Black Plate, Single Reduced.
3. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
4. ASTM A755/A755M - Standard Specification for Steel Sheet, Metallic Coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.
5. ASTM B32 - Standard Specification for Solder Metal.
6. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
7. ASTM B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric).
8. ASTM B749 - Standard Specification for Lead and Lead Alloy Strip, Sheet, and Plate Products.

9. ASTM D4397 - Standard Specification for Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.
10. ASTM D4586 - Standard Specification for Asphalt Roof Cement, Asbestos-Free.

C. Federal Specification Unit:
1. FS TT-C-494 - Coating Compound, Bituminous, Solvent Type, Acid Resistant.

D. Sheet Metal and Air Conditioning Contractors:
1. SMACNA - Architectural Sheet Metal Manual.

1.3 DESIGN REQUIREMENTS

A. Sheet Metal Flashings: Conform to the following criteria of SMACNA "Architectural Sheet Metal Manual."

1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

C. Product Data: Submit data on manufactured components metal types, finishes, and characteristics.

1.6 QUALIFICATIONS

A. Fabricator and Installer: Company specializing in sheet metal work with minimum three years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Product storage and handling requirements.

B. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

C. Prevent contact with materials causing discoloration or staining.

1.8 COORDINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

1.9 WARRANTY

A. The installer of metal flashings and trim shall provide a two-year unconditional guarantee for water-tightness on all materials and workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Metal-Era
B. Metal Span
C. Nucor
D. Hickman Metals
E. Substitutions, refer to 016000 – Product Requirements.

2.2 ACCESSORIES

A. Fasteners: Same material and finish as flashing metal.
B. Sealant: Acrylic type as specified in Section 079000.
C. Plastic Cement: ASTM D4586, Type I.
D. Solder: ASTM B32; 50/50 type.

2.3 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Fabricate cleats of same material as sheet.

C. Form pieces in longest possible lengths.

D. Hem exposed edges on underside 1/2 inch; miter and seam corners.

E. Form material with flat lock seams, except where otherwise indicated. At moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

F. Fabricate corners from one piece with minimum 18 inch long legs; solder for rigidity, seal with sealant.

G. Fabricate flashings to allow toe to extend 2 inches over roofing. Return and brake edges.

H. Seal metal joints.

2.4 FACTORY FINISHING

A. PVDF (polyvinylidene fluoride) coating: Multiple coat, thermally cured, fluoropolymer system. To match wall panels EXACTLY.

B. Primer Coat: Finish concealed side of metal sheets with primer compatible with finish system, as recommended by finish system manufacturer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

3.2 PREPARATION

A. Install any required starter, edge strips, or cleats before starting installation.

B. If required, install surface mounted reglets to lines and levels indicated on Drawings. Seal top of reglets with sealant.

C. Paint concealed metal surfaces with protective backing paint to minimum dry film thickness of 15 mil.

3.3 INSTALLATION

A. Apply plastic cement compound between metal flashings and felt flashings.

B. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

C. Seal metal joints watertight.

D. Install fabricated sheet metal splash pans beneath downspouts that discharge onto a roof surface.

3.4 SCHEDULE

A. The following Schedule is a list of principle items only. Refer to Drawings Sheets for items not specifically scheduled.

1. Miscellaneous flashing types: 22 gage prefinished galvanized steel as required to complete the work and as shown on the documents.

2. Copings and top of wall/parapet conditions.

END OF SECTION

SECTION 077233 - ROOF ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Prefabricated mounted hatch railing.
2. Prefabricated parapet sidewall mounted fall protection rail.

1.2 REFERENCE STANDARDS

A. American National Standards Institute:
1. ANSI A1264.1 - Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Roof Openings; Stairs and Guardrails Systems.

B. Occupational Safety & Health Administration (OSHA)
1. OSHA 29 CFR 1910.23 Guarding floor and wall openings and tables
2. OSHA 29 CFR 1926.502 Fall protections systems criteria

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit manufacturer information regarding unit construction, sizes, configuration, jointing methods, locations if applicable, and attachment methods.

C. Manufacturer Instructions: Submit special installation criteria and interface with adjacent components.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five years' documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.

C. Store materials according to manufacturer instructions.

D. Protection:
1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.

2. Provide additional protection according to manufacturer instructions.

1.6 EXISTING CONDITIONS

A. Field Measurements:
1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

1.7 COORDINATION

A. Coordinate layout and installation of roof accessories with carpentry and modified bitumen roofing system including base flashings to ensure a leak proof, watertight, secure and non-corrosive installation.

1.8 WARRANTY

A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.

B. Provide manufacturer's standard 5-year warranty. Roof hatches shall be free from manufacturing defects in materials and fabrication for a period of 5 years from the date of shipment. Should a product fail to function in normal use within this period, manufacturer shall furnish a replacement or new.

PART 2 - PRODUCTS

2.1 ROOF HATCH RAILING

A. MANUFACTURERS:
1. Babcok- Davis; model BSRCAY; basis of design.
2. Bilco – equal product.
3. JL Industries – equal product.
4. The Safety Rail Co. – equal product.
5. Substitutions: As specified in Section 016000 - Product Requirements.

B. Description:
1. Material: Aluminum.
2. Finish: Powdercoat, Gray or from Manufacturers full line.

2.2 ROOF PARAPET RAILING (Permanent)

A. MANUFACTURERS:
1. Babcok- Davis;.
2. Bilco – equal product.
3. The Safety Rail Co.
4. Substitutions: As specified in Section 016000 - Product Requirements.

B. Description:
1. Sidewall mounted Fall Protection Railing at Parapet wall.
2. Material: Aluminum; powdercoat.

3. Provide flashing, additional studs and plywood as required for stability and to meet KBC and OSHA.

2.3 FABRICATION

A. Fabricate components free of defects and visual distortion.

B. Fit components for weathertight assembly.

C. Provide flashing, plies or slip sheet as required to maintain roof manufacturers warranty.

2.4 ACCESSORIES

A. Anchorage Devices: As recommended by manufacturer.

B. Sealant:

1. As recommended by manufacturer.
2. Type: Non-hardening, non-skinning, non-drying, non-migrating, and butyl based.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify that openings and substrate conditions are ready to receive Work of this Section.

3.2 PREPARATION

A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Apply protective coating on aluminum surfaces in contact with cementitious materials or dissimilar metals.

C. Provide additional studs, plywood or blocking required for sound anchorage, or base flashings required by roof manufacturer.

3.3 INSTALLATION

A. According to manufacturer instructions.

B. Coordinate with installation of roofing system and related flashings for weathertight installation.

3.4 CLEANING

A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.

B. Wash exposed surfaces and wipe clean.

C. Remove excess sealant.

END OF SECTION 077233

SECTION 077300 - ALUMINUM CANOPIES AND WALKWAY COVER

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Delegated Engineering, Furnishing and installation of extruded aluminum wall-hung rod supported canopy as well as post aluminum post supported aluminum walkway cover with with welded drain beams, trusses, and integral downspout. Refer to plans and schedule for quantity and locations. Included shall be a delegated design for all foundation and footer design as well as steel plate attachment to existing sidewalk.

B. Extent of the canopies required is shown on the drawings. Included herein, but not limited to, are:
1. Decking
2. Fascia/Gutter
3. Gutters
4. Overhead supports, hangers and brackets
5. Beams
6. Downspouts
7. Anchors

1.2 RELATED SECTIONS

A. Section 033000 – Cast-in-Place Concrete
B. Section 042000 – Unit Masonry
C. Section 051200 – Structural Steel

1.3 REFERENCES

A. Pecifications for Aluminum Structures, Sixth Edition, 1994.

B. ASCE 7-95, Minumim Design Loads for Buildings and Other Structures.

C. American Architectural Manufacturer's Association (AAMA)

D. American Society for Testing and Materials (ASTM)

E. SMACNA's "Architectural Sheet Metal Manual" details for fabrication of units, including flanges and cap flashing to coordinate with metal wall panels and roofing.

F. Aluminum Design Manual 2000, Specifications & Guidelines for Aluminum Structures.

1.4 SUBMITTALS FOR REVIEW

A. Section 013300: Submittal Procedures.

B. Product Data: Provide properties of primer, bitumen, and mastics.

C. Shop Drawings with canopy profile, layout and details. Show structural component locations/positions, material dimensions and details of construction and assembly. Confirm dimensions in field prior to shop drawing preparation if possible.

D. Manufacturer's list of standard colors.

1.5 SUBMITTALS FOR INFORMATION

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Shop Drawings:
Indicate metal roofing panel profiles, jointing patterns, jointing details, fastening methods, flashings, terminations, and installation details.

C. Product Data:
1. Submit data on metal types, finishes, and characteristics.
2. Submit data on vapor retarder including thickness, sheet size and perm rating.
3. Submit color charts for finish selection.

D. Design Data:
1.Design data to be certified by independent testing agency.

E. Manufacturer's Installation Instructions: Submit instructions including special procedures for roofing penetrations, flashings, and perimeter conditions requiring special attention.

F. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

A. Protective canopy shall be wholly produced by a recognized manufacturer with at least five years experience in the design and fabrication of extruded aluminum walkway cover systems. Components shall be assembled in shop to greatest extent possible tominimize field assembly. Protective Canopy shall be installed by manufacturer. Third party installation is not acceptable.
B. Provide delegated design submittal of canopies, stamped by engineer licensed in the State of Kentucky.

1.7 DESIGN REQUIREMENTS

A. Roof Loads: Design to resist live and dead loads with 1/360 maximum deflection.
1. Roof Live Loads: Minimum 20 psf
2. Roof Snow Loads: 15 psf
3. Dead Loads: Actual weight of materials incorporated into Work.

B. Wind Loads: Design and size components to withstand positive and negative wind loads, including increased loads at building corners.

C. Design Wind Load: As calculated in accordance Kentucky Building Code, using 70 mph Basic Wind Speed, Exposure C, and Importance Factor 1.

D. Wind Uplift Resistance: UL 580; Class 90. Tested in accordance with ASTM E 1592.

1.8 WARRANTY

A. Protective cover system shall be warranted from defects for a period of (1) year from the date of Substantial Completion.

1.9 PERFORMANCE

A. Canopy must conform to local and Kentucky building codes.

1.10 DELIVERY STORAGE AND HANDLING

A. Deliver and store all canopy components in protected areas.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Tennessee Valley Metals
B. Peachtree Protective Covers
C. Mapes
D. Duo-Gard
E. Dittmer
F. For Substitutions -- see section 016000.

2.2 ALUMINUM FRAMING SYSTEM COMPONENTS

A. Framing: Tubing, conforming to ASTM B210, ASTM B221, ASTM B241/B241M and ASTM B483.

B. Columns: Columns shall be radius-cornered tubular extrusion of size shown on drawings with cutout and internal diverter for drainage where indicated. Circular downspout opening in column is not acceptable. Provide a small weep hole at the bottom of all non-draining columns to allow for the escape of condensation.

C. Beams (when used): Beams shall be tubular extrusions of size and shape shown on drawings (open-top tubular extrusions of size and shape shown on drawings with top edges thickened for strength as necessary).

D. Fittings: Elbows, T-shapes, wall brackets; cast aluminum.

E. Mounting: Brackets and flanges, with stainless steel brackets for mounting on masonry wall construction.

F. Splice Connectors: Concealed spigot; machined aluminum.

G. Exposed Fasteners: Flush countersunk stainless steel screws or bolts; consistent with design of system.

H. Intermediate members shall be extruded aluminum, alloy 6050-T6 in profile and thickness shown by manufacturer.

I. Hanger Rods and attachment hardware shall be galvanized/zinc plated designed to meet load requirements.

2.3 DECKING

A. Manufacturer's standard extruded self flashing interlocking into a composit unit. 3" Flat Pan Decking (6" wide). Interlocking joints shall be positively fastened at 18" O.C. creating a monolithic structural unit capable of developing the full strength of the sections. The fastenings must have minimum shear strength of 350 pounds each. Deck shall be assembled with sufficient camber to offset dead load deflection.

B. Finish Exposed Components: Standard factory color options for baked enamel finish, per AAMA 603.8.

2.4 DRAINAGE

A. Downspouts: 4" x 4" x .125 Extruded Alum. Column.

B. Finish Exposed Components: Etched, clear, satin anodized.

C. Water shall drain internally from deck to beams to columns for discharge out of rain diverters at or below ground level as indicatd on architectural drawings.uts.

D. Coordinate connection of columns/downspouts to underground piping as shown on Site Development drawings.

2.5 FASCIAS / GUTTERS / BEAMS

A. Fascia: Manufacturer's standard single piece aluminum, 8" x 4-1/8" Extruded Alum. Fascia/Gutter.

B. Beam: Manuacturer's standard single piece aluminum, 6" x 8" x .188 Extruded Aluminum Beam.

C. Gutter: Manufacturer's standard single piece aluminum, 6" x 8" x .188 Extruded Aluminum Drainage Beam/Gutter.

D. Finish Exposed Components: Etched, clear, satin anodized.

2.6 FABRICATION - FRAMING

A. Fit and shop assemble components in largest practical sizes, for delivery to site.

B. Fabricate components with joints tightly fitted and secured.

C. Exposed Fastenings: Unobtrusively located; consistent with design of component, except where specifically noted otherwise.

D. Supply components required for anchorage of framing. Fabricate anchors and related components of same material and finish as framing, except where specifically noted otherwise.

E. Continuously seal joined pieces.

F. Accurately form components to suit each other and to building structure.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify wall substrate anchors are acceptable and are ready to receive work.

C. Verify surrounding area is clean and ready for the canopy installation.

D. Installer shall verify the dimensions and elevations to be as shown on shop drawings and construction documents.

E. Erection shall be performed by an approved installer and scheduled after all concrete, masonry roofing, and pre-engineered building construction are completed.

3.2 INSTALLATION

A. Installation of Framing:
1. Install components plumb and level, accurately fitted, free from distortion or defects.
2. Provide anchors required for connecting framing to structure. Anchor framing to structure.
3. Conceal bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.

B. Installation of Decking:
1. Install in accordance with manufacturer's written instructions.
2. Slope decking for positive drainage.

C. The canopy is to be shipped in pre-assembled sections for ease of installation.

D. All connections shall be mechanically assembled utilizing stainless steel 3/16" fasteners with a minimum shear stess of 350 lbs. Provide washers at fasteners for watertight installation. Pre-welded or factory welded connections are not acceptable.

E. Provide rubber or neoprene washers at all fasteners locations where aluminum sections fastened to steel members, to separate metals.

F. Installation shall be in strict accordance with manufacturer's shop drawings. Particular attention should be given to protecting the finish during handling and erection. After installation, entire system shall be tested for water leakage and left in a clean condition.

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3.3 ERECTION TOLERANCES

A. Section 014000 - Quality Requirements: Tolerances.

B. Maximum Variation from Plumb: 1/4 inch per story, non-cumulative.

C. Maximum Misalignment from Indicated Position: 1/4 inch.

3.4 ADJUSTING

A. Section 017000 - Execution Requirements: Testing, adjusting, and balancing.

B. Adjust awnings to produce uniform appearance and consistently in proper elation with adjacent work.

3.5 CLEANING

A. Section 017000 - Execution Requirements: Final Cleaning

B. Clean all surfaces of the walkway cover, including areas concealed from view. Remove any/all foreign material from the surface of the walkway cover deck.

3.6 SCHEDULE

List below includes but not limited to all canopies shown on the drawings. Refer to Roof Plan and Elevations.

A. Stair A Entry

a. Provide Wall mounted canopy in extents shown on drawings.

B. Stair B Entry

a. Provide free standing column supported canopy with integral drainage.

END OF SECTION

SECTION 078400 - FIRESTOPPING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes firestopping and through-penetration protection system materials and accessories, to include but not limited to the following:
   1. Firestopping through-penetrations of fire rated assemblies.
   2. Firestopping joints in fire rated assemblies.
   3. Firestopping tops of fire rated walls.
   4. Smoke sealing penetrations and joints of smoke enclosed rooms.

B. Related Sections:
   1. Section 092116 - Gypsum Board Assemblies: Gypsum board fireproofing.

1.2 REFERENCES

A. ASTM International:
   1. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
   2. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
   3. ASTM E814 - Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
   4. ASTM E1966 - Standard Test Method for Fire-Resistive Joint Systems.

B. California Department of Health Services:
   1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

C. Intertek Testing Services (Warnock Hersey Listed):
   1. WH - Certification Listings.

D. Underwriters Laboratories Inc.:
   1. UL 263 - Fire Tests of Building Construction and Materials.
   2. UL 1479 - Fire Tests of Through-Penetration Firestops.
   3. UL 2079 - Tests for Fire Resistance of Building Joint Systems.
   4. UL - Fire Resistance Directory.

1.3 DEFINITIONS

A. Firestopping (Through-Penetration Protection System): Sealing or stuffing material or assembly placed in spaces between and penetrations through building materials to arrest movement of fire, smoke, heat, and hot gases through fire rated construction.

1.4 PERFORMANCE REQUIREMENTS

A. Conform to current Kentucky Building Code for fire resistance ratings and surface burning characteristics.

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1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on product characteristics, performance and limitation criteria.

C. Schedule: Submit schedule of opening locations and sizes, penetrating items, and required listed design numbers to seal openings to maintain fire resistance rating of adjacent assembly.

D. Manufacturer's Installation Instructions: Submit preparation and installation instructions.

E. Manufacturer's Certificate: Certify products meet or exceed applicable code requirements.

F. Engineering Judgements: For conditions not covered by UL or WH listed designs, submit judgements by licensed professional engineer suitable for presentation to authority having jurisdiction for acceptance as meeting code fire protection requirements.

1.6 QUALITY ASSURANCE

A. Through Penetration Firestopping of Fire Rated Assemblies: ASTM E814 with 0.10 inch water gage minimum positive pressure differential to achieve fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.
   1. Wall Penetrations: Fire F-Ratings as indicated on Drawings, but not less than 1-hour.
   2. Floor and Roof Penetrations: Fire F-Ratings and temperature T-Ratings as indicated on Drawings, but not less than 1-hour.

B. Through Penetration Firestopping of Non-Fire Rated Floor and Roof Assemblies: Materials to resist free passage of flame and products of combustion.
   1. Noncombustible Penetrating Items: Noncombustible materials for penetrating items connecting maximum of three stories.
   2. Penetrating Items: Materials approved by authorities having jurisdiction for penetrating items connecting maximum of two stories.

C. Fire Resistant Joints in Fire Rated Floor, Roof, and Wall Assemblies: UL 2079 to achieve fire resistant rating as indicated on Drawings for assembly in which joint is installed.
   1. Smoke Barrier Joints Air Leakage: Maximum 5 cfm per foot 0.30 inches water gage pressure differential

D. Fire Resistant Joints Between Floor Slabs and Exterior Walls: ASTM E119 with 0.10 inch water gage minimum positive pressure differential to achieve fire resistant rating as indicated on Drawings for floor assembly.

E. Surface Burning Characteristics: Maximum 25/450 flame spread/smoke developed index when tested in accordance with ASTM E84.

1.7 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years documented experience.

B. Applicator: Company specializing in performing Work of this section with minimum three years documented experience.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 016000 - Product Requirements.

B. Do not apply materials when temperature of substrate material and ambient air is below 60 degrees F.

C. Maintain this minimum temperature before, during, and for minimum 3 days after installation of materials.

D. Provide ventilation in areas to receive solvent cured materials.

PART 2 PRODUCTS

2.1 FIRESTOPPING

A. Manufacturers:
1. A/D Fire Protection Systems, Inc.
2. Hilti Corp.
3. 3M Fire Protection Products
4. Nelson Firestop Products
5. Specified Technologies
6. United States Gypsum Co.
7. Substitutions: Section 01 60 00 - Product Requirements.

B. Product Description: Different types of products by multiple manufacturers are acceptable as required to meet specified system description and performance requirements; provide only one type for each similar application.
1. Silicone Firestopping Elastomeric Firestopping: Single component silicone elastomeric compound and compatible silicone sealant.
2. Foam Firestopping Compounds: Single component foam compound.
3. Formulated Firestopping Compound of Incombustible Fibers: Formulated compound mixed with incombustible non-asbestos fibers.
4. Fiber Stuffing and Sealant Firestopping: Composite of mineral fiber stuffing insulation with silicone elastomer for smoke stopping.
5. Mechanical Firestopping Device with Fillers: Mechanical device with incombustible fillers and silicone elastomer, covered with sheet stainless steel jacket, joined with collars, penetration sealed with flanged stops.
6. Intumescent Firestopping: Intumescent putty compound which expands on exposure to surface heat gain.
7. Firestop Pillows: Formed mineral fiber pillows.
8. Mortar as specified in Section 040503 where permitted by Kentucky Building Code

2.2 ACCESSORIES

A. Primer: Type recommended by firestopping manufacturer for specific substrate surfaces and suitable for required fire ratings.

B. Dam Material: Permanent:
1. Mineral fiberboard.

C. Installation Accessories: Provide clips, collars, fasteners, temporary stops or dams, and other devices required to position and retain materials in place.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify openings are ready to receive firestopping.

3.2 PREPARATION

A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other matter affecting bond of firestopping material.

B. Remove incompatible materials affecting bond.

C. Install damming materials to arrest liquid material leakage.

3.3 APPLICATION

A. Install material at fire rated construction perimeters and openings containing penetrating sleeves, piping, ductwork, conduit and other items, requiring firestopping.

B. Apply primer where recommended by manufacturer for type of firestopping material and substrate involved, and as required for compliance with required fire ratings.

C. Apply firestopping material in sufficient thickness to achieve required fire and smoke rating, to uniform density and texture.

D. Compress fibered material to maximum 40 percent of its uncompressed size.

E. Dam material to remain.

3.4 CLEANING

A. Section 017000 - Execution and Closeout Requirements: Final cleaning.

B. Clean adjacent surfaces of firestopping materials.

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 017000 - Execution and Closeout Requirements: Protecting installed construction.

B. Protect adjacent surfaces from damage by material installation.

END OF SECTION

SECTION 079000 - JOINT PROTECTION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes cleaning and preparation of surfaces to receive sealants and joint backing, sealants, pre-compressed foam sealers, and accessories in all locations where two different materials meet, or where there is a gap in a common material that creates a potential for water or air infiltration, or creates a visual concern.

B. Exterior Joints at cement concrete pavement.

C. Related Sections:
1. Section 061000 – Rough Carpentry.
2. Section 099000 – Painting and Coating.

1.2 REFERENCES

A. ASTM International:
1. ASTM C834 - Standard Specification for Latex Sealants.
2. ASTM C919 - Standard Practice for Use of Sealants in Acoustical Applications.
3. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
4. ASTM C1193 - Standard Guide for Use of Joint Sealants.
5. ASTM D1056 - Standard Specification for Flexible Cellular Materials-Sponge or Expanded Rubber.
6. ASTM D1667 - Standard Specification for Flexible Cellular Materials-Vinyl Chloride Polymers and Copolymers (Closed-Cell Foam).
7. ASTM D2628 - Standard Specification for Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.

B. California Department of Health Services:
1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

C. South Coast Air Quality Management District:
1. SCAQMD Rule 1168 January 7, 2005 - Adhesive and Sealant Applications.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Products Data: Submit data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.

C. Manufacturer's Installation Instructions: Submit special procedures, surface preparation, and perimeter conditions requiring special attention.

D. Warranty: Include coverage for installed sealants and accessories failing to achieve airtight seal, watertight seal, exhibit loss of adhesion or cohesion, and sealants which do not cure.

E. Warranty: The installer shall agree to replace or repair joint sealants that do not comply with specified performance criteria for a period of five years.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

B. Applicator: Company specializing in performing Work of this section with minimum five years documented experience.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Section 016000 - Product Requirements.

B. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.

C. Do not proceed with installation of joint sealants under the following conditions:

1. When ambient and substrate temperature conditions are outside limits permitted by joint- sealant manufacturer.
2. When joint substrates are wet or covered with frost.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 COORDINATION

A. Section 013000 - Administrative Requirements: Coordination. Project conditions.

B. Coordinate Work with sections referencing this section.

C. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

PART 2 PRODUCTS

2.1 JOINT SEALERS

A. Exterior Sealant, for glazing and general weather sealing applications - shall be a one-part, non-sag, neutral cure, medium modulus, UV resistant, high performance, silicone sealer, as by Sonneborn, Tremco, Pecora or approved equal.

B. Exterior Sealant, for high-movement expansion and control joints – shall be a one-part, non-sag, neutral cure, low-modulus / ultra-low modulus, UV resistant, high performance silicone sealer, as by Sonneborn, Tremco, Pecora or approved equal.

C. Interior sealant shall be a single component acrylic latex type, suitable for application of paint. Pecora AC-20 Acrylic, Sonolac by Sonneborn or approved equal.

D. Color of sealants shall be selected from manufacturers' standards by Architect.

2.2 COLD-APPLIED JOINT SEALANTS

A. Multicomponent, Pourable, Traffic-Grade, Urethane Joint Sealant for Concrete: ASTM C 920, Type M, Grade P, Class 25, for Use T.
1. Available Products:

B. Pecora Corporation; Urexpan NR-200; or equal

2.3 ACCESSORIES

A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: Round foam rod compatible with sealant; ASTM D1056, sponge or expanded rubber; oversized 30 to 50 percent larger than joint width.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify substrate surfaces and joint openings are ready to receive work.

C. Verify joint backing and release tapes are compatible with sealant.

3.2 PREPARATION

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

B. Remove loose materials and foreign matter impairing adhesion of sealant.

C. Clean and prime joints.

D. Perform preparation in accordance with ASTM C1193.

E. Protect elements surrounding Work of this section from damage or disfiguration.

3.3 INSTALLATION

A. Perform installation in accordance with ASTM C1193.

B. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer.

C. Install bond breaker where joint backing is not used.

D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.

F. Tool joints concave.

G. Pre-compressed Foam Sealant: Do not stretch; avoid joints except at corners, ends, and intersections; install with face 1/8 to 1/4 inch below adjoining surface.

H. Field-Adhesive testing shall be performed by the installer to ensure proper quality control of sealant installations.

I. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

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

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

K. Provide recessed joint configuration for silicone sealants of recess depth and at locations indicated

3.4 CLEANING

A. Section 017000 - Execution and Closeout Requirements: Final cleaning.

B. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur

3.5 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 017000 - Execution and Closeout Requirements: Protecting installed construction.

B. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations with repaired areas are indistinguishable from the original work

3.6 SCHEDULE

A. Caulk and seal all joints where different materials join. The exterior is to be water and weather tight. Included is all wall to canopy interface.

B. Caulk and seal entire perimeter of building between as noted on drawings (between building and adjacent hard surfaces, paved or concrete).

C. Caulk around all door and window frames.

D. Provide compressible foam pad sealants at all door and window frame installation, placed full perimeter of opening PRIOR to installing frame components.

E. Caulk all gaps in exterior and interior construction, which are not sealed by prime painting.

F. Seal all expansion and control joints.

G. Seal all gaps as required for a uniform finish.

END OF SECTION

SECTION 081213 - STANDARD HOLLOW METAL FRAMES

1.1 SUMMARY

A. Section includes fire rated, non-rated and thermally insulated steel frames.
   1. Section 087100 - Door Hardware.
   2. Section 099000 – Painting and Coating

1.2 REFERENCES

A. American National Standards Institute:

   1. ANSI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.

B. ASTM International:

   1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

C. National Fire Protection Association:

   1. NFPA 80 - Standard for Fire Doors, Fire Windows.
   2. NFPA 105 - Standard for the Installation of Smoke Door Assemblies and other Opening Protectives.
   3. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.

D. Underwriters Laboratories Inc.:

   1. UL 10B - Fire Tests of Door Assemblies.
   2. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
   3. UL 1784 - Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Indicate frame elevations, reinforcement, anchor types and spacing, location of cut-outs for hardware, and finish.

C. Product Data: Submit frame configuration and finishes.

D. Manufacturer's Installation Instructions: Submit special installation instructions.

E. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Conform to requirements of ANSI A250.8.

B. Fire Rated Frame Construction: Conform to NFPA 252.

C. Installed Fire Rated Frame Assembly: Conform to NFPA 80 for fire rated class same as fire door.

D. Smoke and Draft Control Door Frames: Tested in accordance with UL 1784 and installed in accordance with NFPA 105.

   1. Air Leakage: Maximum 3.0 cfm/sf (0.0154 cu m/s/sq m) of door opening with 0.10 inch water gage (24.9 Pa) pressure differential.

E. Attach label from agency approved by authority having jurisdiction to identify each fire rated door frame.

   1. Attach smoke label to smoke and draft control door frames.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years' experience.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Product storage and handling requirements.

B. Accept frames on site in manufacturer's packaging. Inspect for damage.

C. Break seal on-site to permit ventilation.

1.7 COORDINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Coordinate Work with frame opening construction, door, and hardware installation.

PART 2 - PRODUCTS

2.1 STANDARD STEEL FRAMES

A. Manufacturers:

   1. Steelcraft

   2. Metal Products

3. Curries Manufacturing

4. Ceco Door Products

5. Substitutions: Section 016000 - Product Requirements.

B. Product Description: Standard shop fabricated steel frames, thermally broken, fire rated and non-rated types.

1. Interior Frames:

a. Rated and non-rated, Level 2, nominal 16 gage/0.053-inch-thick material, base metal thickness.

b. Frames in all locations shall have a zinc coating applied by the hot-dip process conforming to ASTM A653 (A60).

c. Shop Prime finish.

2.2 ACCESSORIES

A. Removable Stops: Rolled steel channel shape, butted corners; prepared for countersink style screws.

B. Bituminous Coating: Non-asbestos fibered asphalt emulsion. (at all intersections with mortar or masonry.)

C. Primer: ANSI A250.10 rust inhibitive type.

D. Silencers: Resilient rubber fitted into drilled hole.

2.3 FABRICATION

A. Fabricate frames with hardware reinforcement plates welded in place. Provide mortar guard boxes as required.

B. Reinforce frames wider than 48 inches (1 200 mm) with roll formed steel channels fitted tightly into frame head, flush with top.

C. Prepare frames for silencers. Provide three single silencers for single doors and mullions of double doors on strike side. Provide two single silencers on frame head at double doors without mullions.

D. Attach fire rated label to each fire rated frame.

E. Configure frames as req. to receive weatherstripping.

2.4 SHOP FINISHING

A. Steel Sheet: Galvanized to ASTM A653/A653M A60.

B. Primer: Baked.

C. Provide manufacturers bituminous coating min 1/16" thick at inside of inside of frame.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify opening sizes and tolerances are acceptable.

3.2 INSTALLATION

A. Install frames in accordance with ANSI A250.8.

B. Coordinate with pre-engineered building, masonry, gypsum board or concrete wall construction for anchor placement.

C. Coordinate installation of glass and glazing specified in Section 088000.

D. Coordinate installation of frames with installation of hardware specified in Section 087100 and doors in Section 081416.

E. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

3.3 ERECTION TOLERANCES

A. Section 014000 - Quality Requirements: Tolerances.

B. Maximum Diagonal Distortion: 1/16 inch measured with straight edges, crossed corner to corner.

3.4 SCHEDULE

A. Door frames to wrap walls, refer to door details.

B. Refer to door and frame elevation information on plans.

END OF SECTION 081213

SECTION 081313.13 - STANDARD HOLLOW METAL DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes non-rated, fire rated, thermally insulated, and steel doors, and door louvers.

B. Related Sections:

1. Section 081214 - Standard Steel Frames.
2. Section 087100 - Door Hardware.
3. Section 099000 - Painting and Coating: Field painting of doors.

1.2 REFERENCES

A. American National Standards Institute:

1. ANSI A250.8 - Recommended Specifications for Standard Steel Doors and Frames.

B. ASTM International:

1. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
2. ASTM C1363 - Standard Test Method for the Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
4. ASTM E413 - Classification for Rating Sound Insulation.

C. Hollow Metal Manufacturers Association:

1. HMMA 810 - Hollow Metal Doors.

D. National Fire Protection Association:

1. NFPA 80 - Standard for Fire Doors, Fire Windows.
2. NFPA 105 - Standard for the Installation of Smoke Door Assemblies and other Opening Protectives.
3. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.

E. Steel Door Institute:

1. SDI 108 - Recommended Selection and Usage Guide for Standard Steel Doors.

F. Underwriters Laboratories Inc.:

1. UL 10B - Fire Tests of Door Assemblies.
2. UL 10C - Positive Pressure Fire Tests of Door Assemblies.

3. UL 1784 - Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Shop Drawings: Indicate door elevations, internal reinforcement, closure method, and cut-outs for glazing, louvers, and finishes.

C. Product Data: Submit door configurations, location of cut-outs for hardware reinforcement.

D. Manufacturer's Installation Instructions: Submit special installation instructions.

E. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ANSI A250.8.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum three years.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept doors on site in manufacturer's packaging. Inspect for damage.

C. Break seal on site to permit ventilation.

1.7 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate Work with door opening construction, door frame, and door hardware installation.

PART 2 - PRODUCTS

2.1 STANDARD STEEL DOORS

A. Manufacturers:

1. Steelcraft
2. Fenestra
3. Metal Products
4. Ceco Door Products
5. Curries
6. Substitutions: Section 016000 - Product Requirements.

B. Product Description:

1. Exterior Doors (thermally isolated, Insulated with Polystyrene core: ANSI A250.8, SDI 108, 1-3/4 inch (44 mm) thick.
   a. Level 3 - Extra heavy Duty, Model 2, seamless design. Physical Performance Level A.
2. Interior Doors (Rated and Non-Rated): ANSI A250.8, SDI 108, 1-3/4 inch (44 mm) thick.
   a. Level 2 - Heavy Duty, Model 1, full flush design.

2.2 COMPONENTS

A. Face: Steel sheet in accordance with ANSI A250 and SDI 108.

B. End Closure: Channel, 0.04 inches (1.2 mm) thick, flush.

C. Core: polystyrene foam, with steel channel grid (interior doors).

D. Thermal Insulated Door: Total insulation R-Value of 7, measured in accordance with ASTM C1363.

2.3 FABRICATION

A. Fabricate doors with hardware reinforcement welded in place.

B. Attach astragal to inactive leaf of pairs of fire rated doors., if applicable, refer to plans.

2.4 SHOP FINISHING

A. Steel Sheet: Galvanized to ASTM A653/A653M A60.

B. Primer: Baked.

C. Shop Finish: Site applied under work of Section 099000.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify opening sizes and tolerances are acceptable.

3.2 INSTALLATION

A. Install doors in accordance with ANSI A250.8.

B. Coordinate installation of glass and glazing specified in Section 088000.

C. Coordinate installation of doors with installation of frames specified in Section 081214 and hardware specified in Section 087100.

D. Touch-up damaged shop finishes.

3.3 ERECTION TOLERANCES

A. Section 014000 - Quality Requirements: Tolerances.

B. Maximum Diagonal Distortion: 1/16 measured with straight edge, corner to corner.

3.4 ADJUSTING

A. Section 017000 - Execution and Closeout Requirements: Requirements for adjusting.

B. Adjust door for smooth and balanced door movement.

3.5 SCHEDULE

A. Refer to Door and Frame Schedule, details and Elevations in the contract drawings.

B. If indicated on elevations, provide insulated, tempered glazing – any exterior door lite.

C. Provide tempered glazing in all door lites.

END OF SECTION 081313

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes aluminum-framed storefronts including aluminum and glass doors and frames.

B. Related Sections:
1. Section 079000 - Joint Protection: System perimeter sealant and back-up materials.
2. Section 087100 - Door Hardware: Mortised hardware reinforcement requirements affecting framing members; hardware items other than specified in this section.
3. Section 088000 - Glazing.
4. Section 088730 - Security Film

1.2 REFERENCES

A. Aluminum Association:
1. AA ADM 1 - Aluminum Design Manual.

B. American Architectural Manufacturers Association/Window & Door Manufacturers Association:
1. AAMA/WDMA 101/I.S.2 - Specification for Windows, Doors and Unit Skylights.
2. AAMA 502 - Voluntary Specification for Field Testing of Windows and Sliding Glass Doors.
3. AAMA 503 - Voluntary Specification for Field Testing of Metal Storefronts. Curtain Wall and Sloped Glazing Systems.
4. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
5. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
6. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
7. AAMA 2604 - Voluntary specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
8. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
9. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.
10. AAMA MCWM-1 - Metal Curtain Wall Manual.
11. AAMA SFM-1 - Aluminum Store Front and Entrance Manual.

C. American Society of Civil Engineers:

1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

D. ASTM International:
1. ASTM A36/A36M - Standard Specification for Carbon Structural Steel.
2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
3. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
4. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
5. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
6. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
7. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
8. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
9. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
10. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Differential.
11. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform or Cyclic Static Air Pressure Difference.
12. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
13. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

E. California Department of Health Services:
1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

F. National Fenestration Rating Council Incorporated:
1. NFRC 100 - Procedures for Determining Fenestration Product U-Factors.

G. SSPC: The Society for Protective Coatings:
1. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).
2. SSPC Paint 25 - Red Iron Oxide, Zinc Oxide, Raw Linseed Oil, and Alkyd Primer.

1.3 SYSTEM DESCRIPTION

A. Aluminum-framed storefront system includes tubular aluminum sections with supplementary internal support framing, aluminum and glass entrances, shop fabricated, factory finished, glass and glazing, related flashings, anchorage and attachment devices.

B. System Assembly: Shop unitized assembly.

1.4 PERFORMANCE REQUIREMENTS

A. System Design: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of wall, including building corners.
   1. As calculated in accordance with Kentucky Building Code, as measured in accordance with ASTM E330.

B. Deflection: Limit mullion deflection to flexure limit of glass; with full recovery of glazing materials.

C. System Assembly: Accommodate without damage to components or deterioration of seals, movement within system, movement between system and peripheral construction, dynamic loading and release of loads, deflection of structural support framing.

D. Air Infiltration: Limit air leakage through assembly to 0.06 cfm/min/sq ft of wall area, measured at a static air pressure difference of 6.24 psf as measured in accordance with ASTM E283.

E. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glass and inner sheet of infill panel and heel bead of glazing compound.

F. Water Leakage: None, when measured in accordance with ASTM E331 and E547 There shall be no uncontrolled water leakage at a static test pressure of 10.0 psf (479 Pa).

G. Expansion / Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over 12 hour period without causing detrimental effect to system components and anchorage.

H. System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to exterior by weep drainage network.

1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: For each type of system specified indicate system dimensions, framed opening requirements and tolerances, affected related Work and expansion and contraction joint location and details. Show details demonstrating use and requirement of subsills for all storefronts exposed to exterior weather conditions.

C. Product Data: Submit component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, and internal drainage details.

D. Samples: Submit two samples 12 inches in length illustrating finished aluminum surface.

E. Design Data: Indicate framing member structural and physical characteristics, calculations, and dimensional limitations.

F. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with AAMA SFM-1 and AAMA MCWM-1 - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.

B. Provide single source manufacturer for all aluminum storefront door and frame materials.

1.7 QUALIFICATIONS

A. Manufacturer and Installer: Company specializing in manufacturing aluminum glazing systems with minimum three years documented experience, and with service facilities within 100 miles of Project.

B. Design structural support framing components under direct supervision of Professional Engineer experienced in design of this Work and licensed in State of Kentucky

1.8 DELIVERY, STORAGE, AND PROTECTION

A. Section 016000 - Product Requirements: Product storage and handling requirements.

B. Handle Products of this section in accordance with AAMA MCWM-1 - Curtain Wall Manual #10.

C. Protect finished aluminum surfaces with wrapping or strippable coating. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section 016000 - Product Requirements.

B. Do not install sealants nor glazing materials when ambient temperature is less than 40 degrees F during and 48 hours after installation.

1.10 WARRANTY

A. Section 017000 - Execution Requirements: Product warranties and product bonds.

B. Furnish ten-year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same.

C. Correct defective work within a two-year period after Substantial Completion.

PART 2 PRODUCTS

2.1 ALUMINUM-FRAMED STOREFRONT & ENTRIES

A. Manufacturers:
1. YKK AP - YES 45TU Thermally broken storefront 2" X 4 1/2" (basis of design)
2. Kawneer – similar product
3. Wasau – similar product

B. Product Description:
1. Aluminum Frame: Thermally broken and Non-thermally broken; flush applied glazing stops; drainage holes; internal weep drainage system. Frames for interior glazing need not to be thermally broken.
2. Mullions: Profile of extruded aluminum with internal reinforcement of aluminum or shaped steel structural section.
3. Doors: Aluminum framed glass doors; 2" inch thick, nominal 6 inch wide top rail and vertical stiles, nominal 10 inch wide bottom rail; nominal 12 inch crossrail fabricated with aluminum panel, recessed pull square glazing stops with structural thermal barrier.
4. Polycarbonate Security film (3-M Ultra S 800 or approved equal) – typical at main entry points doors 01 and 02.

2.2 COMPONENTS

A. Extruded Aluminum: ASTM B221; 6063 alloy, T5 temper typical, 6061 alloy, T6 temper for extruded structural members.

B. Steel Sections: ASTM A36/A36M; shaped to suit mullion sections, galvanized to G90.

C. Glass: Specified in Section 088000.

D. Glazing Materials: As specified on Drawings and in Section 088000.

E. Hardware: As specified in Section 087100.

F. Flashings and Subsills: Minimum 0.080 inch thick aluminum to match mullion sections where exposed.

G. Sealant and Backing Materials:
1. Sealant Used Within System (Not Used for Glazing): Manufacturer's standard materials to achieve weather, moisture, and air infiltration requirements.
2. Perimeter Sealant: As specified in Section 079000 – INSTALLED UNDER WORK OF THIS SECTION.

H. Fasteners: Stainless steel.

I. Security Film: Specified in 088730 – Safety and Security Film.

2.3 FABRICATION

A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.

C. Prepare components to receive anchor devices. Fabricate anchors.

D. Arrange fasteners and attachments to conceal from view.

E. Prepare components with internal reinforcement for door hardware.

F. Reinforce framing members for imposed loads.

2.4 SHOP FINISHING

A. Finish: Anodized Aluminum Surfaces, AA-M10-C22-A41; Clear Anodized 1; 611-98

B. Concealed Steel Items: Galvanized in accordance with ASTM A123/A123M to thickness Grade 85, 2.0 oz/sq ft.

C. Apply bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar metals.

D. Shop and Touch-Up Primer for Steel Components: SSPC Paint 25 red oxide.

E. Touch-Up Primer for Galvanized Steel Surfaces: SSPC Paint 20 zinc rich.

F. Extent of Finish:
1. Apply factory coating to surfaces exposed at completed assemblies.
2. Apply finish to surfaces cut during fabrication so no natural aluminum is visible in completed assemblies, including joint edges.
3. Apply touch-up materials recommended by coating manufacturer for field application to cut ends and minor damage to factory applied finish.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify dimensions, tolerances, and method of attachment with other Work.

C. Verify wall openings and adjoining air and vapor seal materials are ready to receive Work of this Section.

3.2 INSTALLATION

A. Install wall system in accordance with AAMA MCWM-1 - Metal Curtain Wall, Window, Store Front and Entrance - Guide Specifications Manual.

B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

C. Provide alignment attachments and shims to permanently fasten system to building structure.

D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent Work.

E. Provide thermal isolation where components penetrate or disrupt building insulation.

F. Install sill flashings / subsills on all assemblies exposed to exterior weather. Turn up ends and edges; seal to adjacent Work to form water tight dam.

G. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

H. Install integral flashings and integral joint sealers.

I. Set thresholds in bed of mastic and secure.

J. Install hardware using templates provided. Refer to Section 087100 for installation requirements.

K. Coordinate installation of glass with Section 088000; separate glass from metal surfaces.

L. Install perimeter sealants in conformance with Section 079000.

3.3 ERECTION TOLERANCES

A. Section 014000 - Quality Requirements: Tolerances.

B. Maximum Variation from Plumb: 0.06 inches every 3 ft non-cumulative or 1/16 inches per 10 ft, whichever is less.

C. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.

3.4 ADJUSTING

A. Section 017000 - Execution Requirements: Testing, adjusting and balancing.

B. Adjust operating hardware for smooth operation.

3.5 CLEANING

A. Section 017000 - Execution Requirements: Final cleaning.

B. Remove protective material from pre-finished aluminum surfaces.

C. Wash down surfaces with solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.

D. Remove excess sealant by method acceptable to sealant manufacturer.

3.6 PROTECTION OF INSTALLED CONSTRUCTION

A. Section 017000 - Execution Requirements: Protecting installed construction.

B. Protect finished Work from damage.

3.7 SCHEDULES

A. Refer to Door and Window Schedule in the Contract Drawings.

B. Provide all incidental, prefinished flashings associated with storefront systems and as detailed in the drawings and as necessary to complete the work. All flashings shall be extruded where possible and where not possible they shall be .125 inch thick prefinished aluminum break metal.

C. Coordinate with safety film at both entries.

END OF SECTION

SECTION 085113 - ALUMINUM WINDOWS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Extruded aluminum windows, both fixed and fixed with operable portions.
2. Factory glazing - not shop-glazed.
3. Operating hardware.

B. Related Requirements:
1. Section 054000 – Cold Form Framing.
2. Section 055000 - Metal Fabrications.
3. Section 061000 - Carpentry: Wood perimeter shims & blocking.
4. Section 079000 - Joint Protection: Perimeter sealant and back-up materials.
5. Section 084113 - Aluminum-Framed Entrances and Storefronts: Operable sash within storefront system.
6. Section 088000 - Glazing.

1.2 REFERENCE STANDARDS

A. Aluminum Association:
1. AA DAF-45 - Designation System for Aluminum Finishes.

B. American Architectural Manufacturers Association:
1. AAMA 101 - Voluntary Performance Specification for Windows, Skylights and Glass Doors.
2. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
3. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
4. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
5. AAMA 2604 - Voluntary specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
6. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
7. AAMA MCWM-1 - Metal Curtain Wall manual.

C. American Society of Civil Engineers:
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

D. ASTM International:
1. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
2. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

3. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
4. ASTM D3656 - Standard Specification for Insect Screening and Louver Cloth Woven from Vinyl-Coated Glass Yarns.
5. ASTM E283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
6. ASTM E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
7. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors By Uniform Static Air Pressure Difference.
8. ASTM E547 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Cyclic Static Air Pressure Differential.
9. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Curtain Walls, and Doors by Uniform or Cyclic Static Air Pressure Difference.
10. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
11. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.
12. ASTM F588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact.

E. California Department of Health Services:
1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

F. Consumer Product Safety Commission:
1. CPSC 16 CFR 1201; Safety Standard for Architectural Glazing.

G. Glass Association of North America:
1. GANA - Glazing Manual.

H. National Fenestration Rating Council Incorporated:
1. NFRC 100 - Procedures for Determining Fenestration Product U-Factors.

I. SSPC: The Society for Protective Coatings:
1. SSPC Paint 20 - Zinc-Rich Primers (Type I - Inorganic and Type II - Organic).
2. SSPC Paint 25 - Red Iron Oxide, Zinc Oxide, Raw Linseed Oil, and Alkyd Primer.

1.3 SUBMITTALS

A. Section 013300 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit component dimensions, anchorage and fasteners, glass, internal drainage, and typical details.

C. Shop Drawings: Indicate opening dimensions, framed opening tolerances, affected related Work; and installation requirements.

D. Manufacturer's Certificates: Certify Product performance ratings by independent third party such as AAMA, CAWM, or NFRC as meeting or exceeding specified requirements and performance criteria tests.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with the following:
1. Aluminum Windows: Fabricate and label window assemblies in accordance with AAMA 101 for types of windows required.
2. Insulated Glass: Fabricate insulated glass units in accordance with GANA (formerly FGMA) Glazing Manual.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing commercial aluminum windows with minimum Ten Years documented experience, and with service facilities within 600 of Project.

B. Installer: Company specializing in installation of commercial aluminum windows with minimum Ten Years documented experience on minimum five (5) similar scale projects. List to be available to Owner at any time of request.

1.6 DELIVERY, STORAGE, AND PROTECTION

A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Handle Work of this section in accordance with AAMA MCWM-1 - Curtain Wall Manual #10.

C. Protect factory finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond when exposed to sunlight or weather.

1.7 AMBIENT CONDITIONS

A. Section 015000 - Temporary Facilities and Controls: Ambient conditions control facilities for product storage and installation.

B. Do not install glazing materials when ambient temperature is less than 40 degrees F.

C. Maintain this minimum temperature during and after installation of glazing materials.

1.8 WARRANTY

A. Section 017000 - Execution Requirements: Product warranties and product bonds.

B. Correct defective work within a five year period after Date of Substantial Completion.

C. Furnish ten year manufacturer warranty for insulated glass units from seal failure, interpane dusting or misting, and replacement of same.

D. Warranty: Include coverage for degradation of color finish.

PART 2 PRODUCTS

2.1 ALUMINUM WINDOWS

A. Manufacturers:
1. YKK AP
a. YOW350T 3 1/2" deep windows for the stand alone windows on the upper level
b. YES SSG TU vents to be installed in storefront for other operable vents
c. YES 45TU Thermally broken storefront 2" X 4 1/2"
2. Kawneer – equal product
3. Wausau – equal product
4. Substitutions: Section 016000 - Not Permitted

B. Product Description: Aluminum windows thermally broken with interior portion of frame insulated from exterior portion; flush applied glass stops of snap-on type, sash, glass and glazing, and operating hardware.

C. Window Configuration: Conform with AAMA 101 Designations for windows required for Project; A-awning, sash.

D. Performance / Design Criteria:
1. Primary Performance Requirements: Aluminum windows to meet performance criteria for Windows shall conform to all AAMA/WDMA/CSA 101/I.S.2/A440 – 08 and A440-17.
2. Deflection: Limit member deflection to the more restrictive of the following:
a. flexure limit of glass or
b. 1/175 of longer dimension with full recovery of glazing materials.
3. Assembly: To accommodate, without damage to components or deterioration of seals, movement between window and perimeter framing, deflection of lintel.
4. Thermal Transmittance of Assembly: Maximum U Value of 0.45 Btu/sq ft per hour per deg F when measured in accordance with AAMA 1503.
5. Air Infiltration: Limit air infiltration through assembly to 0.1 cfm/min/sq ft of wall area, measured at reference differential pressure across assembly of 6.27 psf as measured in accordance with ASTM E283. Air infiltration shall not exceed .10 cfm/SF (.50 l/s•m²) of unit
6. Water Leakage: None, when measured in accordance with ASTM E331 at 15 psf static air pressure difference.
7. System Internal Drainage: Drain water entering joints, condensation occurring in glazing channels, and migrating moisture occurring within system, to exterior by weep drainage network.
8. Air and Vapor Seal: Maintain continuous air barrier and vapor retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.

2.2 COMPONENTS

A. Extruded Aluminum: ASTM B221; 6063-T6,temper of not less than .125 wall thickness.

B. Sheet Aluminum: ASTM B209; 5005 alloy, H15 or H34 temper.

C. Steel Sections: Profiled to suit mullion sections.

D. Insulating Glass: Sealed double pane units conforming with requirements in Section 088000 – Glazing – as Guardian: SunGuard "Super Neutral 54" or PPG Industries: "Solarban 67".
1. Outer Pane: Clear Low E; float or safety glass.
2. Inner Pane: Clear Low E; float or safety glass.
3. Pane Thickness: Minimum 1/4 inch thick.
4. Minimum Total Unit Thickness: 1 inch.
5. Glazing Materials: Manufacturer's standard conforming with requirements specified in Section 088000 - Glazing.
6. Provide Spandrel glazing at windows in chase area as noted on plans.

E. Hardware:
1. Sash lock: Access Control CAM type, white bronze alloy with US25D Brushed finish.

F. Operating Hardware: 4-Bar stainless steel arms with limit stop. Anderberg or equal.

G. Subframes, Receptors, Extenders, Trim, Panning, and Mullions: Manufacturer's standard extruded material with matching finish.

H. Miscellaneous trim as shown on drawings.

I. Operable Sash Weather Stripping: 3/8 inch high density neoprene; permanently resilient, profiled to effect weather seal.

2.3 FABRICATION

A. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

B. Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof.

C. Prepare components to receive anchor devices. Fabricate anchors.

D. Arrange fasteners and attachments to ensure concealment from view.

E. Prepare components with internal reinforcement for operating hardware.

F. Furnish internal reinforcement in mullions with galvanized steel members to maintain rigidity.

G. Permit internal drainage weep holes and channels to migrate moisture to exterior. Furnish internal drainage of glazing spaces to exterior through weep holes.

H. Weatherstrip operable units.

I. Factory glaze window units. Install glass and infill panels in accordance with Section 088000, to glazing method required to achieve performance criteria.

2.4 SHOP FINISHING

A. Finish Coatings: Conform to AAMA 611-14.

B. Color: Anodized Aluminum, AA-M10-C22-A41.

C. Locks, Operators, and Exposed Hardware: finish as selected from mfrs. standard options.

D. Key operated sash lock: Anodized aluminum finish.

E. Apply coat of bituminous paint on concealed aluminum surfaces in contact with cementitious or dissimilar materials.

F. Touch-Up Primer for Galvanized Steel Surfaces: SSPC Paint 20 zinc rich.

G. Galvanizing: ASTM A123/A123M; hot dip galvanize after fabrication; galvanize after fabrication.

H. Galvanizing for Nuts, Bolts and Washers: ASTM A153/A153M.

2.5 ACCESSORIES

A. Fasteners and Anchors: Stainless steel.

B. Bituminous Paint: Fibered asphaltic type.

C. Swing Inhibitors: set for maximum outswing of 6" on project out windows.

D. Limit Stops: Resilient rubber.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify wall openings and adjoining air and vapor seal materials are ready to receive Work of this section.

3.2 INSTALLATION

A. Attach window frame and shims to perimeter opening to accommodate construction tolerances and other irregularities.

B. Align window plumb and level, free of warp or twist. Maintain dimensional tolerances and alignment with adjacent Work.

C. Install sill and sill end angles. All wood blocking shown as part of the window details for supporting metal trim is to be part of the window installation.

D. Install thermal isolation where components penetrate or disrupt building insulation. Provide low expansion spray foam insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

E. Coordinate attachment and seal of perimeter air barrier and vapor retarder materials.

F. Install operating hardware.

G. Install perimeter sealants in conformance with Section 079000.

3.3 ERECTION TOLERANCES

A. Section 014000 - Quality Requirements: Tolerances.

B. Maximum Variation from Level or Plumb: 1/16 inches every 3 ft non-cumulative or 1/8 inches per 10 ft, whichever is less.

3.4 ADJUSTING

A. Section 017000 - Execution Requirements: Testing, adjusting, and balancing.

B. Adjust hardware for smooth operation and secure weathertight closure.

3.5 CLEANING

A. Section 017000 - Execution Requirements: Final cleaning.

B. Remove protective material from factory finished aluminum surfaces.

C. Wash surfaces by method recommended and acceptable to sealant and window manufacturer; rinse and wipe surfaces clean.

D. Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant and window manufacturer.

3.6 SCHEDULES

A. Refer to Contract Drawings. Provide one key operator for every room where an operable sash is located.

END OF SECTION

SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes:

1. Mechanical door hardware

B. Section excludes:

1. Windows
2. Cabinets (casework), including locks in cabinets
3. Signage
4. Toilet accessories
5. Overhead doors

C. Related Sections:

1. Division 01 Section "Alternates" for alternates affecting this section.
2. Division 06 Section "Rough Carpentry"
3. Division 06 Section "Finish Carpentry"
4. Division 07 Section "Joint Sealants" for sealant requirements applicable to threshold installation specified in this section.
5. Division 08 Sections:
   a. "Metal Doors and Frames"
   b. "Aluminum-Framed Entrances and Storefronts"

1.02 REFERENCES

A. UL LLC

1. UL 10B - Fire Test of Door Assemblies
2. UL 10C - Positive Pressure Test of Fire Door Assemblies
3. UL 1784 - Air Leakage Tests of Door Assemblies
4. UL 305 - Panic Hardware

B. DHI - Door and Hardware Institute

1. Sequence and Format for the Hardware Schedule
2. Recommended Locations for Builders Hardware
3. Keying Systems and Nomenclature
4. Installation Guide for Doors and Hardware

C. NFPA – National Fire Protection Association

1. NFPA 80 – 2016 Edition – Standard for Fire Doors and Other Opening Protectives
2. NFPA 101 – Life Safety Code

3. NFPA 105 – Smoke and Draft Control Door Assemblies
4. NFPA 252 – Fire Tests of Door Assemblies

D. ANSI - American National Standards Institute

1. ANSI A117.1 – 2017 Edition – Accessible and Usable Buildings and Facilities
2. ANSI/BHMA A156.1 - A156.29, and ANSI/BHMA A156.31 - Standards for Hardware and Specialties
3. ANSI/BHMA A156.28 - Recommended Practices for Keying Systems
4. ANSI/WDMA I.S. 1A - Interior Architectural Wood Flush Doors
5. ANSI/SDI A250.8 - Standard Steel Doors and Frames

1.03 SUBMITTALS

A. General:

1. Submit in accordance with Conditions of Contract and Division 01 Submittal Procedures.
2. Prior to forwarding submittal:
   a. Review drawings and Sections from related trades to verify compatibility with specified hardware.
   b. Highlight, encircle, or otherwise specifically identify on submittals: deviations from Contract Documents, issues of incompatibility or other issues which may detrimentally affect the Work.

B. Action Submittals:

1. Product Data: Submit technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
2. Samples for Verification: If requested by Architect, submit production sample of requested door hardware unit in finish indicated and tagged with full description for coordination with schedule.
   a. Samples will be returned to supplier. Units that are acceptable to Architect may, after final check of operations, be incorporated into Work, within limitations of key coordination requirements.
3. Door Hardware Schedule:
   a. Submit concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate fabrication of other work critical in Project construction schedule.
   b. Submit under direct supervision of a Door Hardware Institute (DHI) certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) with hardware sets in vertical format as illustrated by Sequence of Format for the Hardware Schedule published by DHI.
   c. Indicate complete designations of each item required for each opening, include:
      1) Door Index: door number, heading number, and Architect's hardware set number.
      2) Quantity, type, style, function, size, and finish of each hardware item.
      3) Name and manufacturer of each item.
      4) Fastenings and other pertinent information.

5) Location of each hardware set cross-referenced to indications on Drawings.
6) Explanation of all abbreviations, symbols, and codes contained in schedule.
7) Mounting locations for hardware.
8) Door and frame sizes and materials.
9) Degree of door swing and handing.

4. Key Schedule:
   a. After Keying Conference, provide keying schedule that includes levels of keying, explanations of key system's function, key symbols used, and door numbers controlled.
   b. Use ANSI/BHMA A156.28 "Recommended Practices for Keying Systems" as guideline for nomenclature, definitions, and approach for selecting optimal keying system.
   c. Provide 3 copies of keying schedule for review prepared and detailed in accordance with referenced DHI publication. Include schematic keying diagram and index each key to unique door designations.
   d. Index keying schedule by door number, keyset, hardware heading number, cross keying instructions, and special key stamping instructions.
   e. Provide one complete bitting list of key cuts and one key system schematic illustrating system usage and expansion. Forward bitting list, key cuts and key system schematic directly to Owner, by means as directed by Owner.
   f. Prepare key schedule by or under supervision of supplier, detailing Owner's final keying instructions for locks.

C. Informational Submittals:

1. Provide Qualification Data for Supplier, Installer and Architectural Hardware Consultant.
2. Provide Product Data:
   a. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
   b. Include warranties for specified door hardware.

D. Closeout Submittals:

1. Operations and Maintenance Data: Provide in accordance with Division 01 and include:
   a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
   b. Catalog pages for each product.
   c. Final approved hardware schedule edited to reflect conditions as installed.
   d. Final keying schedule
   e. Copy of warranties including appropriate reference numbers for manufacturers to identify project.

E. Inspection and Testing:

1. Submit written reports to the Owner and Authority Having Jurisdiction (AHJ) of the results of functional testing and inspection for:
   a. Fire door assemblies, in compliance with NFPA 80.
   b. Required egress door assemblies, in compliance with NFPA 101.

1.04 QUALITY ASSURANCE

A. Qualifications and Responsibilities:

1. Supplier: Recognized architectural hardware supplier with a minimum of 5 years documented experience supplying both mechanical and electromechanical door hardware similar in quantity, type, and quality to that indicated for this Project. Supplier to be recognized as a factory direct distributor by the manufacturer of the primary materials with a warehousing facility in the Project's vicinity. Supplier to have on staff, a certified Architectural Hardware Consultant (AHC) or Door Hardware Consultant (DHC) available to Owner, Architect, and Contractor, at reasonable times during the Work for consultation.
2. Installer: Qualified tradesperson skilled in the application of commercial grade hardware with experience installing door hardware similar in quantity, type, and quality as indicated for this Project.
3. Architectural Hardware Consultant: Person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and meets these requirements:
   a. For door hardware: DHI certified AHC or DHC.
   b. Can provide installation and technical data to Architect and other related subcontractors.
   c. Can inspect and verify components are in working order upon completion of installation.

4. Single Source Responsibility: Obtain each type of door hardware from single manufacturer.

B. Certifications:

1. Fire-Rated Door Openings:
   a. Provide door hardware for fire-rated openings that complies with NFPA 80 and requirements of authorities having jurisdiction.
   b. Provide only items of door hardware that are listed products tested by UL LLC, Intertek Testing Services, or other testing and inspecting organizations acceptable to authorities having jurisdiction for use on types and sizes of doors indicated, based on testing at positive pressure and according to NFPA 252 or UL 10C and in compliance with requirements of fire-rated door and door frame labels.

2. Smoke and Draft Control Door Assemblies:
   a. Provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105
   b. Comply with the maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at tested pressure differential of 0.3-inch wg (75 Pa) of water.

3. Accessibility Requirements:
   a. Comply with governing accessibility regulations cited in "REFERENCES" article 087100, 1.02.D3 herein for door hardware on doors in an accessible route. This project must comply with all Federal Americans with Disability Act regulations and all Local Accessibility Regulations.

C. Pre-Installation Meetings

1. Keying Conference
   a. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including:
      1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
      2) Preliminary key system schematic diagram.
      3) Requirements for key control system.
      4) Address for delivery of keys.

2. Pre-installation Conference
   a. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   b. Inspect and discuss preparatory work performed by other trades.
   c. Review required testing, inspecting, and certifying procedures.
   d. Review questions or concerns related to proper installation and adjustment of door hardware.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for hardware delivered to Project site. Promptly replace products damaged during shipping.

B. Tag each item or package separately with identification coordinated with final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package. Deliver each article of hardware in manufacturer's original packaging.

C. Maintain manufacturer-recommended environmental conditions throughout storage and installation periods.

D. Provide secure lock-up for door hardware delivered to Project. Control handling and installation of hardware items so that completion of Work will not be delayed by hardware losses both before and after installation.

E. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace or repair products damaged during Work. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

F. Deliver keys to manufacturer of key control system for subsequent delivery to Owner.

1.06 COORDINATION

A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete.

B. Installation Templates: Distribute for doors, frames, and other work specified to be factory or shop prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.07 WARRANTY

A. Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within published warranty period.

1. Warranty does not cover damage or faulty operation due to improper installation, improper use or abuse.
2. Warranty Period: Beginning from date of Substantial Completion, for durations indicated in manufacturer's published listings.
   a. Mechanical Warranty
      1) Locks
         a) 3 years
      2) Exit Devices
         a) 3 years
      3) Closers
         a) 30 years

1.08 MAINTENANCE

A. Furnish complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

B. Turn over unused materials to Owner for maintenance purposes.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. The Owner requires use of certain products for their unique characteristics and project suitability to ensure continuity of existing and future performance and maintenance standards. After investigating available product offerings, the Awarding Authority has elected to prepare proprietary specifications. These products are specified with the notation: "No Substitute."

1. Where "No Substitute" is noted, submittals and substitution requests for other products will not be considered.

B. Approval of alternate manufacturers and/or products other than those listed as "Scheduled Manufacturer" or "Acceptable Manufacturers" in the individual article for the product category are only to be considered by official substitution request in accordance with section 01 25 00.

C. Approval of products from manufacturers indicated in "Acceptable Manufacturers" is contingent upon those products providing all functions and features and meeting all requirements of scheduled manufacturer's product.

D. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

A. Fabrication

1. Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. provide screws according to manufacturer's recognized installation standards for application intended.
2. Finish exposed screws to match hardware finish, or, if exposed in surfaces of other work, to match finish of this other work including prepared for paint surfaces to receive painted finish.
3. Provide concealed fasteners wherever possible for hardware units exposed when door is closed. Coordinate with "Metal Doors and Frames", "Flush Wood Doors", "Stile and Rail Wood Doors" to ensure proper reinforcements. Advise the Architect where visible fasteners, such as thru bolts, are required.

B. Provide screws, bolts, expansion shields, drop plates and other devices necessary for hardware installation.

1. Where fasteners are exposed to view: Finish to match adjacent door hardware material.

2.03 HINGES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
   a. Ives 3CB series

2. Acceptable Manufacturers and Products:
   a. Hager AB700/800 series
   b. McKinney TA314/714 TA386/786 series
   c. Best CB1900 series

B. Requirements:

1. Provide hinges conforming to ANSI/BHMA A156.1.
2. Provide 3 knuckle, concealed bearing hinges.
3. 1-3/4 inch (44 mm) thick doors, up to and including 36 inches (914 mm) wide:
   a. Exterior: Standard weight, bronze or stainless steel, 4-1/2 inches (114 mm) high
   b. Interior: Standard weight, steel, 4-1/2 inches (114 mm) high

4. 1-3/4 inch (44 mm) thick doors over 36 inches (914 mm) wide:
   a. Exterior: Heavy weight, bronze/stainless steel, 5 inches (127 mm) high
   b. Interior: Heavy weight, steel, 5 inches (127 mm) high

5. 2 inches or thicker doors:
   a. Exterior: Heavy weight, bronze or stainless steel, 5 inches (127 mm) high
   b. Interior: Heavy weight, steel, 5 inches (127 mm) high

6. Adjust hinge width for door, frame, and wall conditions to allow proper degree of opening.

7. Provide three hinges per door leaf for doors 90 inches (2286 mm) or less in height, and one additional hinge for each 30 inches (762 mm) of additional door height.
8. Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:
   a. Steel Hinges: Steel pins
   b. Non-Ferrous Hinges: Stainless steel pins
   c. Out-Swinging Exterior Doors: Non-removable pins
   d. Out-Swinging Interior Lockable Doors: Non-removable pins
   e. Interior Non-lockable Doors: Non-rising pins
9. Width of hinges: 4-1/2 inches (114 mm) at 1-3/4 inch (44 mm) thick doors, and 5 inches (127 mm) at 2 inches (51 mm) or thicker doors. Adjust hinge width as required for door, frame, and wall conditions to allow proper degree of opening.

2.04 CONTINUOUS HINGES

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives
2. Acceptable Manufacturers:
   a. ABH
   b. Hager-Roton
   c. McKinney

B. Requirements:

1. Provide aluminum geared continuous hinges conforming to ANSI/BHMA A156.26, Grade 1.
2. Provide aluminum geared continuous hinges, where specified in the hardware sets, fabricated from 6063-T6 aluminum.
3. Provide split nylon bearings at each hinge knuckle for quiet, smooth, self-lubricating operation.
4. Provide hinges capable of supporting door weights up to 450 pounds, and successfully tested for 1,500,000 cycles.
5. On fire-rated doors, provide aluminum geared continuous hinges classified for use on rated doors by testing agency acceptable to authority having jurisdiction.
6. Provide hinges 1 inch (25 mm) shorter in length than nominal height of door, unless otherwise noted or door details require shorter length and with symmetrical hole pattern.

2.05 TWO-POINT LOCK

A. Manufacturer and Product:

1. Scheduled Manufacturer and Product:
   a. Schlage LM9200
2. Acceptable Manufacturers and Products:
   a. Corbin-Russwin MP9800 series

   b. Sargent 7000 series

B. Requirements:

1. Provide concealed two-point locking system for use in pair wood door applications manufactured from heavy gauge steel, containing components of steel with a zinc dichromate plating for corrosion resistance. Provide lock case that is multi-function and field reversible for handing without opening case. Cylinders: Refer to "KEYING" article, herein.
2. Concealed Vertical Locking Devices: Vertical latch system in two-point for non-rated or fire rated wood doors up to a 45-minute rating and less bottom latch (LBL) configuration for non-rated or fire rated wood doors up to 20-minute rating.
3. Lever Trim: Solid brass, bronze, or stainless steel, cast or forged in design specified, with wrought roses or escutcheon as scheduled and external lever spring cages. Provide escutcheon trim which does not require the use of a backer plate in wood door applications. Provide thru-bolted levers with 2-piece spindles.
   a. Lever Design: 06A.

2.06 CYLINDRICAL LOCKS – GRADE 1

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
   a. Best 9K series
2. Acceptable Manufacturers and Products:
   a. Corbin-Russwin CL3300 series
   b. Sargent 10-Line
   c. Schlage ND series

B. Requirements:

1. Provide cylindrical locks conforming to ANSI/BHMA A156.2 Series 4000, Grade 1, and UL Listed for 3-hour fire doors.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide locks with standard 2-3/4 inches (70 mm) backset, unless noted otherwise, with 1/2-inch latch throw. Provide proper latch throw for UL listing at pairs.
4. Provide locksets with separate anti-rotation thru-bolts, and no exposed screws.
5. Provide independently operating levers with two external return spring cassettes mounted under roses to prevent lever sag.
6. Provide standard ASA strikes unless extended lip strikes are necessary to protect trim.
7. Provide electrified options as scheduled in the hardware sets.
8. Lever Trim: Solid cast levers without plastic inserts and wrought roses on both sides.
   a. Provide levers that return to within 1/2 inch (13 mm) of door face.
   b. Lever Design: 15D.

2.07 EXIT DEVICES

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:
   a. Von Duprin 99/33A series

2. Acceptable Manufacturers and Products:
   a. Detex Advantex series
   b. Precision APEX 2000 series
   c. Sargent 19-43-GL-80 series

B. Requirements:

1. Provide exit devices tested to ANSI/BHMA A156.3 Grade 1 and UL listed for Panic Exit or Fire Exit Hardware.
2. Cylinders: Refer to "KEYING" article, herein.
3. Provide grooved touchpad type exit devices, fabricated of brass, bronze, stainless steel, or aluminum, plated to standard architectural finishes to match balance of door hardware.
4. Touchpad must extend a minimum of one half of door width. No plastic inserts are allowed in touchpads.
5. Provide exit devices with weather resistant components that can withstand harsh conditions of various climates and corrosive cleaners used in outdoor pool environments.
6. Provide flush end caps for exit devices.
7. Provide exit devices with manufacturer's approved strikes.
8. Provide exit devices cut to door width and height. Install exit devices at height recommended by exit device manufacturer, allowable by governing building codes, and approved by Architect.
9. Mount mechanism case flush on face of doors or provide spacers to fill gaps behind devices. Where glass trim or molding projects off face of door, provide glass bead kits.
10. Provide cylinder or hex-key dogging as specified at non fire-rated openings.
11. Removable Mullions: 2 inches (51 mm) x 3 inches (76 mm) steel tube. Where scheduled as keyed removable mullion, provide type that can be removed by use of a keyed cylinder, which is self-locking when re-installed.
12. Provide factory drilled weep holes for exit devices used in full exterior application, highly corrosive areas, and where noted in hardware sets.
13. Top latch mounting: double- or single-tab mount for steel doors, face mount for aluminum doors eliminating requirement of tabs, and double tab mount for wood doors.
14. Provide exit devices with optional trim designs to match other lever and pull designs used on the project.
15. Special Options:
    a. CVC
       1) Provide cable-actuated concealed vertical latch system in two-point for non-rated or fire rated wood doors up to a 90 minute rating and less bottom latch (LBL) configuration for non-rated or fire rated wood doors up to 20 minute rating. Vertical rods not permitted.
          a) Cable: Stainless steel with abrasive resistant coating. Conduit and core wire ends snap into latch and center slides without use of tools.
          b) Wood Door Prep: Maximum 1 inch x 1.1875 inch x 3.875 inches top latch pocket and 1 inch x 1.1875 inch x 5 inches bottom latch pocket which does not require the use of a metal wrap or edge for non-rated or fire rated wood doors up to a 45 minute rating.

c) Latchbolts and Blocking Cams: Manufactured from sintered metal low carbon copper- infiltrated steel, with molybdenum disulfide low friction coating.
d) Top Latchbolt: Minimum 0.38 inch (10 mm) and greater than 90-degree engagement with strike to prevent door and frame separation under high static load.
e) Bottom Latchbolt: Minimum of 0.44-inch (11 mm) engagement with strike.
f) Product Cycle Life: 1,000,000 cycles.
g) Latch Operation: Top and bottom latch operate independently of each other. Top latch fully engages top strike even when bottom latch is compromised. Separate trigger mechanisms not permitted.
h) Latch release does not require separate trigger mechanism.
i) Cable and latching system characteristics:
   i. Installed independently of exit device installation, and capable of functioning on door prior to device and trim installation.
   ii. Connected to exit device at single point in steel and aluminum doors, and two points for top and bottom latches in wood doors.
   iii. Bottom latch height adjusted, from single point for steel and aluminum doors and two points for wood doors, after system is installed and connected to exit device, while door is hanging
   iv. Bottom latch position altered up and down minimum of 2 inches (51 mm) in steel and aluminum doors without additional adjustment. Bottom latch deadlocks in every adjustment position in wood doors.
   v. Top and bottom latches in steel and aluminum doors and top latch in wood doors may be removed while door is hanging.

2.08 CYLINDERS

A. Manufacturers:

1. Scheduled Manufacturer and Product:
   a. Best

2. Acceptable Manufacturers and Products:
   a. No Substitute

B. Requirements:

1. Provide cylinders/cores to match Owner's existing key system, compliant with ANSI/BHMA A156.5; latest revision; cylinder face finished to match lockset, manufacturer's series as indicated. Refer to "KEYING" article, herein.

2.09 KEYING

A. Scheduled System:

1. Existing factory registered system:

a. Provide cylinders/cores keyed into Owner's existing factory registered keying system. Comply with guidelines in ANSI/BHMA A156.28, incorporating decisions made at keying conference.

B. Requirements:

1. Construction Keying:
   a. Replaceable Construction Cores.
      1) Provide temporary construction cores replaceable by permanent cores, furnished in accordance with the following requirements.
         a) 3 construction control keys
         b) 12 construction change (day) keys.
      2) Owner or Owner's Representative will replace temporary construction cores with permanent cores.

2. Permanent Keying:
   a. Provide permanent cylinders/cores keyed by the manufacturer according to the following key system.
      1) Master Keying system as directed by the Owner.
   b. Forward bitting list and keys separately from cylinders, by means as directed by Owner. Failure to comply with forwarding requirements will be cause for replacement of cylinders/cores involved at no additional cost to Owner.
   c. Provide keys with the following features:
      1) Material: Nickel silver; minimum thickness of .107-inch (2.3mm)
      2) Patent Protection: Keys and blanks protected by one or more utility patent(s).
      3) Geographically Exclusive: Where High Security or Security cylinders/cores are indicated, provide nationwide, geographically exclusive key system complying with the following restrictions.
   d. Identification:
      1) Mark permanent cylinders/cores and keys with applicable blind code for identification. Do not provide blind code marks with actual key cuts.
      2) Identification stamping provisions must be approved by the Architect and Owner.
      3) Stamp cylinders/cores and keys with Owner's unique key system facility code as established by the manufacturer; key symbol and embossed or stamped with "DO NOT DUPLICATE" along with the "PATENTED" or patent number to enforce the patent protection.
      4) Failure to comply with stamping requirements will be cause for replacement of keys involved at no additional cost to Owner.
      5) Forward permanent cylinders/cores to Owner, separately from keys, by means as directed by Owner.
   e. Quantity: Furnish in the following quantities.
      1) Change (Day) Keys: 3 per cylinder/core.
      2) Permanent Control Keys: 3.
      3) Master Keys: 6.

2.10 DOOR CLOSERS

A. Manufacturers and Products:

1. Scheduled Manufacturer and Product:

a. LCN 4010/4110/4020 series

2. Acceptable Manufacturers and Products:
   a. Corbin-Russwin DC8000 series
   b. Sargent 281 series

B. Requirements:

1. Provide door closers conforming to ANSI/BHMA A156.4 Grade 1 requirements by BHMA certified independent testing laboratory. Certify surface mounted mechanical closers to meet fifteen million (15,000,000) full load cycles. ISO 9000 certify closers. Stamp units with date of manufacture code.
2. Provide door closers with fully hydraulic, full rack and pinion action with high strength cast iron cylinder, and full complement bearings at shaft.
3. Cylinder Body: 1-1/2-inch (38 mm) diameter with 11/16-inch (17 mm) diameter double heat-treated pinion journal.
4. Hydraulic Fluid: Fireproof, passing requirements of UL10C, and requiring no seasonal closer adjustment for temperatures ranging from 120 degrees F to -30 degrees F.
5. Spring Power: Continuously adjustable over full range of closer sizes, and providing reduced opening force as required by accessibility codes and standards.
6. Hydraulic Regulation: By tamper-proof, non-critical valves, with separate adjustment for latch speed, general speed, and backcheck.
7. Provide closers with solid forged steel main arms and factory assembled heavy-duty forged forearms for parallel arm closers. When closers are parallel arm mounted, provide closers which mount within 6-inch (152 mm) top rail without use of mounting plate so that closer is not visible through vision panel from pull side.
8. Pressure Relief Valve (PRV) Technology: Not permitted.
9. Finish for Closer Cylinders, Arms, Adapter Plates, and Metal Covers: Powder coating finish which has been certified to exceed 100 hours salt spray testing as described in ANSI/BHMA Standard A156.4 and ASTM B117, or has special rust inhibitor (SRI).
10. Provide special templates, drop plates, mounting brackets, or adapters for arms as required for details, overhead stops, and other door hardware items interfering with closer mounting.

2.11 DOOR TRIM

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Ives

2. Acceptable Manufacturers:
   a. Burns
   b. Rockwood
   c. Trimco

B. Requirements:

1. Provide push plates, push bars, pull plates, pulls, and hands-free reversible door pulls with diameter and length as scheduled.

2.12 THRESHOLDS, SEALS, DOOR SWEEPS, AUTOMATIC DOOR BOTTOMS, AND GASKETING

A. Manufacturers:

1. Scheduled Manufacturer:
   a. Zero International

2. Acceptable Manufacturers:
   a. Legacy
   b. National Guard
   c. Pemko

B. Requirements:

1. Provide thresholds, weather-stripping, and gasketing systems as specified and per architectural details. Match finish of other items.
2. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
3. Provide door sweeps, seals, astragals, and auto door bottoms only of type where resilient or flexible seal strip is easily replaceable and readily available.
4. Size thresholds 1/2 inch (13 mm) high by 5 inches (127 mm) wide by door width unless otherwise specified in the hardware sets or detailed in the drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to installation of hardware, examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance. Verify doors, frames, and walls have been properly reinforced for hardware installation.

B. Submit a list of deficiencies in writing and proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Mount door hardware units at heights to comply with the following, unless otherwise indicated or required to comply with governing regulations.

1. Standard Steel Doors and Frames: ANSI/SDI A250.8.
2. Custom Steel Doors and Frames: HMMA 831.
3. Interior Architectural Wood Flush Doors: ANSI/WDMA I.S. 1A
4. Installation Guide for Doors and Hardware: DHI TDH-007-20

B. Install door hardware in accordance with NFPA 80, NFPA 101 and provide post-install inspection, testing as specified in section 1.03.E unless otherwise required to comply with governing regulations.

C. Install each hardware item in compliance with manufacturer's instructions and recommendations, using only fasteners provided by manufacturer.

D. Do not install surface mounted items until finishes have been completed on substrate. Protect all installed hardware during painting.

E. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

F. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

G. Install operating parts so they move freely and smoothly without binding, sticking, or excessive clearance.

H. Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than quantity recommended by manufacturer for application indicated.

I. Lock Cylinders:

1. Install construction cores to secure building and areas during construction period.
2. Replace construction cores with permanent cores as indicated in keying section.
3. Furnish permanent cores to Owner for installation.

J. Door Closers: Mount closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors from corridors. Mount closers so they are not visible in corridors, lobbies and other public spaces unless approved by Architect.

K. Closer/Holders: Mount closer/holders on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

L. Thresholds: Set thresholds in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

M. Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they may impede traffic or present tripping hazard.

N. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.

O. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.

P. Door Bottoms and Sweeps: Apply to bottom of door, forming seal with threshold when door is closed.

3.03 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

1. Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.

B. Occupancy Adjustment: Approximately three to six months after date of Substantial Completion, examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors and door hardware.

3.04 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items per manufacturer's instructions to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.05 DOOR HARDWARE SCHEDULE

A. The intent of the hardware specification is to specify the hardware for interior and exterior doors, and to establish a type, continuity, and standard of quality. However, it is the door hardware supplier's responsibility to thoroughly review existing conditions, schedules, specifications, drawings, and other Contract Documents to verify the suitability of the hardware specified.

B. Discrepancies, conflicting hardware, and missing items are to be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application.

C. Hardware items are referenced in the following hardware schedule. Refer to the above specifications for special features, options, cylinders/keying, and other requirements.

Abbreviation	Name
BES	Best Locking Systems
GLY	Glynn-Johnson Corp
IVE	H.B. Ives
LCN	LCN Commercial Division
SCH	Schlage Lock Company
VON	Von Duprin
ZER	Zero International Inc

Hardware Set No. AC-01
For use on mark/door #(s):
01 02(2)
Each to have:

2	EA	CONT. HINGE	A31311G E
1	EA	ELEC PANIC HARDWARE	TYPE 8-02-E01-E04
1	EA	ELEC PANIC HARDWARE	TYPE 8-03-E01-E04
1	EA	MORTISE CYLINDER	E09251
1	EA	SFIC CORE	E09241
2	EA	OH STOP	C01541
2	EA	SURFACE CLOSER	CO2021 PT-4A, PT-4C, PT-4D, PT-4H
2	EA	PA MOUNTING PLATE	PA MOUNTING BRACKET
2	EA	CUSH SHOE SUPPORT	CUSH SHOE SUPPORT
2	EA	BLADE STOP SPACER	BLADE STOP SPACER
1	EA	THRESHOLD	J36130
2	EA	DOOR CONTACT	PUSH IN TYPE E08
1	EA	POWER SUPPLY	REGULATED, FILTERED, 24VDC, BATTERY BACKUP, FOR E04 FUNCTION
		ACCESS READER	CREDENTIAL READER BY ANOTHER SECTION

PROVIDE HARDWARE FOR ALUMINUM DOORS UNDER THIS SECTION. DELIVER HARDWARE TEMPLATES AND HARDWARE, EXCEPT FIELD APPLIED HARDWARE, TO THE ALUMINUM DOOR AND FRAME MANUFACTURER FOR USE IN FABRICATING DOORS AND FRAMES.
PERIMETER WEATHER, MEETING STYLE AND DOOR SWEEP SEALS PROVIDED BY ALUMINUM SECTION.
DOORS REQUIRE SPECIAL 3/8 INCH UNDERCUT FOR ADA TYPE THRESHOLD.
DESCRIPTION OF OPERATION;
PRESENTING VALID CREDENTIAL TO READER WILL RETRACT LATCHES FOR ACCESS.
EMERGENCY ACCESS BY MECHANICAL KEY OVERRIDE.
REQUEST TO EXIT AND DOOR POSITION SWITCHES ARE FOR USE BY ACCESS CONTROL CONTRACTOR.
FREE EGRESS AT ALL TIMES.

Hardware Set No. AC-02
For use on mark/door #(s):
03 04
Each to have:

2	EA	HINGE	A5111 4.5 X 4.5
1	EA	ELECTRIC HINGE	A5111 4.5 X 4.5 E
1	EA	ELEC PANIC HARDWARE	TYPE 1-03-E01-E04
1	EA	MORTISE CYLINDER	E09251
1	EA	SFIC CORE	E09241
1	EA	SURFACE CLOSER	CO2021 PT-4A, PT-4C, PT-4D, PT-4G, PT-4H
1	EA	KICK PLATE	J102
1	EA	RAIN DRIP	R3Y976
1	SET	GASKETING	R3E164
1	EA	THRESHOLD	J36130
1	EA	DOOR CONTACT	PUSH IN TYPE E08
1	EA	POWER SUPPLY	REGULATED, FILTERED, 24VDC, BATTERY BACKUP, FOR E04 FUNCTION
		ACCESS READER	CREDENTIAL READER BY ANOTHER SECTION

DOORS REQUIRE SPECIAL 3/8 INCH UNDERCUT FOR ADA TYPE THRESHOLD.
DESCRIPTION OF OPERATION;
PRESENTING VALID CREDENTIAL TO READER WILL RETRACT LATCH FOR ACCESS.
EMERGENCY ACCESS BY MECHANICAL KEY OVERRIDE.
REQUEST TO EXIT AND DOOR POSITION SWITCHES ARE FOR USE BY ACCESS CONTROL CONTRACTOR.
FREE EGRESS AT ALL TIMES.

SECTION 088000 - GLAZING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes glass and glazing for fixed and operable windows and aluminum storefront.

B. Glass glazing materials and installation requirements are included in this section for other sections referencing this section.

C. Wired Glass not allowed.

D. Related Sections
1. Section 079000 - Joint Protection: Sealant and back-up material other than glazing sealants.
1. Section 081214 - Standard Steel Frames
2. Section 081314 – Standard Steel Doors
3. Section 084113 – Aluminum-Framed Entrances, Storefronts and Doors: Glazed exterior aluminum entrance and storefront units, doors and windows.
4. Section 085113 – Aluminum Windows
5. Section 088730 – Safety and Security Film

1.2 REFERENCES

A. American National Standards Institute:
1. ANSI Z97.1 - Safety Glazing Materials Used in Buildings Safety.

B. American Society of Civil Engineers:
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International:
1. ASTM C509 - Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material.
2. ASTM C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
3. ASTM C920 - Standard Specification for Elastomeric Joint Sealants.
4. ASTM C1036 - Standard Specification for Flat Glass.
5. ASTM C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT Coated and Uncoated Glass.
6. ASTM C1172 - Standard Specification for Laminated Architectural Flat Glass.
7. ASTM C1193 - Standard Guide for Use of Joint Sealants.
8. ASTM C1376 - Standard Specification for Pyrolytic and Vacuum Deposition Coatings on Flat Glass.
9. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
10. ASTM D1929 - Standard Test Method for Determining Ignition Temperature of Plastics.

11. ASTM D4802 - Standard Specification for Poly (Methyl Methacrylate) Acrylic Plastic Sheet.
12. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
13. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
14. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
15. ASTM E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings.
16. ASTM E1425 - Standard Practice for Determining the Acoustical Performance of Windows, Doors, Skylight, and Glazed Wall Systems.
17. ASTM E2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation.
18. ASTM E1886 - Standard Test Method for Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials.
19. ASTM E1996 - Standard Specification for Performance of Exterior Windows, Curtain Walls, Doors and Impact Protective Systems Impacted by Windborne Debris in Hurricanes.

D. California Department of Health Services:
1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

E. Consumer Products Safety Commission:
1. CPSC 16 CFR 1201 - Safety Standard for Architectural Glazing.

F. Deutsches Institut für Normung:
1. DIN 18516-4 - Back-ventilated, Non-Loadbearing, External Enclosures of Buildings, Made from Tempered Safety Glass Panels - Requirements and Testing.

G. Glass Association of North America:
1. GANA - Sealant Manual.
2. GANA - Glazing Manual.
3. GANA - Laminated Glass Design Guide.

H. National Fenestration Rating Council Incorporated:
1. NFRC 100 - Procedures for Determining Fenestration Product U-Factors.
2. NFRC 200 - Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence.
3. NFRC 300 - Test Method for Determining the Solar Optical Properties of Glazing Materials and Systems.

I. National Fire Protection Association:
1. NFPA 80 - Standard for Fire Doors, Fire Windows.
2. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies.

3. NFPA 257 - Standard on Fire Test for Window and Glass Block Assemblies.

J. South Coast Air Quality Management District:
1. SCAQMD Rule 1168 January 7, 2005 - Adhesive and Sealant Applications.

K. Underwriters Laboratories Inc.:
1. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
2. UL - Building Materials Directory.

1.3 DEFINITIONS

A. Manufacturers of Primary Glass: Firms that produce primary glass, as defined in referenced industry publications.

B. Manufacturers/Fabricators of Glass Products: Firms that utilize primary glass in the production of glass products that may include coated glass, laminated glass, and insulating glass.

C. Sealed Insulating Glass Unit Surfaces:
1. Surface 1: Exterior surface of outer lite.
2. Surface 2: Interspace-facing surface of outer lite.
3. Surface 3: Interspace-facing surface of inner lite.
4. Surface 4: Interior surface of inner lite.

1.4 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems that will withstand dead loads and positive and negative live loads acting normal to plane of glass as calculated in accordance with applicable code and normal thermal movement without failure, including loss or glass breakage resulting from defective manufacture, fabrication, or installation; failure of glazing systems to remain watertight and airtight; or deterioration of glazing material.

B. Glass Design: Glass thicknesses indicated are minimums. Select actual glass lite thicknesses by analyzing loads and conditions.

C. Thermal Movements: Allow for thermal movements of glazing components and glass framing members resulting from a temperature change range of 120 deg F ambient and 180 deg F material surfaces.

D. Thermal and Optical Performance Properties: Provide glass meeting specified performance properties, based on manufacturer's published test data for units of thickness indicated, and the following:
1. Center-of-Glass Values: Per LBL-44789 WINDOW 5.0 analysis, as follows:
a. U-Factors: NFRC 100 expressed as Btu/sq. ft. x h. x deg F.
b. Solar Heat Gain Coefficient: NFRC 200.
c. Solar Optical Properties: NFRC 300.

E. Provide glass and glazing materials for continuity of building enclosure vapor retarder & weather barrier:
1. In conjunction with materials described in Section 072600, 072700 and 079000.

2. To utilize inner pane of multiple pane sealed units for continuity of air barrier and vapor retarder seal.
3. To maintain continuous air barrier and vapor retarder throughout glazed assembly from glass pane to heel bead of glazing sealant.

F. Limit glass deflection to 1/200 or flexure limit of glass with full recovery of glazing materials, whichever is less.

G. Supplier to provide tempered or laminated glass where necessary to meet code requirements, such as sidelights.

1.5 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Product Data:
1. Glass: Provide structural, physical and environmental characteristics, size limitations, special handling or installation requirements.
2. Glazing Sealants, Compounds and Accessories: Provide chemical, functional, and environmental characteristics, limitations, special application requirements. Identify available colors where exposed.

C. Certificates: Certify products meet or exceed specified requirements.

D. Manufacturer's Certificate: Certify sealed insulated glass, meets or exceeds specified requirements.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with GANA Glazing Manual, GANA Sealant Manual, GANA Laminated Glass Design Guide for glazing installation methods.

1.7 QUALIFICATIONS

A. Installer: Company specializing in performing Work of this section with minimum five years documented experience.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 016000 - Product Requirements.

B. Do not install glazing when ambient temperature is less than 50 degrees F.

C. Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

1.9 WARRANTY

A. Section 017000 - Execution Requirements.

B. Furnish ten-year warranty to include coverage for sealed glass units from seal failure, interpane dusting or misting, and replacement of same.

C. Furnish ten-year warranty to include coverage for delamination of laminated glass and replacement of same.

PART 2 PRODUCTS

2.1 GLAZING

A. Manufacturers:
1. Guardian (basis of design)
2. PPG Industries
3. AFG
4. Pilkington
5. Substitutions: Section 016000 - Product Requirements.

B. Glazing Compounds Manufacturers:
1. Sonneborn Product: Sonolastic
2. PRC Product: 5000
3. Pecora Product: Synthacaulk GC-9.
4. Substitutions: Section 016000 - Product Requirements.

C. Glazing Accessories Manufacturers:
1. Tremco
2. Pecora
3. DAP
4. Substitutions: Section 016000 - Product Requirements.

2.2 COMPONENTS

A. Float Glass: Minimum 1/4 inch unless otherwise indicated.
1. Clear Float Glass: ASTM C1036, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.
2. Clear Heat Strengthened Glass: ASTM C1048, Kind HS, heat strengthened, Condition A uncoated, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.
3. Low E Clear Float Glass: Clear float glass Type FG-CF, with low emissivity coating on inner surface.
4. Low E Clear Heat Strengthened Glass (Type FG-EHC): Clear heat strengthened glass Type FG-CH with low emissivity coating on Number 2 or 3 surface.

B. Safety Glass (Type SG): Conform to ANSI Z97.1, minimum thickness 1/4 inch unless otherwise indicated.
1. Clear Tempered Glass (Type SG-CT): ASTM C1048, Kind FT Fully tempered, Condition A, uncoated, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.

C. Laminated Glass Units: Kind LHS – Two lites of heat-strengthened float glass.

1. Outer Ply: Class 1, clear float glass, 6.0 mm thickness.
2. Inner Ply: Class 1, clear float glass, 6.0 mm thickness.
3. Plastic Interlayer: Clear, 0.06 mm thickness.
4. Visible Light Transmittance: 86% min.
5. Winter Nighttime U-Factor: 0.97 max.
6. Summer Daytime U-Factor: 0.88 max.
7. Solar Heat Gain Coefficient: 0.70 max.
8. Outdoor Visible Reflectance: 8% max.

D. Insulated Glass Units: Total unit thickness 1 inch.:.
1. High Performance Solar Control Low-E Insulating Glass Units
2. Basis of Design – Guardian: SunGuard "SuperNeutral 54"
   a. Total Unit Thickness: 1 inch
   b. Product: Guardian "SunGuard SN 54"
   c. Color: clear
   d. Coating on Surface #2
   e. U-Factor Winter: .29 maximum.
   f. U-Factor Summer: .27 maximum.
   g. Solar Heat Gain Coefficient: .28 maximum.
   h. Visible Light Transmittance: 54% minimum.

3. PPG Industries, Inc. Solarban 67 Clear
   a. Total Unit Thickness: 1 inch
   b. Product: PPG "Solarban 67"
   c. Color: clear
   d. Coating on Surface #2
   e. U-Factor Winter: .29 maximum.
   f. U-Factor Summer: .27 maximum.
   g. Solar Heat Gain Coefficient: .28 maximum.
   h. Visible Light Transmittance: 54% minimum.

E. Film-Faced Ceramic Glazing: Clear, ceramic flat glass; 3/16-inch nominal thickness (interior); faced on one surface with a clear glazing film; complying with testing requirements in 16 CFR 1201 for Category II materials.

1. Products: Subject to compliance with requirements, provide one of the following:

   a. Nippon Electric Glass Co., Ltd. (distributed by Technical Glass Products); FireLite NT.
   b. Safti First; SuperLite C/SP.
   c. Vetrotech Saint-Gobain; SGG Keralite FR-F.

A. Glass Type: 90-minute fire-rated glazing; film-faced ceramic glazing.
   a. Provide safety glazing labeling.
   b. All interior glazings in fire rated construction.

2.3 ACCESSORIES

A. Glazing Sealants:
1. Compatibility: Compatible with one another and with other materials they contact, including glass products, seals of insulating-glass units, and glazing channel substrates, under conditions of service and application, as demonstrated by sealant manufacturer based on testing and field experience.

2. Suitability: Comply with sealant and glass manufacturers' written instructions for selecting glazing sealants suitable for applications indicated and for conditions existing at time of installation.

B. Glazing Sealants: Neutral-curing silicone glazing sealant complying with ASTM C 920, Type S, Grade NS, Class 50, Use NT.
1. Manufacturers: subject to compliance with requirements, provide products by one of the following:
   a. BASF Construction Chemicals – Construction Systems
   b. Dow Corning Corporation
   c. Pecora Corporation
   d. Sika Corporation
   e. May National Associates, Inc
   f. Polymeric Systems Inc
   g. Tremco Incorporated

C. Glazing Gaskets:
1. The material shall consist of at least 50% by weight of basic rubber hydrocarbon, and shall contain no crude or reclaimed rubber. It shall be homogenous, free from defects, and shall be compounded and cured to meet the requirements herein specified.
2. Cured materials shall evidence the properties of AAMA SG-1.

D. Pre-Formed Glazing Tape: Size to suit application.
1. Preformed butyl compound with integral resilient tube spacing device; 10 to 15 Shore A durometer hardness; coiled on release paper; black color.
   a. Type: Tremco 44, Pecora B-44, Dap Butyl.
   b. Butyl Corner Sealant: ASTM C920 single component non-skinning butyl compatible with glazing tape; color to match tape.

E. Setting Blocks: ASTM C864 Option I, Elastomeric or Silicone, 80 to 90 Shore A durometer hardness, length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

F. Spacer Shims: ASTM C864 Option I, Elastomeric or Silicone, 50 to 60 Shore A durometer hardness, minimum 3 inch long x one half the height of glazing stop x thickness to suit application, self adhesive on one face.

2.3 ACCESSORIES

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E. Setting Blocks: ASTM C864 Option I, Elastomeric or Silicone, 80 to 90 Shore A durometer hardness, length of 0.1 inch for each square foot of glazing or minimum 4 inch x width of glazing rabbet space minus 1/16 inch x height to suit glazing method and pane weight and area.

F. Spacer Shims: ASTM C864 Option I, Elastomeric or Silicone, 50 to 60 Shore A durometer hardness, minimum 3 inch long x one half the height of glazing stop x thickness to suit application, self adhesive on one face.

G. Compressible Filler Rod: Closed cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with sealants used. Not to be used in glazing rabbet.

H. Cleaners, Primers and Sealers: Type recommended by manufacturer of sealant or gasket.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 013000 - Administrative Requirements: Coordination and project conditions.

B. Verify openings for glazing are correctly sized and within acceptable tolerance.

C. Verify surfaces of glazing channels or recesses are clean, free of obstructions impeding moisture movement, weeps are clear, and ready to receive glazing.

3.2 PREPARATION

A. Clean contact surfaces with solvent and wipe dry.

B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

C. Prime surfaces scheduled to receive sealant.

3.3 INSTALLATION

A. Perform installation in accordance with GANA Glazing Manual.
1. Glazing Sealants: Comply with ASTM C1193.
2. Fire Rated Openings: Comply with NFPA 80

B. Exterior Wet/Dry Method (Preformed Tape and Sealant) Installation:
1. Cut glazing tape to length and set against permanent stops, 3/16 inch below sight line. Seal corners by butting tape and dabbing with compatible butyl sealant.
2. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete continuity of air and vapor seal.
3. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
4. Rest glazing on setting blocks and push against tape [and heel bead of sealant] with sufficient pressure to attain full contact at perimeter of pane or glass unit.
5. Install removable stops, with spacer strips inserted between glazing and applied stops, 1/4 inch below sight line. Place glazing tape on glazing pane or unit with tape flush with sight line.
6. Fill gap between glazing and stop with elastomeric glazing sealant to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.
7. Apply cap bead of elastomeric glazing sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

SECTION 088730 - SAFETY AND SECURITY FILM (Storefront entry only)

PART 1 -GENERAL

1.1 SECTION INCLUDES

A. An optically clear glass shatter resistant and abrasion resistant window film which, when applied to the interior window surface, will help hold broken glass together and reduce the ultra-violet light that normally would enter through the window. This is an easily applied, tear-resistant safety and security window film designed to provide an increased measure of protection in a broad range of uses including basic glass fragment retention, spontaneous glass breakage, seismic preparedness, safety glazing, bomb blast mitigation, Smash and Grab or Break and Entry events.

B. This system is to be used in conjunction with a film attachment system.

1.2 RELATED SECTIONS

A. Section 084113 - Aluminum Entrances & Storefront

B. Section 088000 - Glazing.

1.3 REFERENCES

A. ASHRAE - American Society for Heating, Refrigeration, and Air Conditioning Engineers; Handbook of Fundamentals, 1997 Edition.

B. ASTM D 1044 - Standard Method of Test for Resistance of Transparent Plastics to Surface Abrasion (Taber Abrader Test).

C. ASTM E 84 - Standard Method of Test for Surface Burning Characteristics of Building Materials.

D. ASTM E 308 - Standard Recommended Practice for Spectophotometry and Description of Color in CIE 1931 System.

E. ASTM E 903 - Standard Methods of Test for Solar Absorbance, Reflectance and Transmittance of Materials Using Integrating Spheres.

F. ASTM G 26 - Standard Practice for Performing Accelerated Outdoor Weatherizing for Non-metallic Materials Using Concentrated Natural Sunlight.

1.4 PERFORMANCE REQUIREMENTS

A. Fire Performance: Surface burning characteristics when tested in accordance ASTM E 84:
   1. Flame Spread: 25, maximum.
   2. Smoke Developed: 450, maximum.

B. Abrasion Resistance: Film must have a surface coating that is resistant to abrasion such that, less than 5 percent increase of transmitted light haze will result in accordance with ASTM D 1044 using 50 cycles, 500 grams weight, and the CS10F Calbrase Wheel.

1.5 SUBMITTALS

Police West Roll Call – Envelope Improvements Tate Hill Jacobs Architects

Police Roll Call West Envelope and HVAC Project
Lexington Fayette Urban County Government
LFUCG RFP No. 78-2024

Tate Hill Jacobs Architects
Construction Documents
May 3, 2024

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

D. Verification Samples: For each finish product specified, two samples representing actual product, color, and patterns.

E. Performance Submittals:
   1. Provide laboratory data of emissivity and calculated window U-Factors for various outdoor temperatures based upon established calculation procedure defined by the 1997 ASHRAE Handbook of Fundamentals, Chapter 29, or Lawrence Berkeley Laboratory Window 5.2 Computer Program.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: All primary products specified in this section will be supplied by a single manufacturer with a minimum of ten (10) years experience.

B. Installer Qualifications: All products listed in this section are to be installed by a single installer with a minimum of five (5) years demonstrated experience in installing products of the same type and scope as specified.
   1. Provide documentation that the installer is authorized by the Manufacturer to perform Work specified in this section.
   2. Provide a commercial building reference list of FIVE _____(5) properties where the installer has applied window film. This list will include the following information:
      a. Name of building.
      b. The name and telephone number of a management contact.
      c. Type of glass.
      d. Type of film.
      e. Amount of film installed.
      f. Date of completion.
   3. Provide a Glass Stress Analysis of the existing glass and proposed glass/film combination as recommended by the film Manufacturer.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
   1. Finish areas designated by Architect.
   2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
   3. Refinish mock-up area as required to produce acceptable work.

D. Mfr. to provide independent test data showing that the film, when applied to either side of the window glass, shall meet the 400 ft-lb impact requirements of 16 CFR 1201 (Category 2) and ANSI Z97.1 (Class A, Unlimited). Testing shall be done with film applied both on 1/8" and 1/4" annealed glass.

1.7 DELIVERY, STORAGE, AND HANDLING

SECTION 092116 - GYPSUM BOARD ASSEMBLIES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes metal stud wall and ceiling framing; gypsum board, primer-surfacer and joint treatment; gypsum sheathing.

B. Related Sections:
1. Section 061000 – Carpentry: Wood blocking.
2. Section 099000 – Painting and Coatings.

1.2 REFERENCES

A. ASTM International:
1. ASTM C475/C475M - Standard Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
2. ASTM C514 - Standard Specification for Nails for the Application of Gypsum Board.
3. ASTM C557 - Standard Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
4. ASTM C645 - Standard Specification for Nonstructural Steel Framing Members.
5. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
6. ASTM C754 - Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
7. ASTM C840 - Standard Specification for Application and Finishing of Gypsum Board.
8. ASTM C954 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs from 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
9. ASTM C1002 - Standard Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases.
10. ASTM C1007 - Standard Specification for Installation of Load Bearing (Transverse and Axial) Steel Studs and Related Accessories.
11. ASTM C1178/C1178M - Standard Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel.
12. ASTM C1280 - Standard Specification for Application of Gypsum Sheathing.
13. ASTM C1288 - Standard Specification for Discrete Non-Asbestos Fiber-Cement Interior Substrate Sheets.
14. ASTM C1325 - Standard Specification for Non-Asbestos Fiber-Mat Reinforced Cement Substrate Sheets.
15. ASTM C1396/C1396M - Standard Specification for Gypsum Board.
16. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
17. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.
18. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.

19. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

B. American Society of Civil Engineers:
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. California Department of Health Services:
1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

D. Gypsum Association:
1. GA 214 - Recommended Levels of Gypsum Board Finish.
2. GA 216 - Application and Finishing of Gypsum Board.

E. Intertek Testing Services (Warnock Hersey Listed):
1. WH - Certification Listings.

F. National Fire Protection Association:
1. NFPA 265 - Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Coverings on Full Height Panels and Walls, Method B.
2. NFPA 286 - Standard Methods of Fire Tests for Evaluating Room Fire Growth Contribution of Wall and Ceiling Interior Finish.

G. South Coast Air Quality Management District:
1. SCAQMD Rule 1168[-January 7, 2005] - Adhesive and Sealant Applications.

H. Underwriters Laboratories Inc.:
1. UL - Fire Resistance Directory.

1.3 PERFORMANCE REQUIREMENTS

A. Conform to Kentucky Building Code for fire rated assemblies.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on metal framing, gypsum board, joint tape; acoustic accessories.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ASTM C840.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

a. Metal Framing: One bead.
b. Face Layer.
c. Seal penetrations of partitions by conduit, pipe, duct work, rough-in boxes, and all other systems.

E. Gypsum Board Installation:
1. Install gypsum board in accordance with GA-216 and GA-600.
2. Erect single layer standard gypsum board in most economical direction, with ends and edges occurring over firm bearing.
3. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.
4. Use screws when fastening gypsum board to metal furring or framing.
5. Treat cut edges and holes in moisture resistant gypsum board with sealant.
6. Place corner beads at all external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
7. Install cementitious backing board over metal studs, where specified, in conformance with manufacturer's written instructions.

F. Joint Treatment:
1. Finish in accordance with GA-214 Level 5 unless otherwise specified.
2. Feather coats on to adjoining surfaces so that camber is maximum 1/32 inch.
3. Fill and finish joints and corners of cementitious backing board.

3.3 ERECTION TOLERANCES

A. Section 014000 - Quality Requirements: Tolerances.

B. Maximum Variation of Finished Gypsum Board Surface from Flat Surface: 1/8 inch in 10 feet.

3.4 SCHEDULES

A. Finishes in accordance with GA-214 Level:
1. Level 1: Above finished ceilings concealed from view.
2. Level 4: Ceilings exposed to view.
3. Level 5: Walls exposed to view.

END OF SECTION

SECTION 095113 - ACOUSTICAL PANEL CEILINGS

PART 1 GENERAL

1.1 SUMMARY

A. For all areas where ceiling system is impacted by the course of the work, remove existing tiles and store for reinstallation. Protect grid, and all building system components including but not limited to lights, sprinklers, HVAC, speakers horns and strobes.

B. Any and all replacement tiles shall match owners existing ceiling system.

C. Section Includes:
1. Acoustic tile.
2. Acoustic panels.
3. Suspended metal grid ceiling system and perimeter trim.
4. Hold-Down clips where appropriate.

D. Related Requirements:
1. Section 079000 - Joint Protection.
2. Section 083113 - Access Doors and Frames: Access panels.
3. Section 092116 – Acoustic Insulation. Acoustic partition system.
4. DIV 23
5. DIV 26 - Interior Lighting: Light fixtures in ceiling system.

1.2 REFERENCE STANDARDS

A. ASTM International:
1. ASTM C635 - Standard Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings.
2. ASTM C636 - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
3. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
4. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
5. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
6. ASTM E580/E580M - Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint.
7. ASTM E1264 - Standard Classification for Acoustical Ceiling Products.

B. American Society of Civil Engineers:
1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. California Department of Health Services:

PART 2 PRODUCTS

2.1 SUSPENDED ACOUSTICAL CEILINGS

A. Manufacturers:
1. USG Interiors
   a. Type 1: Donn DX (standard)
   b. Type 2: DXL (Fire rated)
   c. Type 3: DXLA (moisture resistant)
2. Armstrong Industries
3. Chicago Metallic
4. Certainteed
5. Substitutions: Section 016000 - Product Requirements

B. Performance / Design Criteria:
1. Suspension System: Rigidly secure acoustic ceiling system including integral mechanical and electrical components with maximum deflection of 1/360 of span.

2.2 SUSPENSION SYSTEM

A. Manufacturers:
1. U.S. Gypsum:
   a. Type 1: Donn DX (standard)
   b. Type 2: DXL (fire rated)
   c. Type 3: DXLA (moisture-resistant)
2. Chicago Metallic.
3. Substitutions: Refer to Section 016000 – Product Requirements.

2.3 SUSPENSION SYSTEM MATERIALS – 2x2 grids

A. Grid: ASTM C635, intermediate; exposed T; components die cut and interlocking.

B. Exposed Grid Surface Width: 15/16 inch.

C. Grid Finish: White - or as selected by Architect

D. Accessories: Stabilizer bars, clips, splices, perimeter moldings, hold down clips, and other as required for suspended grid system.

E. Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirements specified. Maximum spacing of Main-Tee is 48" o.c., Maximum Cross-Tees is 24" o.c.

F. All ceiling suspension grids, framing Unistrut, cabling or piping to be supported by structural elements, NOT from the metal deck.

2.4 ACOUSTIC UNIT MATERIALS

1. TYPE: ACT-1:
   A. Manufacturers:
      1. Armstrong: Fine Fissured #1714.
      2. USG: Radar ClimaPlus #22441.
      3. Substitutions: Under provisions of Section 016000.

   B. Acoustic Tile: ASTM E1264, Type III, Forms 2 or 4, conforming to:
      1. Size: 24x24 inches
      2. Thickness: ¾ inches.
      3. Composition: Mineral.
      4. NRC Range: .70 min
      5. CAC Range: 35
      6. VOC: zero
      7. Flame Spread Classification of Class A
      8. Light Reflectance: minimum value of 0.80.
      9. Edge: Square.
      10. Surface Color: White.
      11. Surface Finish: non direction fine fissured with random perforations.
      12. Non-sag warranty: 10-year guarantee.

2. TYPE: ACT-2 (HIGH MOISTURE AREAS – TOILET ROOMS)
   A. Manufacturers:
      1. USG Sheetrock: Lay0In ClimaPlus 3260 non-sag vinyl faced gypsum ["Stipple"] (USDA approved – USFD approved - FSIS)
      2. Armstrong: Kitchen Zone 673
      3. Rockfon: Hygienic Plus 31100, 2x2, with Chicago Metallic 200 grid (Kitchen).
      4. Rockfon: Pacific 200, 2x2, with Chicago Metallic 200 grid (Locker Rooms, Toilet Rooms).
      5. Substitutions: Section 016000 - Product Requirements.

   B. Acoustic Tile: ASTM E1264, Type XX, conforming to the following:
      6. To be USDA-approved – FSIS.
      7. Size: 24 x 24 inches
      8. Thickness: 1/2 inches.
      9. CAC: 35
      10. Flame Spread Classification: Class A
      11. Light Reflectance Value: min 0.70.
      12. Composition: Gypsum Core with .002" vinyl face and back.
      13. Edge: Square.
      14. Surface Color: White.
      15. Surface Finish: Vinyl faced

2.5 ACCESSORIES

A. Gypsum Board: Fire rated type; specified in Section 092116.

SECTION 099000 - PAINTING AND COATING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes surface preparation and field application of paints and other coatings both interior and exterior (incl. existing concrete walls, entry foundations).

B. Related Sections:
1. Section 055000 - Metal Fabrications: Shop primed items.
2. Section 081214 – Standard Steel Frames
3. Division 23 - Mechanical Identification.
4. Division 26 - Electrical Identification.

1.2 REFERENCES

A. ASTM International:
1. ASTM D16 - Standard Terminology for Paint, Related Coatings, Materials, and Applications.
2. ASTM D4442 - Standard Test Methods for Direct Moisture Content Measurement of Wood and Wood-Base Materials.
3. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

B. California Department of Health Services:
1. CA/DHS/EHLB/R-174 - Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers, including 2004 Addenda.

C. Green Seal:
1. GC-03 2nd Edition, January 7, 1997 - Anti-Corrosive Paints.
2. GS-11 1st Edition, May 20, 1993 - Product Specific Environmental Requirements.

D. Painting and Decorating Contractors of America:
1. PDCA - Architectural Painting Specification Manual.

E. South Coast Air Quality Management District:
1. SCAQMD Rule 1113 January 1, 2004 - Architectural Coatings.

F. SSPC: The Society for Protective Coatings:
1. SSPC - Steel Structures Painting Manual.

1.3 DEFINITIONS

A. Conform to ASTM D16 for interpretation of terms used in this section.

1.4 SUBMITTALS

A. Section 013300 - Submittal Procedures: Submittal procedures.

B. Product Data: Submit data on finishing products.

C. Samples: Submit one complete set of manufacturers paint deck for color selection.

D. Manufacturer's Installation Instructions: Submit special surface preparation procedures and substrate conditions requiring special attention.

E. Where requested by architect, the painting contractor shall provide 24" (min) square samples of the requested paint with the specified gloss / sheen and textures for review and approval.

1.5 CLOSEOUT SUBMITTALS

A. Section 017000 – Execution and Closeout Requirements: Closeout procedures.

B. Operation and Maintenance Data: Submit data on cleaning, touch-up, and repair of painted and coated surfaces.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

B. Applicator: Company specializing in performing work of this section with minimum five years documented proven satisfactory experience, and shall be required to show proof before commencement of work that he/she will maintain a qualified crew of painters throughout the duration of the work.

1.7 PRE-INSTALLATION MEETINGS

A. Section 013000 - Administrative Requirements: Pre-installation meeting.

B. Convene minimum two weeks prior to commencing work of this section.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 016000 - Product Requirements: Product storage and handling requirements.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

C. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

D. Paint Materials: Store at minimum ambient temperature of 45 degrees F and maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.
5. Concrete Floors: 8 percent.

3.2 PREPARATION

A. Surface Appurtenances: Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

B. Surfaces: Correct defects and clean surfaces capable of affecting work of this section. Remove or repair existing coatings exhibiting surface defects including shop applied primers and zinc coatings.

C. Marks: Seal with shellac those which may bleed through surface finishes.

D. Impervious Surfaces: Remove mildew by scrubbing with solution of tetra-sodium tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

E. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high-pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

F. Asphalt, Creosote, or Bituminous Surfaces Scheduled for Paint Finish: Remove foreign particles to permit adhesion of finishing materials. Apply latex based compatible sealer or primer.

G. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.

H. Concrete Floors: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.

I. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions. Clean surfaces with pressurized water. Use pressure range of 1500 to 4000 psi at 6 to 12 inches.

J. Copper Surfaces Scheduled for Paint Finish: Remove contamination by steam, high pressure water, or solvent washing. Apply vinyl etch primer immediately following cleaning.

K. Copper Surfaces Scheduled for Natural Oxidized Finish: Remove contamination by applying oxidizing solution of copper acetate and ammonium chloride in acetic acid. Rub on repeatedly for required effect. Once attained, rinse surfaces with clear water and allow to dry.

L. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.

M. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.

N. Concrete and Unit Masonry Surfaces Scheduled to Receive Paint Finish: Remove dirt, loose mortar, scale, salt or alkali powder, and other foreign matter. Remove oil and grease with solution of tri-sodium phosphate; rinse well and allow to dry. Remove stains caused by weathering of corroding metals with solution of sodium metasilicate after thoroughly wetting with water. Allow to dry.

O. Plaster Surfaces: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.

P. Uncoated Steel and Iron Surfaces: Remove grease, mill scale, weld splatter, dirt, and rust. Where heavy coatings of scale are evident, remove by power tool wire brushing or sandblasting; clean by washing with solvent. Apply treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

Q. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Prime metal items including shop primed items.

R. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

S. Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.

T. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior paintable caulking compound after prime coat has been applied.

U. Exterior Wood Scheduled to Receive Transparent Finish: Remove dust, grit, and foreign matter; seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes with tinted exterior caulking compound after sealer has been applied.

V. Metal Doors Scheduled for Painting: Prime metal door top and bottom edge surfaces.

3.3 APPLICATION

A. Apply products in accordance with manufacturer's recommendations.

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance (min one primer and 2 finish coats: 5-6 mils wet film finish each) Apply each coat of paint slightly darker than preceding coat unless specified otherwise – 0% tint in primer, 50% tint in first Finish coat and 100% tint in second or subsequent Finish coats.

D. Sand wood and metal surfaces lightly between coats to achieve required finish.

D. Concrete Masonry Units, Epoxy Finish System DRY Conditions
   1. One coat of block filler- as PPG Paints 6-15 Speedhide Latex Block Filler.
   3. Two coats of finish- as PPG Paints 16-510 Pitt-Glaze WB1 semi-gloss, single component water-borne Pre-catalyzed epoxy

E. Concrete Masonry Units, Epoxy Finish System WET Conditions
   2. One coat of block filler– as PPG Paints 95-217 Cementitious Waterproofing Block Filler.
   3. Two coats- as PPG Paints 98-1/98-100 semi-gloss, two-component water-borne polyamide epoxy.

F. Steel - Primed:
   1. Touch-up with alkyd primer– as PPG Paints Multi-Prime Universal Primer 94-258
   2. Two coats of vinyl acrylic latex, semi-gloss– as PPG Paints 6-4510 Speedhide Zero Latex Semi-Gloss

G. Steel – Galvanized AND Aluminum – Mill Finish
   1. One coat galvanize prime- as PPG Paints 90-912 Pitt-Tech Plus DTM Primer
   2. Two coats of Latex enamel, semi-gloss– as PPG Paints 6-4510 Speedhide Zero Latex Semi-Gloss

H. Gypsum Board:
   1. One coat of latex primer sealer- as PPG Paints 6-2 Speedhide Latex Sealer
   2. Two coats of interior latex- as PPG Paints 6-4310 SpeedHide Zero, eggshell finish

3.8 SCHEDULE

A. COLOR: To be selected from Manufacturers full range of colors.

B. REFER to DRAWINGS. Work includes all items affected by the scope of the work, interior and exterior.

C. Refer to Section 012300 – Alternates.

D. Final paint schedules to be released after approved submittals of paint and coatings.
   1. Interior
      a. P1 - SW 7004 Snowbound, Eggshell
      b. P2 – SW1015 Sky Line Steel, Eggshell
      c. P3 – SW9165 Gossamer Veil, Eggshell
      d. P4 – SW 7649 Silver Plate, Eggshell
      e. P5 - SW9170 Acier, Semigloss
   2. Exterior Schedule
      a. PT-1 Doors
      b. PT-2: select handrail, guardrail, frames c. wall
      c. PT-3: select concrete wall at entry
      d. PT-4: concrete wall at stair, foundation wall, paintable synthetic trim board

ROOM SCHEDULE

ROOM	WALLS	TRIM
MEN & WOMEN RESTROOM	P1	P5
FOYER	P3	P5
HALL	P3	P5
OFFICER WORK ARES	P3	P5
SERGEANT ROOM	P2	P5
LIEUTENANT ROOM	P2	P5
LADIES OFFICE	P2	P5
COMMANDER OFFICE	P4	P5
PETERSON OFFICE	P4	P5
ASSISTANT CHIEF OFFICE	P4	P5
CLASSROOM	P4	P5
RESOURCE OFFICER OFFICE	P2	P5

END OF SECTION

SECTION 122413 - WINDOW ROLLER SHADES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Roller shades, manual operation and accessories. Typical for all exterior windows.

B. Shade fabric. To be selected by owner from mfr full line including fabric and degree of light transmittance.

1.2 RELATED SECTIONS

A. Section 06100 - Rough Carpentry: Wood blocking and grounds for mounting roller shades and accessories.

B. Section 09260 - Gypsum Board Assemblies: Coordination with gypsum board assemblies for installation of shade pockets, closures and related accessories.

C. Section 09510 - Acoustical Ceilings: Coordination with acoustical ceiling systems for installation of shade pockets, closures and related accessories.

1.3 REFERENCES

A. ASTM International (ASTM):
1. ASTM G21 and E 2180 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.

B. Cradle to Cradle Products Innovation Institute (C2C):
1. C2C (DIR) - C2C Certified Products Registry.

C. National Fire Protection Association (NFPA):
1. NFPA 701 - Standard Methods of Fire Tests for Flame Propagation of Textiles and Films.

D. Window Covering Manufacturers Association (WCMA):
1. WCMA A100.1 - Safety of Window Covering Products; 2018.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: One week prior to commencing work related to this section. Require attendance of all affected installers.

B. Sequencing:
1. Do not fabricate shades until field dimensions for each opening have been taken with finished conditions in place. "Hold to" dimensions are not acceptable.
2. Do not install shades until final surface finishes and painting are complete.

1.5 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Bid Submittal: Information Required with Submittal of Bid: In order to evaluate proposals for integrated lighting control and window shade systems, the Architect requires the following information be submitted prior to the award of the system.
1. Bid proposal shall be accompanied with a document that notes all deviations from these specifications on a line-by-line basis.

C. Product Data: Manufacturer's catalog pages and data sheets for products specified including materials, finishes, dimensions, profiles, mountings, and accessories.
1. Preparation instructions and recommendations.
2. Styles, material descriptions, dimensions of individual components, profiles, features, finishes , accessories, and operating instructions.
3. Storage and handling requirements and recommendations.
4. Mounting details and installation methods.
5. Manufacturer's Instructions: Include storage, handling, protection, examination, preparation, and installation.
6. Project Record Documents: Record actual locations of control system components and show interconnecting wiring.
7. Operation and Maintenance Data: Component list with part numbers, and operation and maintenance instructions.

D. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, and relationship to adjacent work.
1. Prepare shop drawings on AutoCad or MicroStation format using base sheets provided electronically by the Architect.
2. Provide location plan showing all manual shade control locations. Cross-reference furniture plans for optimal positioning of chains.
3. Provide elevation drawings showing shade band layout. Indicate any necessary seam or batten locations, and align with horizontal mullions where possible.

A. Window Treatment Schedule: For all roller shades. Use same room designations as indicated on the Drawings and include opening sizes and key to typical mounting details.

B. Verification Samples: For each finish product specified, one complete set of shade components, unassembled, demonstrating compliance with specified requirements.
4. Shadecloth Sample: Mark face of material to indicate interior faces.
a. Test reports indicating compliance with specified fabric properties.
b. Verification Samples: 6 inches (150 mm) square, representing actual materials, color and pattern.

C. Maintenance Data: Bill of materials for all components with part numbers. Methods for maintaining roller shades, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.

D. Warranty: Provide manufacturer's warranty documents as specified in this Section.

1.6 QUALITY ASSURANCE

A. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 3 EXECUTION

3.1 EXAMINATION

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

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

C. Start of installation shall be considered acceptance of substrates.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using methods recommended by manufacturer for achieving best result for substrate under the project conditions.

C. Coordinate with window installation and placement of concealed blocking to support shades.

3.3 INSTALLATION

A. DO NOT installed on widow system. , mount to wall or header. No exceptions.

B. Contractor Furnish and Install Responsibilities:
1. Window Covering Contractor (WC) shall provide an on site, Project Manager, and shall be present for all related jobsite scheduling meetings.
2. WC shall supervise the roller shade installation, and setting of intermediate stops of all shades.
3. WC shall be responsible for field inspection on an area-by- area and floor-by-floor basis during construction to confirm proper mounting conditions per approved shop drawings.
4. Verification of Conditions: examine the areas to receive the work and the conditions under which the work would be performed and notify General Contractor and Owner of conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected. Commencement of installation shall constitute acceptance of substrate conditions by the installer.
5. WC shall provide accurate to 0.0625" inch (1.5875mm); field measurements for custom shade fabrication on the Roller Shades manufacturers input forms.
6. WC Installer shall install roller shades level, plumb, square, and true according to manufacturer's written instructions, and as specified here in. Blocking for roller shades installed under the contract of the interior General Contractor shall be installed plumb, level, and fitted to window mullion as per interior architect's design documents and in accordance with industry standard tolerances. The horizontal surface of the shade pocket shall not be out-of-level more than 0.625" (15.875mm) over 20 linear feet (6.096 meters)
7. Shades shall be located so the shade band is not closer than 2 inches (50 mm) to the interior face of the glass. Allow proper clearances for window operation hardware.
8. Adjust, align and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

9. Installer shall set Upper and Lower limits of all manual shade bands, and assure alignment in accordance with the above requirements.
10. Clean roller shade surfaces after installation, according to manufacturer's written instructions.
11. WC shall train Owner's maintenance personnel to adjust, operate and maintain roller shade systems.
    a. Use operation and maintenance manual as a reference, supplemented with additional training materials as required.

3.4 PROTECTION AND CLEANING

A. Protect installed products until completion of project.

B. Touch-up, repair or replace damaged products before Substantial Completion.
1. Clean soiled shades and exposed components as recommended by manufacturer.
2. Replace shades that cannot be cleaned to "like new" condition.

C. Shades shall be provided for all exterior windows.

END OF SECTION 12496

1. Fabricator Qualifications: Minimum of three years documented experience in fabricating solid surfacing countertops similar in scope and complexity to this Project. Currently certified by the manufacturer as an acceptable fabricator.
2. Installer Qualifications: Minimum of three years documented installation experience for projects similar in scope and complexity to this Project, and currently certified by the manufacturer as an acceptable installer. [Installer shall be the fabricator].

1.7 DELIVERY, STORAGE, AND HANDLING

A. Storage and Protection: Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer. Store sheet materials flat on pallets or similar rack-type storage to preclude damage.

1.8 PROJECT CONDITIONS

A. Field Measurements: Verify actual measurements and openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements and fabrication schedule with construction progress to avoid construction delays.

B. Adhesive: Acclimatize adhesives to occupancy room temperatures with maximum temperature not to exceed 75 deg F.

1.9 WARRANTY

A. Manufacturer's Limited Warranty: Provide manufacturer's standard 10 Year Commercial Limited Warranty against defects in solid surface sheet materials.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis of Design: Wilsonart LLC.
B. Section 016000: Substitutions

2.2 SOLID SURFACE SHEET MATERIAL

A. Acceptable Product: Wilsonart Solid Surface, or approved equal.

B. Composition: Acrylic resins, fire-retardant mineral fillers, and proprietary coloring agents. Through-the-body color for full thickness of sheet material.

C. Material Thickness: 1/2 inch, nominal.

D. Conformance Standards:

1. UL 2818:

a. GREENGUARD - Emission levels in UL 2818, Section 7.1 are applicable for furniture products.
b. GREENGUARD Gold - Emission levels in UL 2818, Section 7.2 are applicable for building materials, finishes, and furnishings.

E. Physical Characteristics:

1. Tensile Strength: [6800 psi]; ASTM D 638.
2. Tensile Modulus: [1.5 x 10^6 psi]; ASTM D 638.
3. Tensile Elongation: 0.4 percent minimum; ASTM D 638.
4. Flexural Strength: [10,000 psi]; ASTM D 790.
5. Flexural Modulus: [1.5 x 10^6 psi]; ASTM D 790.
6. Thermal Expansion Coefficient: 1.37 x 10^{-5} in./in.^{o}F; ASTM D 696.
7. Hardness (Barcol Impressor): 55-62; ASTM D 2583.
8. Impact Resistance: [144 in.] drop with no fracture; NEMA LD-3, Method 3.8.
9. Izod Impact: 0.28 (ft-lb.)/in.; ASTM D 256, Method A.
10. Light Resistance - Xenon: No effect; NEMA LD-3, Method 3.3.
11. Stain Resistance: Pass; ANSI Z 124.3, modified.
12. Wear and Cleanability: Pass; ANSI Z 124.3.
13. Fungi Resistance: Pass; ASTM G 21.
14. Bacterial Resistance: Pass; ASTM G 22.
15. Boiling Water Resistance: No effect; NEMA LD-3, Method 3.5.
16. High Temperature Resistance: No effect; NEMA LD-3, Method 3.6.
17. Weatherability: Delta E less than 5; ASTM G 155.
18. Moisture Absorption: Less than 0.25 percent; ASTM D 570, long term.
19. Specific Gravity: 1.7 gram/cm^3; ASTM D 792.
20. Weight:[4.4 lb./ft^2.
21. Surface Burning Characteristics: Class I and Class A; ASTM E 84.

F. Color, Pattern, and Finish Design: To be selected by Architect from Manufacturers Full Range.

G. Sill Edge Detail: Indicated on Drawings.

SECTION 22 11 20 – PLUMBING SPECIALITES – ROOF DRAINS

PART 1 - GENERAL

1.1 PERFORMANCE REQUIREMENTS

A. Minimum working pressure for plumbing specialties is 125 PSIG

1.2 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Operation and Maintenance Data: For domestic water piping specialties to include in emergency, operation, and maintenance manuals.

1.3 QUALITY ASSURANCE

A. NSF Compliance:

1. Comply with NSF 14, "Plastics Piping Components and Related Materials," for plastic domestic water piping components.
2. Comply with NSF 61, "Drinking Water System Components - Health Effects; Sections 1 through 9."

PART 2 - PRODUCTS

2.1 ROOF DRAIN COMPONENTS

A. RD/OD-1 – Side by Side Roof Drain and Overflow Drain Zurn Z164. Provide all accessories to meet detail on architectural roof plans.

B. OO-1 - Cow Tongue shall be Zurn Z199-DC all nickel bronze body. Provide hinged removable stainless steel screen.

Police Roll Call West Envelope and HVAC Project
Lexington Fayette Urban County Government
LFUCG RFP No. 78-2024

Tate Hill Jacobs Architects
Construction Documents
May 3, 2024

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install roof drain per details in Architectural Drawings and manufacturer's instructions.

B. All roof drain piping shall be insulated.

END OF SECTION

2) For Plastic Pipes: ASTM F 477, elastomeric seal or ASTM D 5926, PVC.
3) For Dissimilar Pipes: ASTM D 5926, PVC or other material compatible with pipe materials being joined.

PART 3 - EXECUTION

3.1 PIPING INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on coordination drawings.

B. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

E. Install piping at indicated slopes.

F. Install piping free of sags and bends.

G. Install fittings for changes in direction and branch connections.

H. Make changes in direction for piping using appropriate branches, bends, and long-sweep bends. Sanitary tees and short-sweep 1/4 bends may be used on vertical stacks if change in direction of flow is from horizontal to vertical. Use long-turn, double Y-branch and 1/8-bend fittings if two fixtures are installed back to back or side by side with common drain pipe. Straight tees, elbows, and crosses may be used on vent lines. Do not change direction of flow more than 90 degrees. Use proper size of standard increasers and reducers if pipes of different sizes are connected. Reducing size of drainage piping in direction of flow is prohibited.

I. Install aboveground PVC piping according to ASTM D 2665.

J. Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

3.2 JOINT CONSTRUCTION

A. Plastic, Nonpressure-Piping, Solvent-Cement Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
2. PVC Piping: Join according to ASTM D 2855 and ASTM D 2665 Appendixes.

3.3 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for seismic-restraint devices specified in Section 220548 "Vibration and Seismic Controls for Plumbing Piping and Equipment."

B. Comply with requirements for pipe hanger and support devices and installation:

1. Install galvanized **carbon-steel** pipe hangers for horizontal piping in noncorrosive environments.
2. Install individual, straight, horizontal piping runs:

a. 100 Feet (30 m) and Less: MSS Type 1, adjustable, steel clevis hangers.

C. Rod diameter may be reduced one size for double-rod hangers, with 3/8-inch (10-mm) minimum rods.

D. Install hangers for PVC piping with the following maximum horizontal spacing and minimum rod diameters:

1. NPS 1-1/2 and NPS 2 (DN 40 and DN 50): 48 inches (1200 mm) with 3/8-inch (10-mm) rod.
2. NPS 3 (DN 80): 48 inches (1200 mm) with 1/2-inch (13-mm) rod.
3. NPS 4 and NPS 5 (DN 100 and DN 125): 48 inches (1200 mm) with 5/8-inch (16-mm) rod.
4. NPS 6 and NPS 8 (DN 150 and DN 200): 48 inches (1200 mm) with 3/4-inch (19-mm) rod.

E. Install supports for vertical PVC piping every 48 inches (1200 mm).

3.4 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties.

SECTION 23 00 00 – GENERAL MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Furnish all labor, materials, equipment, and incidentals necessary to provide a complete and operational mechanical system as shown on the Drawings and as specified herein.

B. Installation of equipment that has not been specifically detailed in the Drawings shall be installed per that equipment manufacturer's recommended installation instructions or industry Standard Methods. All hardware and materials required for said equipment installation shall be included in the bid price.

1.2 TEMPORARY HEATING AND COOLING TO PREVENT FREEZING AND MOLD

A. Contractor shall provide enough temporary heat via non electric means in all areas of the building during construction to prevent piping from freezing. Use of Owner's electric must be approved by the Owner. Temperatures in winter shall be maintained above 37 degrees in areas that contain water filled piping.

B. Contractor shall provide enough 24-hour continuous ventilation throughout the building during all days where dewpoint could cause sweating on building surfaces. This requires the interior components of the building and the exterior ambient air dewpoint of the building, to be of the same dewpoint.

C. Refer elsewhere in this Specification Section for additional requirements for using temporary air conditioning with new equipment.

1.3 RELATED WORK SPECIFIED ELSEWHERE

A. Drawings and general provisions of the Contract, including General Supplementary Conditions and Divisions 0 and 1 Specification sections, apply to work of this section. Additional work incidental to the Mechanical System work shall be done under other Sections of the Specifications. Carefully review the entire contents of the bidding documents.

1.4 PROTECTION OF MATERIALS, WORKS, AND GROUNDS

A. Materials, fixtures, and equipment shall be properly protected and all pipe openings shall be temporarily closed so as to prevent obstruction and damage.

B. Protect and preserve all materials, supplies, and equipment of every description and all work performed. Damages shall be repaired or replaced promptly at no additional cost to the Owner.

1.5 CLEANING

A. During the progress of the work, clean up and remove all oil, grease, and other debris. At completion, clean all equipment, piping, and duct systems, remove all stickers, non-permanent tags, and leave work in perfect operating condition.

1.6 DRAWINGS

A. All work shown on the Drawings is intended to be approximately correct to scale, but figures, dimensions, and detailed drawings are to be followed in every case. The Drawings shall be taken in a sense as diagrammatic. Size of pipes and ducts and methods of running them are shown, but it is not intended to show every offset and fitting, nor every structural difficulty that may be encountered. To carry out the true intent and purpose of the Drawings, all necessary parts to make complete working systems ready for use shall be furnished without extra charge. All work shall be installed in such a manner to avoid being unsightly.

B. Locations of equipment and piping shown on the Drawings are approximate, and it is intended that all equipment shall be located in accordance with the general and detail Drawings of the construction proper. All measurements shall be taken at the site. UTILIZE ONLY DIMENSIONED ARCHITECTURAL DRAWINGS FOR LAYING OUT WORK. SCALING OF DRAWINGS FOR FIELD WORK IS UNACCEPTABLE.

1.7 CODES, ORDINANCES, STANDARDS

A. The minimum standard for all work shall be the latest revision of the Kentucky Building Code (KBC) and its references. Whenever and wherever state laws and/or regulations and/or the Engineer's design requires a higher standard than the current Code, then these laws and/or regulations and/or the design shall be followed.

B. Contractor's performing HVAC work or plumbing work shall be licensed in the State of Kentucky.

C. All refrigeration systems work shall conform to ASHRAE Standard 15, "Safety Code for Mechanical Refrigeration."

D. Project shall conform to requirements of ASHRAE 62.1-2004, "Ventilation for Acceptable Indoor Air Quality".

E. O & M manuals shall be submitted on CD disk in PDF format along with the required paper copies. Contractor shall send same PDF format information to Facility Management System Contractor to incorporate into the operating system software.

1.14 POWER SUPPLY

A. Refer to Division 26 Electrical and the Contract Drawings (except as noted herein).

1.15 SITE VISIT

A. It shall be the responsibility of the bidder to visit the site before submitting his bid, and thoroughly note the conditions under which the work will be installed. No extra compensation will be later allowed for necessary work not figured that should have been foreseen.

1.16 REMOVAL OF EXISTING EQUIPMENT

A. De-energize, remove and dispose off the site, the existing fans, pipes, pumps, heaters, tanks, ductwork, fan coils, chiller, air handlers, and all existing equipment, etc.

B. Wherever the word "Remove" is noted for demolition that shall mean the Contractor fully removes the equipment or item and disposes of it offsite in an approved manner. The Owner has no further liability of the removed item.

1.17 MECHANICAL DEMOLITION

A. See general mechanical demolition notes on the Architectural and Mechanical demolition drawings for requirements. Additional notes for cutting and patching are noted below.

1.18 ACCEPTANCE

A. After the various systems are completed and at which time the Engineer shall deem appropriate, the Contractor shall run an operation test for acceptance of each system. The Contractor shall adjust all valves, equipment, controls and accessories so as to obtain maximum operating efficiency. Failure of any component to perform as specified shall constitute cause for rejection and removal. The Contractor shall instruct the Owner's representative in the operation of the system. See individual technical sections for additional requirements.

1.19 NOISE AND VIBRATION

A. Install vibration isolators, flexible connectors, expansion joints, and other safety measures to prevent noise and vibration from being transmitted to occupied areas. Equipment shall be selected to operate within the noise level recommended for the particular type installation in relation to its location.

B. Following installation, make proper adjustments to eliminate excessive noise and vibration.

1.20 CUTTING AND PATCHING

A. Cutting and patching shall be held to an absolute minimum, and such work shall be done only under the direction of the Engineer/Architect. The Contractor shall be responsible for and pay for all openings that may be required in the walls, floors, and roofs, to accommodate the work, and shall be conducted at the project site by qualified representative of the manufacturer.

B. Contractor must first locate concealed concrete steel prior to core drilling. Cutting of concrete reinforcing steel is not allowed. Steel can be located with appropriate investigative testing equipment.

C. Prior to cutting of any floors or walls, all conduits must be located prior to the cutting through the use of sounding test equipment. Such equipment is readily available through local electrical companies and other sources. If a pipe or electrical circuit is damaged during cutting/demolition the Contractor shall repair the damaged item back to original condition. Absolutely no extras will be allowed for the replacement of damaged electrical conduits, pipes, etc. in floors walls, and ceilings that are to remain.

1.21 OWNER TRAINING

A. All manufacturers supplying equipment for this division shall provide the Owner's operations staff with training in the operation and maintenance on the equipment being furnished. The training shall be conducted at the project site by a qualified representative of the manufacturer.

B. The cost of this training shall be included in the bid price.

C. The required training shall consist of both classroom and hands-on situation. Classroom training shall include instruction on how the equipment works, its relationship to all accessories and other related units, detailed review of shop drawings, detailed presentation of written O&M instructions, troubleshooting and record-keeping recommendations. Hands-on training shall include a review of the manufacturer's O&M instructions, check out of each operators identifying key elements of the equipment, tear down as appropriate, calibration, adjustment, greasing and oiling points, and operating manipulations of all electrical and mechanical controls.

A. Access to mechanical equipment/devices that is located behind chases and above drywall ceilings that require maintenance or have electrical connections (requiring access in any way) shall be coordinated and included with the Architectural Trades. No extras will be allowed for the addition of access doors to such equipment. It is this Contractor's responsibility to ensure that access doors have been accounted for.

PART 2 - PRODUCTS

(Not Applicable)

PART 3 - EXECUTION

(Not Applicable)

END OF SECTION

SECTION 23 05 23 – VALVES

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This Section includes general duty valves common to HVAC piping systems.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Divisions 0 and 1 Specification Sections, apply to this Section.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Valve tags and charts are specified in Section 23 05 53 Section "Mechanical Identification."
2. Section 23 00 00 "General Mechanical Requirements".
3. Control valves are specified in Section 23 09 00 "Facility Management System".
4. Triple duty valves are specified in Section 23 21 13 "Hydronic Piping and Specialties".
5. Valves for Fire Suppression Systems are specified in Division 21.

1.3 SUBMITTALS

A. General: Submit each item in this Article according to the Section 23 00 00 General Mechanical Requirements, Conditions of the Contract and Division 1 Specification Sections.

B. Provide product Data for each valve type. Include body material, valve design, pressure and temperature classification, end connection details, seating materials, trim material and arrangement, dimensions and required clearances, and installation instructions. Include list indicating valve and its application.

C. Provide maintenance data for valves to include in the operation and maintenance manual specified in Division 1. Include detailed manufacturer's instructions on adjusting, servicing, disassembling, and repairing.

1.4 QUALITY ASSURANCE

A. ASME Compliance: Comply with ASME B31.9 for building services piping and ASME B31.1 for power piping.

B. MSS Compliance: Comply with the various MSS Standard Practice documents referenced.

1. Non-rising stem valves may be used only where headroom prevents full extension of rising stems.

B. Pressure and Temperature Ratings: As indicated in the "Application Schedule" of Part 3 of this Section and as required to suit system pressures and temperatures.

1. All valves for use with fire suppression systems shall be suitable for 175 PSIG

C. Sizes: Same size as upstream pipe, unless otherwise indicated.

D. All valves shall be installed so one side of the pipe can be removed while the valve can remain closed with water on the opposite.

E. Operators: Use specified operators and handwheels, except provide the following special operator features:

1. Handwheels: For valves other than quarter turn.

2. Lever Handles: For quarter-turn valves 5 inches (DN150) and smaller.

3. Chain-Wheel Operators: For valves 4 inches (DN100) and larger, installed 96 inches (2400 mm) or higher above finished floor elevation.

4. Gear-Drive Operators: For quarter-turn valves 6 inches (DN200) and larger.

F. EXTENDED STEMS: WHERE INSULATION IS INDICATED OR SPECIFIED, PROVIDE EXTENDED STEMS ARRANGED TO RECEIVE INSULATION AND TO ALLOW FULL OPERATION OF VALVE WITHOUT DISRUPTION TO INSULATION.

G. Bypass and Drain Connections: Comply with MSS SP-45 bypass and drain connections.

H. Threads: ASME B1.20.1.

I. Flanges: ASME B16.1 for cast iron, ASME B16.5 for steel, and ASME B16.24 for bronze valves.

J. Solder Joint: ASME B16.18.

1. Caution: Where soldered end connections are used, use solder having a melting point below 840 deg F (450 deg C) for gate, globe, and check valves; below 421 deg F (216 deg C) for ball valves.

K. All plumbing valves and products related to potable water shall be lead free (less than 0.25% lead content) and shall be in compliance with NSF/ANSI 372 for valve material for potable water. Bismuth or silicon copper alloy will be accepted.

2.3 GATE VALVES

A. Gate Valves, 2-1/2 Inches (DN65) and Smaller: MSS SP-80; Class 125, 200-psi (1380-kPa) cold working pressure (CWP), or Class 150, 300-psi (2070-kPa) CWP; ASTM B 62 cast-bronze

body and bonnet, solid-bronze wedge, copper-silicon alloy rising stem, teflon-impregnated packing with bronze packing nut, threaded or soldered end connections; and with aluminum or malleable-iron handwheel.

B. Gate Valves, 3 Inches (DN80) and Larger: MSS SP-70, Class 125, 200-psi (1380-kPa) CWP, ASTM A 126 cast-iron body and bonnet, solid cast-iron wedge, brass-alloy stem, outside screw and yoke, teflon-impregnated packing with 2-piece packing gland assembly, flanged end connections; and with cast-iron handwheel.

2.4 BALL VALVES

A. Ball Valves, 4 Inches (DN100) and Smaller: MSS SP-110, Class 150, 600-psi (4140-kPa) CWP, ASTM B 584 bronze body and bonnet, 2-piece construction; chrome-plated brass ball, standard port for ½-inch (DN15) valves and smaller and conventional port for 3/4-inch (DN20) valves and larger; blowout proof; bronze or brass stem; teflon seats and seals; threaded or soldered end connections:

1. Operator: Vinyl-covered steel lever handle.

2. Stem Extension: For valves installed in insulated piping.

3. Memory Stop: For operator handles. Use on all hydronic heat pump return connections.

2.5 BUTTERFLY VALVES

A. Butterfly Valves: MSS SP-67, 200-psi (1380-kPa) CWP, 150-psi (1035- kPa) maximum pressure differential, ASTM A 126 cast-iron body and bonnet, extended neck, stainless-steel stem, field-replaceable EPDM or Buna N sleeve and stem seals, lug for double threaded bolts, or grooved style:

1. Disc Type: Nickel-plated ductile iron.

2. Operator for Sizes 2 Inches (DN50) to 6 Inches (DN150): Standard lever handle with memory stop.

3. All valves shall be installed so one side of the pipe can be removed while the valve can remain closed with water on the opposite.

2.6 CHECK VALVES

A. Swing Check Valves, 2-1/2 Inches (DN65) and Smaller: MSS SP-80; Class 125, 200-psi (1380-kPa) CWP, or Class 150, 300-psi (2070-kPa) CWP; horizontal swing, Y-pattern, ASTM B 62 cast-bronze body and cap, rotating bronze disc with rubber seat or composition seat, threaded or soldered end connections:

B. Swing Check Valves, 3 Inches (DN80) and Larger: MSS SP-71, Class 125, 200-psi (1380-kPa) CWP, ASTM A 126 cast-iron body and bolted cap, horizontal-swing bronze disc, flanged or grooved end connections.

A. Note the internal length of threads in valve ends and proximity of valve internal seat or wall to determine how far pipe should be threaded into valve.

B. Align threads at point of assembly.

C. Apply appropriate tape or thread compound to the external pipe threads, except where dry seal threading is specified.

D. Assemble joint, wrench tight. Wrench on valve shall be on the valve end into which the pipe is being threaded.

3.5 FLANGED CONNECTIONS

A. Align flange surfaces parallel.

B. Assemble joints by sequencing bolt tightening to make initial contact of flanges and gaskets as flat and parallel as possible. Use suitable lubricants on bolt threads. Tighten bolts gradually and uniformly with a torque wrench.

C. For dead-end service, butterfly valves require flanges both upstream and downstream for proper shutoff and retention.

3.6 VALVE END SELECTION

A. Select valves with the following ends or types of pipe/tube connections:

1. Copper Tube Size, 2-1/2 Inches (DN65) and Smaller: Solder ends, except provide threaded ends for heating hot water and low-pressure steam service.

2. Steel Pipe Sizes, 2-1/2 Inches (DN65) and Smaller: Threaded or grooved end.

3. Steel Pipe Sizes, 3 Inches (DN80) and Larger: Grooved end or flanged.

3.7 APPLICATION SCHEDULE

A. General Application: Use gate, ball, and butterfly valves for shutoff duty; ball valve for throttling duty. Refer to piping system Specification Sections for specific valve applications and arrangements.

B. Domestic Water Systems: Use the following valve types:

1. Gate Valves: Class 125, bronze or cast-iron body to suit piping system.

2. Ball Valves: Class 150, 600-psi (4140-kPa) CWP, with stem extension.

3. Check Valves: Swing or Silent Class 125, type.

C. Heating Water Systems: Use the following valve types:

1. Gate Valves: Class 150, bronze or cast-iron body to suit piping system.

2. Ball Valves: Class 150, 600-psi (4140-kPa) CWP, with stem extension and memory stop.

3. Butterfly Valves: Nickel-plated ductile iron, aluminum bronze, or epoxy-coated ductile iron disc; EPDM or Buna N sleeve and stem seals.

4. Check Valves: Swing check shall be Class 150 with bronze seat ring.

D. Geothermal Condenser-Water Systems: Use the following valve types:

1. Gate Valves: Class 150, bronze body; or Class 125, cast-iron body.

2. Ball Valves: Class 150, 600-psi (4140-kPa) CWP, with stem extension and memory stop.

3. Butterfly Valves: Nickel-plated ductile iron, aluminum bronze, or elastomer-coated ductile iron disc; EPDM sleeve and stem seals.

4. Check Valves: Class 125, bronze body swing check with rubber seat; Class 125, cast-iron body swing check; Class 125, cast-iron body silent check; or Class 125.

3.8 ADJUSTING

A. Adjust or replace packing after piping systems have been tested and put into service, but before final adjusting and balancing. Replace valves if leak persists.

END OF SECTION

E. Insert Length: Extend 2 inches (50 mm) beyond sheet metal shield for piping operating below ambient air temperature.

F. PROVIDE ANTI-SLIP PIPE SADDLES PER DRAWINGS

2.4 FASTENER SYSTEMS

A. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened Portland cement concrete with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

B. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel anchors, for use in hardened Portland cement concrete; with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

2.5 EQUIPMENT SUPPORTS

A. Description: Welded, shop- or field-fabricated equipment support made from structural carbon-steel shapes.

2.6 STRUCTURAL COORDINATION (FASTENER SYSTEMS)- Do not use drilled powder-actuated fasteners for attaching hangers, support to precast, pre-stressed units. Attachment to the precast plank shall be located around tendon layout and shall incorporate fasteners designed for use in hollow concrete and that do not penetrate the concrete more than ¾" (such as drop-in anchors).

2.7 MISCELLANEOUS MATERIALS

A. Structural Steel: ASTM A 36/A 36M, carbon-steel plates, shapes, and bars; black and galvanized.

B. Grout: ASTM C 1107, factory-mixed and -packaged, dry, hydraulic-cement, non-shrink and nonmetallic grout; suitable for interior and exterior applications.
1. Properties: Non-staining, noncorrosive, and nongaseous.
2. Design Mix: 5000-psi (34.5-MPa), 28-day compressive strength.

PART 3 - EXECUTION

3.1 HANGER AND SUPPORT INSTALLATION (ALSO SEE DRAWINGS FOR DETAILS)

A. Metal Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Install hangers, supports, clamps, and attachments as required to properly support piping from the building structure.

B. Metal Trapeze Pipe-Hanger Installation: Comply with MSS SP-69 and MSS SP-89. Arrange for grouping of parallel runs of horizontal piping, and support together on field-fabricated trapeze pipe hangers.
1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified for individual pipe hangers.
2. Field fabricate from ASTM A 36/A 36M, carbon-steel shapes selected for loads being supported. Weld steel according to AWS D1.1/D1.1M.

C. Thermal-Hanger Shield Installation: Install in pipe hanger or shield for insulated piping.

D. Fastener System Installation:
1. Install powder-actuated fasteners for use in lightweight concrete or concrete slabs less than 4 inches (100 mm) thick in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
2. Install mechanical-expansion anchors in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.

E. Install hangers and supports complete with necessary attachments, inserts, bolts, rods, nuts, washers, and other accessories.

F. Equipment Support Installation: Fabricate from welded-structural-steel shapes.

G. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.

H. Install lateral bracing with pipe hangers and supports to prevent swaying.

I. Install building attachments within concrete slabs or attach to structural steel. Install additional attachments at concentrated loads, including valves, flanges, and strainers, NPS 2-1/2 (DN 65) and larger and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.

J. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.

K. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and to not exceed maximum pipe deflections allowed by ASME B31.9 for building services piping.

L. Insulated Piping:
1. Attach clamps and spacers to piping.
a. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
b. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.
c. Do not exceed pipe stress limits allowed by ASME B31.9 for building services piping.

2. Yoke-Type Pipe Clamps (MSS Type 2): For suspension of up to 1050 deg F (566 deg C), pipes NPS 4 to NPS 24 (DN 100 to DN 600), requiring up to 4 inches (100 mm) of insulation.
3. Carbon- or Alloy-Steel, Double-Bolt Pipe Clamps (MSS Type 3): For suspension of pipes NPS 3/4 to NPS 36 (DN 20 to DN 900), requiring clamp flexibility and up to 4 inches (100 mm) of insulation.
4. Adjustable, Steel Band Hangers (MSS Type 7): For suspension of noninsulated, stationary pipes NPS 1/2 to NPS 8 (DN 15 to DN 200).
5. U-Bolts (MSS Type 24): For support of heavy pipes NPS 1/2 to NPS 30 (DN 15 to DN 750).
6. Pipe Saddle Supports (MSS Type 36): For support of pipes NPS 4 to NPS 36 (DN 100 to DN 900), with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate.
7. Pipe Stanchion Saddles (MSS Type 37): For support of pipes NPS 4 to NPS 36 (DN 100 to DN 900), with steel-pipe base stanchion support and cast-iron floor flange or carbon-steel plate, and with U-bolt to retain pipe.
8. Single-Pipe Rolls (MSS Type 41): For suspension of pipes NPS 1 to NPS 30 (DN 25 to DN 750), from two rods if longitudinal movement caused by expansion and contraction might occur.
9. Complete Pipe Rolls (MSS Type 44): For support of pipes NPS 2 to NPS 42 (DN 50 to DN 1050) if longitudinal movement caused by expansion and contraction might occur but vertical adjustment is not necessary.

J. Vertical-Piping Clamps: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Extension Pipe or Riser Clamps (MSS Type 8): For support of pipe risers NPS 3/4 to NPS 24 (DN 24 to DN 600).
2. Carbon- Steel Riser Clamps (MSS Type 42): For support of pipe risers NPS 3/4 to NPS 24 (DN 20 to DN 600) if longer ends are required for riser clamps.

K. Hanger-Rod Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel Turnbuckles (MSS Type 13): For adjustment up to 6 inches (150 mm) for heavy loads.
2. Steel Clevises (MSS Type 14): For 120 to 450 deg F (49 to 232 deg C) piping installations.

L. Building Attachments: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel or Malleable Concrete Inserts (MSS Type 18): For upper attachment to suspend pipe hangers from concrete ceiling.
2. Top-Beam C-Clamps (MSS Type 19): For use under roof installations with bar-joist construction, to attach to top flange of structural shape.
3. Side-Beam or Channel Clamps (MSS Type 20): For attaching to bottom flange of beams, channels, or angles.
4. Center-Beam Clamps (MSS Type 21): For attaching to center of bottom flange of beams.
5. Welded Beam Attachments (MSS Type 22): For attaching to bottom of beams if loads are considerable and rod sizes are large.
6. C-Clamps (MSS Type 23): For structural shapes.

7. Welded-Steel Brackets: For support of pipes from below, or for suspending from above by using clip and rod. Use one of the following for indicated loads:
   a. Light (MSS Type 31): 750 lb (340 kg).
   b. Medium (MSS Type 32): 1500 lb (680 kg).
   c. Heavy (MSS Type 33): 3000 lb (1360 kg).
8. Side-Beam Brackets (MSS Type 34): For sides of steel or wooden beams.
9. Plate Lugs (MSS Type 57): For attaching to steel beams if flexibility at beam is required.

M. Saddles and Shields: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Steel-Pipe-Covering Protection Saddles (MSS Type 39): To fill interior voids with insulation that matches adjoining insulation.
2. Protection Shields (MSS Type 40): Of length recommended in writing by manufacturer to prevent crushing insulation.
3. Thermal-Hanger Shield Inserts: For supporting insulated pipe.

N. Spring Hangers and Supports: Unless otherwise indicated and except as specified in piping system Sections, install the following types:
1. Spring Cushions (MSS Type 48): For light loads if vertical movement does not exceed 1-1/4 inches (32 mm).
2. Spring-Cushion Roll Hangers (MSS Type 49): For equipping Type 41, roll hanger with springs.
3. Variable-Spring Base Supports (MSS Type 52): Preset to indicated load and limit variability factor to 25 percent to allow expansion and contraction of piping system from base support.

O. Comply with MSS SP-69 for trapeze pipe-hanger selections and applications that are not specified in piping system Sections.

P. Use powder-actuated fasteners instead of building attachments where required in concrete construction.

END OF SECTION

H. Lettering and Graphics: Coordinate names, abbreviations, and other designations used in mechanical identification, with corresponding designations indicated on the Drawings. Use numbers, letters, and terms indicated for proper identification, operation, and maintenance of mechanical systems and equipment.

1. Multiple Systems: Where multiple systems of same name are indicated, identify individual system number as well as service (such as Boiler No. 3, Air Supply No. 1H, or Standpipe F12).

PART 3 - EXECUTION

3.1 LABELING AND IDENTIFYING

A. Piping Systems: Install pipe markers on each system. Include arrows showing normal direction of flow.

1. Plastic markers, with application systems. Install on pipe insulation segment where required for hot non-insulated pipes.
   a. Fasten markers on pipes smaller than 6 inches by one of following methods:
      1) Adhesive lap joint in pipe marker overlap.

2. Locate pipe markers and color bands as follows wherever piping is exposed in finished spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations.
   a. Near each valve and control device.
   b. Near each branch connection, excluding short take-offs for fixtures and terminal units. Mark each pipe at branch, where flow pattern is not obvious.
   c. Near penetrations through walls, floors, ceilings, or enter non-accessible enclosures.
   d. At access doors, manholes, and similar access points that permit view of concealed piping.
   e. Near major equipment items and other points of origination and termination.
   f. Spaced at a maximum of 25-feet intervals along each run.
   g. On piping above removable acoustical ceilings, except omit intermediately spaced markers.

END OF SECTION

Police Roll Call West Envelope and HVAC Project
Lexington Fayette Urban County Government
LFUCG RFP No. 78-2024

Tate Hill Jacobs Architects
Construction Documents
May 3, 2024

B. The items requiring testing, adjusting, and balancing include but are not limited to the following:

1. AIR SYSTEMS:
   Heat Pump Units
   Make-Up Air Units and Systems
   Relief Fans
   Exhaust Fans
   Zone branch and main ducts
   Diffusers, Registers and Grilles

2. HYDRONIC SYSTEMS:
   Pumps
   System Mains and Branches
   Heat Pump Units

1.8 QUALIFICATIONS

A. Agency qualifications: The TAB Agency shall be a current member of a nationally recognized balance organization. This Organization shall provide the owner with National Guarantee document certifying the work of the TAB Agency. Acceptable organizations are Associated Air Balance Council (AABC) or National Environmental Balancing Bureau (NEBB).

1. The selected TAB Agency must provide proof of certification for the total project (air, water, sound, vibration, etc.).

2. The selected TAB Agency shall possess computers, cables, and software needed to operate the building control system. This requires the TAB Agency to be properly licensed and/or trained to run the Control contractor's software.

1.9 DEFINITIONS, REFERENCES AND STANDARDS

A. All work shall be in accordance with the latest edition of the National Standards, as published by the National Organization affiliated with the TAB Agency.

1.10 SUBMITTALS

A. Qualifications: The TAB Agency shall submit a company resume listing personnel and project experience in air and hydronic system balancing and a copy of the agency's test and balance engineer (TBE) certificate. Certification in noise, vibration, and air quality shall be submitted as the job requires.

B. Procedures and agenda: The TAB Agency shall submit the TAB procedures and agenda proposed to be used.

1.11 REPORTS

A. Final TAB Report – The TAB Agency shall submit the final TAB report for review by the engineer. All outlets, devices, HVAC equipment, etc., shall be identified, along with a numbering system corresponding to report unit identification. The TAB Agency shall submit a "National Project Performance Guaranty" assuring that the project systems were tested, adjusted and balanced in accordance with the project specifications and National Standards.

1. Submit 3 copies of the Final TAB Report.

B. General: Typewritten, or computer printout in letter-quality font, on standard bond paper, in 3-ring binder, tabulated and divided into sections by tested and balanced systems.

C. Include a certification sheet in front of binder signed and sealed by the certified testing and balancing engineer.

1. Include a list of the instruments used for procedures, along with proof of calibration.

D. Final Report Contents: In addition to the certified field report data, include the following:

1. Pump curves.

2. Fan curves.

3. Manufacturers' test data.

4. Field test reports prepared by system and equipment installers.

5. Other information relative to equipment performance, but do not include approved Shop Drawings and Product Data.

E. General Report Data: In addition to the form titles and entries, include the following data in the final report, as applicable:

1. Title page.

2. Name and address of testing, adjusting, and balancing Agent.

3. Project name.

4. Project location.

5. Architect's name and address.

6. Engineer's name and address.

7. Contractor's name and address.

8. Report date.

9. Signature of testing, adjusting, and balancing Agent who certifies the report.

10. Summary of contents, including the following:

2. Test Data: Include design and actual values for the following:
   a. Static head in feet of head or psig (kPa).
   b. Pump shutoff pressure in feet of head or psig (kPa).
   c. Actual impeller size in inches (mm).
   d. Full-open flow rate in gpm (L/s).
   e. Full-open pressure in feet of head or psig (kPa).
   f. Final discharge pressure in feet of head or psig (kPa).
   g. Final suction pressure in feet of head or psig (kPa).
   h. Final total pressure in feet of head or psig (kPa).
   i. Final water flow rate in gpm (L/s).
   j. Voltage at each connection.
   k. Amperage for each phase.

1.12 DEFICIENCIES

A. Any deficiencies in the installation or performance of a system or component observed by the TAB Agency shall be brought to the attention of the appropriate responsible person. Also notify the mechanical project representative from the Division of Engineering.

B. The work necessary to correct items on the deficiency listing shall be performed and verified by the affected contractor before the TAB Agency returns to retest. Unresolved deficiencies shall be noted in the final report.

PART 2 - INSTRUMENTATION

2.1 All instruments used for measurements shall be accurate and calibrated. Calibration and maintenance of all instruments shall be in accordance with the requirements of the National Standards.

PART 3 - EXECUTION

3.1 GENERAL

A. The specific systems shall be reviewed and inspected for conformance to design documents. Testing, adjusting and balancing on each identified system shall be performed. The accuracy of measurements shall be in accordance with national Standards. Adjustment tolerances shall be + or – 10% unless otherwise stated.

B. Equipment settings, including manual damper quadrant positions, manual valve indicators, fan speed control levers, and similar controls and devices shall be marked to show final settings.

C. All information necessary to complete a proper TAB project and report shall be per National Organization's standards unless otherwise noted. The descriptions for work required, as listed in this section, are guides to the minimum information needed.

3.2 AIR SYSTEMS

A. The TAB Agency shall verify that all ductwork, dampers, grilles, registers, and diffusers have been installed per design and set in the full open position. The TAB Agency shall perform the following TAB procedures in accordance with the National Standards:

1. For supply fans:
   a. Fan speeds – Test and adjust fan RPM to achieve design CFM. Confirm proper rotation direction.
   b. Current and Voltage – Test and record motor voltage and amperage, and compare data with the nameplate limits to ensure fan motor is not in or above the service factor.
   c. Pitot-Tube Traverse – Perform a Pitot-tube traverse of main supply and return ducts, as applicable to obtain total CFM.
   d. Outside Air – Test and adjust the outside air on applicable equipment using a Pitot-tube traverse. If a traverse is not practical use the mixed-air temperature method if the inside and outside temperature difference is at least 20 degrees Fahrenheit or use the difference between Pitot-tube traverses of the supply and return air ducts.
   e. Static Pressure – Test and record system static profile of each supply fan.

2. For exhaust fans:
   a. Fan speeds – Test and adjust fan RPM to achieve design CFM. Confirm proper rotation direction.
   b. Current and Voltage – Test and record motor voltage and amperage, and compare data with the nameplate limits to ensure motor is not in or above the service factor.
   c. Pitot-tube Traverse – Perform a Pitot-tube traverse of main exhaust ducts to obtain total CFM.

3. For relief fans:
   a. Fan speeds – Test and adjust fan RPM to achieve maximum and design CFM. Confirm proper rotation direction.
   b. Current and Voltage – Test and record motor voltage and amperage, and compare data with the nameplate limits to ensure motor is not in or above the service factor.
   c. Pitot-tube Traverse – Perform a Pitot-tube traverse of main exhaust ducts to obtain total CFM.

4. For zone, branch and main ducts:
   a. Adjust ducts to within design CFM requirements. As applicable, at least one zone balancing damper shall be completely open. Multi-diffuser branch ducts shall have at least one outlet or inlet volume damper completely open.

5. For diffusers, registers and grilles:
   a. Tolerances – Test, adjust, and balance each diffuser, grille, and register to within 10% of design requirements. Minimize drafts.
   b. Identification – Identify the type, location, and size of each grille, diffuser, and register. This information shall be recorded on air outlet data sheets.

6. For coils:
   a. Air Temperature – Once air flows are set to acceptable limits, take wet bulb and dry bulb air temperatures on the entering and leaving side of each cooling coil.

SECTION 23 07 00 – MECHANICAL INSULATION

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This Section includes all pipe, duct, and equipment insulation.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Divisions 0 and 1 Specification Sections, apply to this Section.

B. Related Sections: The following sections contain requirements that relate to this section:

1. Section 23 05 29 "Hangers and Supports" for pipe insulation shields and protection saddles.
2. Section 23 05 23 "Valves" for valve extension handles.
3. Section 23 00 00 "General Mechanical Requirements"

1.3 SUBMITTALS

A. General: Submit the following in accordance with Section 23 00 00 General Mechanical Requirements, Conditions of Contract and Division 1 Specification Sections.

1. Product data for each type of mechanical insulation identifying k-value, thickness, and accessories.
2. Identify insulation thickness and type used for each size of pipe duct or piece of equipment.
3. Provide installation details of field-applied jackets.

1.4 QUALITY ASSURANCE

A. Installer's Qualifications: The installer shall be an insulating subcontractor who has complete five projects of similar scale and complexity within the last three years.

Police Roll Call West Envelope and HVAC Project
Lexington Fayette Urban County Government
LFUCG RFP No. 78-2024

Tate Hill Jacobs Architects
Construction Documents
May 3, 2024

B. Fire Performance Characteristics: Conform to the following characteristics for insulation including facings, cements, and adhesives, when tested according to ASTM E 84, by UL or other testing or inspecting organization acceptable to the authority having jurisdiction. Label insulation with appropriate markings of testing laboratory.

1. Interior Insulation: Flame spread rating of 25 or less and a smoke developed rating of 50 or less.
2. Exterior Insulation: Flame spread rating of 25 or less and a smoke developed rating of 50 or less.

C. Products shall not contain asbestos, lead, mercury, or mercury compounds.

D. Products that come into contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

1.5 DEFINITIONS

A. Hot Surfaces: Normal operating temperatures of 100 deg F or higher.

B. Dual-Temperature Surfaces: Normal operating temperatures that vary from hot to cold.

C. Cold Surfaces: Normal operating temperatures less than 75 deg F.

D. Thermal Resistivity: "r-values" represent the reciprocal of thermal conductivity (k-value). Thermal conductivity is the rate of heat flow through a homogenous material exactly 1 inch thick. Thermal resistivities are expressed by the temperature difference in degrees F between two exposed faces required to cause one Btu to flow through one square foot of material, in one hour, at a given mean temperature.

E. Density: Is expressed in lb/cubic ft.

1.6 SEQUENCING AND SCHEDULING

A. Schedule insulation application after testing of piping and duct systems are tested and completed.

1.7 DELIVERY AND STORAGE OF MATERIALS

A. Deliver all materials to the job site and protect the insulation against dirt, water, chemical and mechanical damage before, during and after installation. Do not install damaged insulation and remove it from the job site.

4. Vapor Retarder Jacket (Factory applied): Aluminum foil reinforced with fiber glass yarn and laminated to fire-resistant kraft shall be secured with UL listed pressure sensitive tape and/or outward clinch expanding staples and vapor barrier mastic as needed.

2.4 DUCTWORK INSULATION

A. FLEXIBLE FIBER GLASS BLANKET: Manville Type 75, Knauf Duct Wrap, or Equal, meeting ASTM C 1290 Type III, flexible blanket.

1. 'K' ('ksi') Value: 0.27 at 75°F Mean Temperature (0.040 at 24°) is the minimum requirement. The total insulation R-value, however, must comply with the insulation schedule in Part 3 of this Section.

2. Operating Service Temperature Limits: 40°F to 250°F (4°C to 121°C).

3. Density: 0.75 lb/cu ft.

4. Vapor Barrier Jacket (Factory applied): FSK, Aluminum foil reinforced with fiber glass yarn and laminated to fire-resistant kraft shall be secured with UL listed pressure sensitive tape and/or outward clinched expanded staples and vapor barrier mastic as needed.

B. RIGID FIBER GLASS BOARD: Manville 814 Spin-Glas, 3 lb. Knauf insulation board, or equal, meeting ASTM C 612, Type 1A & IB; rigid board

1. 'K' ('ksi') Value : 0.23 at 75°F Mean Temperature (0.033 at 24°C).

2. Operating Temperature Limits:
0°F to 450°F (-18°C to 232°C) AP Jacket
40°F to 450°F (4°C to 121°C) FSK Jacket

3. Density: 3.0 lb/cu ft (48 kg/cu m).

4. Vapor Retardant Jacket (Factory applied): AP, bleached kraft paper bonded to aluminum foil, reinforced with fiber glass yarn; or FSK, Aluminum foil reinforced with fiber glass yarn and laminated to fire-resistant kraft shall be secured with UL listed pressure sensitive tape and/or outward clinched expanded staples and vapor barrier mastic as needed.

C. DUCT LAGGING MATERIAL: Ducts shall have extra heavy material added to exterior of ductwork in vicinity of air handling equipment to limit breakout noise.

Indicated for sound attenuation only. See dashed lines per Drawings or RTU detail.

1. Material shall be Model LD-10 manufactured by Unger Technologies, inc.

2. Material shall not contain lead.

3. Material shall be installed to length indicated on Drawings.

4. Submittals are required for approval.

D. INTERNAL INSULATION: Permacote Linacoustic, meeting ASTM C 1071 with air surface coated with acrylic coating treated with EPA register anti-microbial agent proven to resist microbial growth as determine by ASTM G 21 and G 22.

Indicated for sound attenuation only. See dashed lines per Drawings or RTU detail.

1. 'K' ('ksi') Value: Per ASTM C 518, 0.25 at 75 deg F Mean Temperature.

2. Noise Reduction Coefficient: 0.070 or higher based on "Type A mounting" and tested in accordance to ASTM C 423.

3. Maximum Velocity: 5,000 ft/min

4. Adhesive: meeting ASTM C 919. Coverage to be no less than 90% of duct surface.

E. FIELD-APPLIED JACKETS

1. Field-applied jackets shall comply with ASTM C 921, Type I, unless otherwise indicated.

2. FSK Jacket: Aluminum-foil-face, fiberglass-reinforced scrim with kraft-paper backing.

F. ADHESIVES

1. Military Specification in this article was the only standard available when this Section was written. MIL-A-3316C was last updated in October 1987.

2. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.

3. For indoor applications, adhesive shall have a VOC content of 80 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

4. Adhesive shall comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile

C. Exterior insulation: After adhesive has fully cured, apply 2 coats of protective coating to exposed insulation.

3.4 DUCT INSULATION

A. Ductwork External Insulation:

1. Seal all vapor retardant jacket seams and penetrations with UL listed tapes or vapor retardant adhesive.

2. Seal all seams, penetrations, and connection with flexible ductwork with UL listed Aluminum Foil tape.

3. Provide insulated ductwork conveying air above ambient temperature with or without vapor retardant jacket. Where service access is required, bevel and seal ends of insulation.

4. Continue insulation through walls, sleeves, hangers, and other duct penetrations except where prohibited by code.

5. The underside of duct work 24" or greater shall be secured with mechanical fasteners and speed clips spaced approximately 18" on center. The protruding ends of the fasteners should be cut off flush after the speed clips are installed, and then, when required, sealed with the same tape as specified above.

3.5 APPLICATIONS

A. General: Materials and thicknesses are specified in following paragraph in schedules at the end of this Section.

B. Interior, Exposed Piping Systems: Unless otherwise indicated, insulate the following piping systems:

1. All interior supply and return hydronic hot, chilled, valves, specialties, and pumps.

C. Interior, Concealed Piping Systems: Unless otherwise indicated, insulate the following piping systems:

1. All interior condensate from heat pumps.

D. Equipment: Unless otherwise indicated, insulate the following indoor equipment:

E. Duct Systems: Unless otherwise indicated, insulate the following duct systems:

1. Interior concealed supply and outside air ductwork.

2. Interior exposed supply and outside air ductwork.

3. Exhaust Ductwork – last 10' prior to exhaust fan.

3.6 PIPING INSULATION SCHEDULE

A. FIBERGLASS INSULATION

Roof Drain Bodies	all sizes	1.0"
Roof Drainage from drain	all sizes	1.0"

B. ELASTOMERIC FOAM – Condensate ONLY!!!

Condensate Piping Only	all sizes	0.75
VRF piping – Suction, Liquid and Discharge *(2 and 3 pipe VRF configurations)	all sizes	1"
Refrigerant Suction	all sizes	1.0
Refrigerant Hot Gas	< 1" - 0" , > 1" – 0.75"	

3.7 DUCTWORK INSULATION SCHEDULE

	Minimum (installed) R Value	FINISH
A. Flexible Fiber Glass		
Exhaust Ducts Within 10 ft (3 m) of Exterior Openings	6	FSK
Air Ventilation Equipment Casings	6	
Supply Ducts (Cooling Systems)	6	FSK
Return Ducts in Unconditioned Spaces	8	FSK
MAU Supply/Return Ducts (70-75deg)	None	
MAU Exhaust/Outside Air Intake to Indoor unit	8	FSK
B. Rigid Fiber Glass		
Outside Air Intake Ducts	8	FSK
Plenums (Cooling Systems)	8	FSK
Return and Relief Ducts in Mechanical Rooms	6	FSK
Supply Ducts Exposed to Outdoor	8	FSK
Exhaust Ducts Exposed to Outdoor	8	FSK

END OF SECTION

L. ANSI/ASTM B88 - Seamless Copper Water Tube.

M. ANSI/ASTM F708 - Design and Installation of Rigid Pipe Hangers.

N. MSS SP69 - Pipe Hangers and Supports - Selection and Application.

O. MSS SP89 - Pipe Hangers and Supports - Fabrication and Installation Practices.

1.5 QUALITY ASSURANCE

A. ASME Compliance: Comply with the following provisions:

1. ASME B31.9, "Building Services Piping," for materials, products, and installation. Safety valves and pressure vessels shall bear the appropriate ASME label.

2. Fabricate and stamp air separators and compression tanks to comply with ASME Boiler and Pressure Vessel Code, Section VIII, Division 1.

3. Welding Standards: Qualify welding processes and operators according to ASME Boiler and Pressure Vessel Code, Section IX, "Welding and Brazing Qualifications."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Accept pipe materials on site in shipping containers with labeling in place. Inspect for damage.

B. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

C. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

D. Store all pipe in trailers, covered buildings or equivalent. Do not store pipe directly on the earth.

1.7 REGULATORY REQUIREMENTS

A. Conform to ANSI/ASME B31.9 code for installation of piping system.

B. Welding Materials and Procedures: Conform to ANSI/ASME SEC 9 and applicable state labor regulations.

C. Provide certificate of compliance from authority having jurisdiction indicating approval of welders.

1.8 SYSTEM DESCRIPTION

A. Where more than one piping system material is specified, ensure system components are compatible and joined to ensure the integrity of the system is not jeopardized. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing is consistently provided.

B. Use grooved mechanical couplings and fasteners only in accessible locations.

C. Use unions, flanges, and couplings downstream of valves and at equipment or apparatus connections. Do not use direct welded or threaded connections to valves, equipment or other apparatus.

D. Use non-conducting dielectric connections whenever jointing dissimilar metals in open systems.

E. Provide pipe hangers and supports in accordance with MSS SP69 unless indicated otherwise.

F. Use ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.

G. Use 3/4 inch ball valves with cap for drains at main shut- off valves, low points of piping, bases of vertical risers, and at equipment.

1.9 COORDINATION

A. Coordinate layout and installation of piping with equipment and with other installations.

B. Coordinate pipe sleeve installation for foundation wall penetrations.

C. Coordinate installation of roof curbs, equipment supports, and roof penetrations.

D. Coordinate pipe fitting pressure classes with products specified in related Sections.

E. Coordinate size and location of concrete housekeeping pads. Cast anchor-bolt inserts into pad. Concrete, reinforcement, and formwork requirements are specified in Division 3 Sections.

F. Coordinate installation of pipe sleeves for penetrations in exterior walls and floor assemblies. Coordinate with requirements for firestopping specified in Division 21 Section "Firestopping" for fire and smoke wall and floor assemblies.

F. Piping shall be installed substantially as shown on the drawings. The location of the piping is approximate and schematic. The actual installed locations shall provide adequate headroom, harmonize with other work, and permit easy access to and removal of valves, control valves, equipment and testing equipment. The Contractor shall verify the exact location of piping and space conditions on the job.

G. Remove scale and dirt on inside and outside before assembly.

H. Prepare piping connections to equipment with flanges or unions.

I. After completion, fill, clean, and treat systems.

3.2 INSTALLATION

A. The Contractor shall carefully investigate the structural and finish conditions affecting all his work and arrange his work accordingly. The drawings are generally indicative of the work to be installed, and it is not possible to indicate all fittings and specialties. The Contractor shall furnish such offsets and fittings and specialties as may be required to meet the working condition. If required by the building conditions, deviations may be made to the system after securing the consent of the Architect.

B. Piping shall be installed so as to provide access to valves, traps and equipment furnished under this contract and that furnished under other contracts. Piping, valves, fittings and other parts shall be so installed as to provide a clearance of not less than 2" between such work or its insulation covering and all adjacent work whether installed under this or other contracts. Coordinate size and location of access doors.

C. Pipe shall be cut accurately to measurements established at the building and shall be worked into place without springing or forcing. Proper allowances shall be made for expansion and contraction of pipe by means of expansion loops, pipe anchors and alignment guides.

D. Where copper connections are made of steel or galvanized lines and tanks, dielectric NIPPLES shall be used to prevent electrolysis. Dielectric Unions are not acceptable.

E. All piping shall be pitched up in the direction of flow at 1" in 20' unless otherwise noted. High points shall have air vents as noted on the drawings.

F. Piping shall be installed with clearance between exposed piping or between outside of covering on insulated piping and adjoining work. Pipe at or in the ceiling shall be hung from the construction above and as close as possible to the bottom of beams. Control valves shall be located to give complete regulation of systems and other equipment and shall be easily accessible.

G. Piping inside building shall be properly graded to drain to a low point where the system can be emptied. No portions of the piping system shall trap water that cannot be drained. Drains shall be installed at all low points. Install drains at low points in mains, risers, and branch lines consisting of a tee fitting, 3/4-inch NPS (DN20) ball valve, and short 3/4-inch NPS (DN20) threaded nipple and cap.

H. Changes in size of piping shall be made by reducing fittings. Eccentric reducer fittings shall be installed with the level side up. Bushings will not be permitted.

I. Install branch connections to mains using tee fittings in main with takeoff out bottom of main, except for up-feed risers with takeoff out top of main line.

J. Install unions in pipes 2-inch NPS (DN50) and smaller, adjacent to each valve, at final connections of each piece of equipment, and elsewhere as indicated. Unions are not required at flanged connections.

K. Install flanges on valves, apparatus, and equipment having 2-1/2-inch NPS (DN65) and larger connections.

L. Install flexible connectors at inlet and discharge connections to pumps full line size and other vibration-producing equipment.

M. Install strainers on supply side of each control valve, pressure-reducing valve, pressure-regulating valve, and elsewhere as indicated. Install 3/4-inch NPS (DN20) nipple and ball valve in blow-down connection of strainers 2-inch NPS (DN50) and larger.

N. Anchor piping to ensure proper direction of expansion and contraction.

O. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer upon completion of welding.

P. At conclusion of the installation, or as each section of the piping is completed to a point where it may be successfully valved, plugged or otherwise blanked off from the rest of the system, all piping shall be tested as follows:

1. At the conclusion of the water piping and before any insulation is applied, the water supply systems including cold and hot water shall be tested for a period of not less than 60 minutes and proved tight at 100 PSI hydrostatic pressure.

2. Tests of all piping to be concealed in chases, suspended ceilings, or any other way shall be conducted before pipes are concealed.

3. All repairs to piping shall be made with new materials. No caulking of screwed joints, cracks, or holes will be acceptable. Where it becomes necessary to replace pieces of pipe, such replacement shall be the same length as the defective pieces.

A. General: Hanger, support, and anchor devices are specified in Division 15 Section "Hangers and Supports."

3.6 TERMINAL EQUIPMENT CONNECTIONS

A. Install control valves in accessible locations close to equipment.

3.7 FIELD QUALITY CONTROL

A. Testing Preparation: Prepare hydronic piping according to ASME B31.9 and as follows:

1. Leave joints, including welds, uninsulated and exposed for examination during test.
2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
3. Flush system with clean water. Clean strainers.
4. Isolate equipment that is not subjected to test pressure from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Flanged joints where blinds are inserted to isolate equipment need not be tested.
5. Install relief valve set at a pressure no more than one-third higher than test pressure, to protect against damage by expanding liquid or other source of overpressure during test.

B. Testing: Test hydronic piping as follows:

1. Use ambient temperature water as testing medium, except where there is risk of damage due to freezing. Another liquid may be used if it is safe for workers and compatible with piping system components.
2. Use vents installed at the high points of system to release trapped air while filling system. Use drains installed at low points for complete removal of liquid.
3. Examine system to see that equipment and parts that cannot withstand test pressures are properly isolated. Examine test equipment to ensure that it is tight and that low-pressure filling lines are disconnected.

4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the design pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Check to verify that stress due to pressure at bottom of vertical runs does not exceed either 90 percent of specified minimum yield strength or 1.7 times "SE" value in Appendix A of ASME B31.9, Code for Pressure Piping, "Building Services Piping."
5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components as appropriate, and repeat hydrostatic test until there are no leaks.

3.8 ADJUSTING AND CLEANING

A. After completing system installation, including outlet fittings and devices, inspect finish. Remove burrs, dirt, and construction debris, and repair damaged finishes including chips, scratches, and abrasions.

B. Flush hydronic piping systems with clean water. Remove, clean, and replace strainer screens. After cleaning and flushing hydronic piping system, but before balancing, remove disposable fine-mesh strainers in pump suction diffusers.

C. Mark calibrated nameplates of pump discharge valves after hydronic system balancing has been completed, to permanently indicate final balanced position.

D. Chemical Treatment: Provide a water analysis prepared by chemical treatment supplier to determine type and level of chemicals required to prevent scale and corrosion. Perform initial treatment after completing system testing.

3.9 COMMISSIONING

A. Fill system and perform initial chemical treatment.

B. Check expansion tanks to determine that they are not air bound and that system is completely full of water.

C. Perform these steps before operating the system:

1. Open valves to fully open position. Close coil bypass valves.
2. Check pump for proper direction of rotation.
3. Set automatic fill valves for required system pressure.

DIVISION 23 31 14 - HVAC DUCTWORK

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. This Section includes rectangular and round, metal ducts for heating, ventilating, and air conditioning systems in pressure classes from minus 2 inches to plus 10 inches water gauge.

B. DUCT SIZES INDICATED ON THE DRAWINGS INDICATE CLEAR INSIDE DIMENSION WITH OR WITHOUT DUCT LINER. INCREASE ACTUAL DUCT SIZE, THE LINER'S WIDTH, WHEN LINER IS USED.

C. CONTRACTOR SHALL PROVIDE ALL NECESSARY DUCT TRANSITIONS TO AIR HANDLING EQUIPMENT OPENINGS WHETHER INDICATED OR NOT ON THE DRAWINGS.

D. A ductwork/sheet metal Contractor shall perform the work specified herein. See Quality Assurance paragraph below for requirements.

E. Absolutely no fiberglass ductboard is allowed for this project. Any mention of fiberglass through the specifications refers to resin fiberglass plastic duct for corrosion prone areas.

F. Existing duct hangers shall not be used for new work under any circumstances. All ductwork shall receive new hangers.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Divisions 00 and 01 Specification Sections, apply to this Section.

B. Requirements of the following Division 23 Sections apply to this section:

1. "Mechanical Insulation" for exterior duct and plenum insulation.

2. "Duct Accessories" for flexible duct materials, dampers, duct-mounted access panels and doors, and turning vanes.

3. "Air Grilles, Registers, and Diffusers".

1.3 SUBMITTALS

A. Submit product data including details of construction relative to materials, dimensions of individual components, profiles, and finishes for the following items:

1. Duct Liner.

2. Sealing Materials.

3. Fire-Stopping Materials.

B. Submit shop drawings from duct fabrication shop detailing:

1. Duct layout plans-1/8" minimum scale for each floor plan in project

2. Fittings.

3. Reinforcing details and spacing.

4. Seam and joint construction details.

5. Hangers and supports, including methods for building attachment, vibration isolation, and duct attachment.

6. Materials and gauge of duct material for each size used.

C. Submit record drawings including duct systems routing, fittings details, reinforcing, support, and installed accessories and devices, in accordance with Section 23 00 00 "General Mechanical Requirements" and Division 01.

D. Submit maintenance data for volume control devices, fire dampers, and smoke detectors.

1.4 QUALITY ASSURANCE

A. NFPA Compliance: Comply with the following NFPA Standards:

1. NFPA 90A, "Standard for the Installation of Air Conditioning and Ventilating Systems," except as indicated otherwise.

B. SMACNA Compliance:

1. HVAC Duct Construction Standards, Metal and Flexible. The figures referred to in this specification are included in the 1985 edition.

C. Sheet Metal Fabricators Qualifications:

1.5 SYSTEM PERFORMANCE REQUIREMENTS

C. Cross breaking or Cross Beading: Cross break or bead duct sides that are 19 inches and larger and are 20 gauge or less, with more than 10 sq. ft. of un-braced panel area, as indicated in SMACNA "HVAC Duct Construction Standard," Figure 1-4, unless they are lined or are externally insulated.

D. All ductwork 24" wide and larger shall have all transverse joints constructed with the Ductmate System. The installation shall be in strict conformance with the Ductmate manufacturer's assembly and installation instructions.

E. Turning Vanes: All turning vanes shall be of the double wall airfoil blade type.

2.5 RECTANGULAR DUCT FITTINGS

A. Fabricate elbows, transitions, offsets, branch connections, and other duct construction in accordance with SMACNA "HVAC Metal Duct Construction Standard," 1985 Edition, Figures 2-1 through 2-10.

B. Refer to detail on the Drawings "Typical Diffuser and Branch Takeoff "detail.

C. Elbows shall be square throat with airfoil double wall vanes. Single blade steel vanes are not acceptable. Curved backs are not a substitute for double wall vanes.

2.6 SHOP APPLICATION OF LINER IN RECTANGULAR DUCTS-Where indicated on the drawings

A. Adhere a single layer of indicated thickness of duct liner with 90 percent coverage of adhesive at liner contact surface area. Multiple layers of insulation to achieve indicated thickness are prohibited.

B. Apply a coat of adhesive to liner facing in direction of airflow not receiving metal nosing.

C. Butt transverse joints without gaps and coat joint with adhesive.

D. Fold and compress liner in corners of rectangular ducts or cut and fit to assure butted edge overlapping.

E. Longitudinal joints in rectangular ducts shall not occur except at corners of ducts, unless the size of the duct and standard liner product dimensions make longitudinal joints necessary.

1. Apply an adhesive coating on longitudinal seams in ducts exceeding 2,500 FPM air velocity.

F. Secure liner with mechanical fasteners 4 inches from corners and at intervals not exceeding 12 inches transversely around perimeter; at 3 inches from transverse joints and at intervals not exceeding 18 inches longitudinally.

G. Secure transversely oriented liner edges facing the airstream with metal nosings that are either channel or "Z" profile or are integrally formed from the duct wall at the following locations:

1. Fan discharge.

2. Intervals of lined duct preceding unlined duct.

3. Upstream edges of transverse joints in ducts.

H. Secure insulation liner with perforated sheet metal liner of the same gauge specified for the duct, secured to ducts with mechanical fasteners that maintain metal liner distance of from duct without compressing insulation. Provide 3/32-inch-diameter perforations, with an overall open area of 23 percent.

I. Terminate liner with duct build outs installed in ducts to attach dampers, turning vane assemblies, and other devices. Fabricated build outs (metal hat sections) or other build out means are optional; when used, secure build outs to the duct wall with bolts, screws, rivets, or welds. Terminate liner at fire dampers at connection to fire damper sleeve through fire separation.

2.7 ROUND DUCT FABRICATION

A. General: "Basic Round Diameter" as used in this article is the diameter of the size of round duct that has a circumference equal to the perimeter of a given sized of flat oval duct.

B. Round Ducts: Fabricate round supply ducts with spiral lockseam construction, except where diameters exceed 72 inches. Comply with SMACNA "HVAC Duct Construction Standards," Table 3-2 for galvanized steel gauges.

C. Round Ducts: Fabricate round supply ducts using seam types identified in SMACNA "HVAC Duct Construction Standards," 1985 Edition, Figure 3-1, RL-1, RL-4, or RL-5. Seams Types RL-2 or RL-3 may be used if spot-welded on 1-inch intervals. Comply with SMACNA "HVAC Duct Construction Standards," Table 3-2 for galvanized steel gauges.

2.8 ROUND SUPPLY AND EXHAUST FITTINGS FABRICATION

K. Electrical Equipment Spaces: Route ductwork to avoid passing through transformer vaults and above electrical equipment spaces and enclosures.

L. Non-Fire-Rated Partition Penetrations: Where ducts pass interior partitions and exterior walls, and are exposed to view, conceal space between construction opening and duct or duct insulation with sheet metal flanges of same gauge as duct. Overlap opening on 4 sides by at least 1-1/2 inches. Seal around all floor penetrations to make water tight as to prevent water seepage around duct to floor below.

M. Fire Rated Partition Penetrations: Where ducts pass through interior partitions and exterior walls, install appropriate rated fire damper, sleeve, and sealant to meet UL fire penetration requirements.

3.2 SEAM AND JOINT SEALING

A. General: Seal duct seams and joints as follows:

1. Pressure Classifications Greater Than 3 Inches Water Gauge: All transverse joints, longitudinal seams, and duct penetrations.

2. Pressure Classification 2 and 3 Inches Water Gauge: All transverse joints and longitudinal seams. NOTE: THIS EXCEEDS SMANCA STANDARDS!

B. Seal externally insulated ducts prior to insulation installation.

C. Duct sealant shall be water resistant; UL classified fire resistive, and be compatible with duct materials to be sealed. Sealant shall be United McGill's United Duct Sealer, Hardcast's Iron Grip, Uni-Weather duct sealer, or equal.

3.3 HANGING AND SUPPORTING

A. Install rigid round and rectangular metal duct with support systems indicated in SMACNA "HVAC Duct Construction Standards," Tables 4-1 through 4-3 and Figures 4-1 through 4-8.

B. Support horizontal ducts within 2 feet of each elbow and within 4 feet of each branch intersection.

C. Support vertical ducts at a maximum interval of 16 feet and at each floor.

D. Upper attachments to structures shall have an allowable load not exceeding 1/4 of the failure (proof test) load but are not limited to the specific methods indicated.

E. Install concrete insert prior to placing concrete.

F. Install powder actuated concrete fasteners after concrete is placed and completely cured.

3.4 CONNECTIONS

A. Equipment Connections: Connect equipment with flexible connectors in accordance with Division 23 Section "Duct Accessories."

B. Branch Connections: Comply with detail on the drawings.

C. Outlet and Inlet Connections: Comply with SMACNA "HVAC Duct Construction Standards," Figures 2-16 through 2-18 and per detail on the drawings.

D. Terminal Units Connections: Comply with detail on the drawings.

3.5 FIELD QUALITY CONTROL

A. Remake leaking joints as required and apply sealants to achieve specified maximum allowable leakage.

3.6 ADJUSTING AND CLEANING USE DURING CONSTRUCTION

A. Adjust volume control devices as required by the testing and balancing procedures to achieve required air flow. Refer to Division 23 Section "TESTING, ADJUSTING, AND BALANCING" for requirements and procedures for adjusting and balancing air systems.

B. All ducts must be sealed throughout construction to keep them clean. Per the Architect's/Engineer's (A/E) review, the Contractor may be directed to vacuum ducts systems prior to final acceptance to remove dust and debris. All costs associated with vacuuming ducts to meet the A/E approval shall be done at not additional cost to the Owner.

END OF SECTION

pressure classifications of 3 inches or higher. Extend axles full length of damper blades. Provide bearings at both ends of operating shaft.

2.2 STATIC FIRE DAMPERS

A. General: UL labeled according to UL Standard 555 "Standard for Fire Dampers."

B. Fire Rating: 1-1/2 hours, or as indicated. <OR: 3 hours, or as indicated. >

C. Fire Closure Temperature: Each fire damper shall be equipped with a factory installed heat responsive device (fusible link) rated to close the damper when temperature at the damper reaches 165°F. <OR: 212°F, 250°F, 350°F >

D. Frame: Galvanized steel (in gauges required by manufacturer's UL listing).

E. Sleeves: Damper shall be supplied as a single assembly with an integral factory sleeve.

F. Retaining Angles: Damper shall be supplied with factory retaining angles sized to provide installation overlap in accordance with the manufacturer's UL listing.

G. Blades: Galvanized Curtain style – out of air stream type – all locations.

H. Closure Device: Fusible link (replaceable).

2.3 DYNAMIC FIRE DAMPERS Less than 48" X 36" Ductwork
<spec writer: This section contains fire dampers with "curtain style" blades. They shall be used in all applications with ductwork less than "48 x 36" for UL listing as of 5/19/04>

A. General: UL labeled according to UL Standard 555 "Standard for Fire Dampers."

B. Fire resistance rating: 1 ½ hours, or as indicated. < OR: 3 hours, or as indicated >

C. Fire Closure Temperature: Each fire damper shall be equipped with a factory installed heat responsive device (fusible link) rated to close the damper when temperature at the damper reaches 165°F. <OR: 212°F, 286°F>

D. Frame: Galvanized steel (in gauges required by manufacturer's UL listing).

E. Sleeves: Damper shall be supplied as a single assembly with an integral factory sleeve.

F. Retaining Angles: Damper shall be supplied with factory retaining angles sized to provide installation overlap in accordance with the manufacturer's UL listing.

G. Blades: Galvanized Curtain style – out of air stream type – all locations.

H. Differential Pressure: Dampers shall have a minimum UL 555 differential pressure rating of 4in. wg.

I. Velocity: Dampers shall have a minimum UL 555 velocity rating of 2000 fpm.

J. Closure Device: Fusible link (replaceable).

2.4 DYNAMIC FIRE DAMPERS - Larger than 48" X 36" Ductwork
<spec writer: This section contains fire dampers with "multiblade style" blades. They shall be used in all applications with ductwork "48 x 36" and larger for UL listing as of 5/19/04>

A. General: UL labeled according to UL Standard 555 "Standard for Fire Dampers."

B. Fire resistance rating: 1 ½ hours, or as indicated. < OR: 3 hours, or as indicated >

C. Fire Closure Temperature: Each fire damper shall be equipped with a factory installed heat responsive device (fusible link) rated to close the damper when temperature at the damper reaches 165°F. <OR: 212°F, 250°F, 286°F>

D. Frame: Damper frame shall be galvanized steel formed into a 5" x 1" structural hat channel. Top and bottom frame members on dampers less than 17" high shall be low profile design to maximize the free area of these smaller dampers. Frame shall be 4-piece construction with 1 ½" (minimum) integral overlapping gusset reinforcements in each corner to assure square corners and provide maximum resistance to racking.

E. Blades: Damper blades shall be 16 ga. galvanized steel strengthened by three longitudinal 1" deep Vee grooves running the entire length of each blade. Each blade shall be symmetrical relative to its axle pivot point, presenting identical performance characteristics with air flowing in either direction through the damper. Provide symmetrical blades out of air stream of varying size as required to completely fill the damper opening.

F. Blade Stops: Each blade stop (at top and bottom of damper frame) shall occupy no more than ½" of the damper opening area to allow for maximum free area and to minimize pressure loss across the damper.

G. Seals: Jamb seals shall be flexible stainless steel compression type.

H. Linkage: Concealed in jamb.

I. Axles: Minimum ½ inch diameter plated steel.

J. Retaining Angles: Damper shall be supplied with factory retaining angles sized to provide installation overlap in accordance with the manufacturer's UL listing.

A. Splitter Damper Accessories: Zinc-plated damper blade bracket, 1/4-inch, zinc-plated operating rod, and a duct-mounted, ball-joint bracket with flat rubber gasket and square-head set screw.

B. Flexible Duct Clamps: Stainless steel band with cadmium-plated hex screw to tighten band with a worm-gear action. Provide in sizes from 3 to 18 inches to suit duct size.

C. Adhesives: High strength, quick setting, neoprene based, waterproof and resistant to gasoline and grease.

D. Dryer Vent Caps: Provide vent caps at the wall terminations of each dryer vent. Caps shall have integral back draft damper and be of the bird-proof design. Entire assembly shall be galvanized or of non-ferrous construction.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions for compliance with requirements for installation tolerances and other conditions affecting performance of duct accessories. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 INSTALLATION

A. Install duct accessories according to manufacturer's installation instructions and applicable portions of details of construction as shown in SMACNA standards.

B. Install volume control dampers in lined duct with methods to avoid damage to liner and to avoid erosion of duct liner.

C. Install fire dampers according to the manufacturer's UL-approved printed instructions.

D. Install fusible links in fire dampers.

E. Label access doors according to Division 23 Section "Mechanical Identification."

3.3 ADJUSTING

A. Adjust duct accessories for proper settings.

B. Adjust fire dampers for proper action.

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C. Final positioning of manual dampers is specified in Division 23 Section "Testing, Adjusting, and Balancing."

END OF SECTION

PART 3 - EXECUTION

3.1 INSTALLATION

A. General: Install outlets and inlets in accordance with manufacturer's written instructions and in accordance with recognized industry practices to insure that products serve intended functions.

B. Coordinate with other work, including light fixtures, skylights, ductwork and duct accessories, etc. as necessary to interface installation of air outlets and inlets with other work.

C. Contractor shall provide all necessary duct stubs, collars, and transitions to install the diffusers or grilles accordingly. See detail on the drawings for additional requirements.

D. Painting: Interior of ductwork visible through Registers, Grilles and Diffusers shall be painted flat black.

END OF SECTION

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B. A detailed outline of the equipment maintenance and minor repair training session shall be submitted to the A/E for review and acceptance. Schedule training with the Owner and A/E only after startup has been performed and O&M manuals have been accepted. Training shall be completed prior to project substantial completion. Documentation and recording of the Training session must be performed. It is desired to use manufacturer standard videos in the training session if they are available. Video recording of the training shall be included in the Contract. The video shall be clear, with good audio and acceptable to the Owner and A/E or training shall be re-performed until quality is sufficient. Provide four hours of classroom training and four hours of hands on training.

9. OPERATING AND MAINTENANCE MANUALS

A. Three sets of O&M instructions and manuals shall be submitted in loose-leaf 3-ring cardboard reinforced vinyl binders to the Engineer in accordance with the General Conditions.

B. Contained in each binder shall also be vendors, vendor phone numbers, list of materials, and materials parts list.

C. O & M Manuals shall be available to the Owner prior to equipment training commences.

D. General and Supplemental General Conditions shall supersede this paragraph where conflicts occur.

E. O&M manuals shall be submitted on CD disk in PDF format along with the required paper copies. Contractor shall send same PDF format information to Facility Management System Contractor to incorporate into the operation system software.

10. WARRANTY

A. Warranty: Manufacturer's standard form in which manufacturer agrees to replace components of RTUs that fail in materials or workmanship within specified warranty period. Manufacturer shall provide Parts and Labor warranty for One Year from Substantial Completion.

1. Warranty Period for Compressors: Manufacturer's standard, but not less than five years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide a comparable product by one of the following:

1. Daikin Applied (Basis of Design)
2. Carrier
3. Johnson Controls

4. Trane

2.2 ENERGY RECOVERY ROOFTOP UNIT

A. GENERAL REQUIREMENTS
1. Configuration: Fabricate as detailed on prints and drawings:
2. The complete unit shall be cETLus listed. The unit shall be ASHRAE 90.1-2016 compliant and labeled.
3. Each unit shall be specifically designed for outdoor rooftop application and include a weatherproof cabinet. Each unit shall be completely factory assembled and shipped in one piece. Packaged units shall be shipped fully charged with R-410 Refrigerant and oil.
4. The unit shall undergo a complete factory run test prior to shipment. The factory test shall include a refrigeration circuit run test, a unit control system operations checkout, a unit refrigerant leak test and a final unit inspection.
5. All units shall have decals and tags to indicate caution areas and aid unit service. Unit nameplates shall be fixed to the main control panel door. Electrical wiring diagrams shall be attached to the control panels. Installation, operating and maintenance bulletins and start-up forms shall be supplied with each unit.
6. Warranty: The manufacturer shall provide 12-month parts only warranty. Defective parts shall be repaired or replaced during the warranty period at no charge. The warranty period shall commence at startup or six months after shipment, whichever occurs first.

B. CABINET, CASING, AND FRAME
1. Panel construction shall be double-wall construction for all panels. All floor panels shall have a solid galvanized steel inner liner on the air stream side of the unit to protect insulation during service and maintenance. Insulation shall be a minimum of 1" thick with an R-value of 7.0, and shall be 2 part injected foam. Panel design shall include no exposed insulation edges. Unit cabinet shall be designed to operate at total static pressures up to 5.0 inches w.g.
2. Exterior surfaces shall be constructed of pre-painted galvanized steel for aesthetics and long term durability. Paint finish to include a base primer with a high quality, polyester resin topcoat of a neutral beige color. Finished panel surfaces to withstand a minimum 750-hour salt spray test in accordance with ASTM B117 standard for salt spray resistance.
3. Service doors shall be provided on the fan section, filter section, control panel section, and heating vestibule in order to provide user access to unit components. All service access doors shall be mounted on multiple, stainless steel hinges and shall be secured by a latch system. Removable service panels secured by multiple mechanical fasteners are not acceptable.
4. The unit base shall overhang the roof curb for positive water runoff and shall seat on the roof curb gasket to provide a positive, weathertight seal. Lifting brackets shall be provided on the unit base to accept cable or chain hooks for rigging the equipment.

C. OUTDOOR/RETURN AIR SECTION
1. Unit shall be provided with a 100% outdoor air hood. The 100% outdoor air hood shall allow outdoor air to enter from the back of the unit, at the draw-through filter section. The outdoor air hood shall be factory installed and constructed from galvanized steel finished with the same durable paint finish as the main unit. The hood shall include a

3. Supply fan and motor assembly combinations larger than 8 hp or 22" diameter shall be internally isolated on 1" deflection, spring isolators and include removable shipping tie downs.
4. The fan motor shall be a totally enclosed EC motor that is speed controlled by the rooftop unit controller. The motor shall include thermal overload protection and protect the motor in the case of excessive motor temperatures. The motor shall have phase failure protection and prevent the motor from operation in the event of a loss of phase. Motors shall be premium efficiency.
5. The supply fan shall be capable of airflow modulation from 30% to 100% of the scheduled designed airflow. The fan shall not operate in a state of surge at any point within the modulation range.

H. HEATING SECTION
1. The rooftop unit shall include a natural gas heating section. The gas furnace design shall be one natural gas fired heating module factory installed downstream of the supply air fan in the heat section. The heating module shall be a tubular design with in-shot gas burners.
2. Each module shall have two stages of heating control. The module shall be complete with furnace controller and control valve capable of 5:1 modulating operation.
3. The heat exchanger tubes shall be constructed of stainless steel.
4. The module shall have an induced draft fan that will maintain a negative pressure in the heat exchanger tubes for the removal of the flue gases.
5. Each burner module shall have two flame roll-out safety protection switches and a high temperature limit switch that will shut the gas valve off upon detection of improper burner manifold operation. The induced draft fan shall have an airflow safety switch that will prevent the heating module from turning on in the event of no airflow in the flue chamber.
6. The factory-installed DDC unit control system shall control the gas heat module. Field installed heating modules shall require a field ETL certification. The manufacturer's rooftop unit ETL certification shall cover the complete unit including the gas heating modules.

I. ELECTRICAL
1. Unit wiring shall comply with NEC requirements and with all applicable UL standards. All electrical components shall be UL recognized where applicable. All wiring and electrical components provided with the unit shall be number and color-coded and labeled according to the electrical diagram provided for easy identification. The unit shall be provided with a factory wired weatherproof control panel. Unit shall have a single point power terminal block for main power connection. A terminal board shall be provided for low voltage control wiring. Branch short circuit protection, 115-volt control circuit transformer and fuse, system switches, and a high temperature sensor shall also be provided with the unit. Each compressor and condenser fan motor shall be furnished with contactors and inherent thermal overload protection. Supply fan motors shall have contactors and external overload protection. Knockouts shall be provided in the bottom of the main control panels for field wiring entrance.
2. A single non-fused disconnect switch shall be provided for disconnecting electrical power at the unit. Disconnect switches shall be mounted internally to the control panel and operated by an externally mounted handle.

J. CONTROLS
1. Provide a complete integrated microprocessor based Direct Digital Control (DDC) system to control all unit functions including temperature control, scheduling, monitoring, unit safety protection, including compressor minimum run and minimum off times, and diagnostics. This system shall consist of all required temperature sensors, pressure sensors, controller and keypad/display operator interface. All MCBs and sensors shall be factory mounted, wired and tested.
2. The stand-alone DDC controllers shall not be dependent on communications with any on-site or remote PC or master control panel for proper unit operation. The microprocessor shall maintain existing set points and operate stand alone if the unit loses either direct connect or network communications. The microprocessor memory shall be protected from voltage fluctuations as well as any extended power failures. All factory and user set schedules and control points shall be maintained in nonvolatile memory. No settings shall be lost, even during extended power shutdowns.
3. The DDC control system shall permit starting and stopping of the unit locally or remotely. The control system shall be capable of providing a remote alarm indication. The unit control system shall provide for outside air damper actuation, emergency shutdown, remote heat enable/disable, remote cool enable/disable, heat indication, cool indication, and fan operation.
4. All digital inputs and outputs shall be protected against damage from transients or incorrect voltages. All field wiring shall be terminated at a separate, clearly marked terminal strip.
5. The DDC controller shall have a built-in time schedule. The schedule shall be programmable from the unit keypad interface. The schedule shall be maintained in nonvolatile memory to insure that it is not lost during a power failure. There shall be one start/stop per day and a separate holiday schedule. The controller shall accept up to sixteen holidays each with up to a 5-day duration. Each unit shall also have the ability to accept a time schedule via BAS network communications.
6. The keypad interface shall allow convenient navigation and access to all control functions. The unit keypad/display character format shall be 4 lines x 20 characters. All control settings shall be password protected against unauthorized changes. For ease of service, the display format shall be English language readout. Coded formats with look-up tables will not be accepted. The user interaction with the display shall provide the following information as a minimum: Discharge air temperature.em Condenser fan speed
7. If the unit is to be programmed with a night setback or setup function, an optional space sensor shall be provided. Space sensors shall be available to support field selectable features. Sensor options shall include:
8. Zone sensor with tenant override switch
9. Zone sensor with tenant override switch plus heating and cooling set point adjustment. (Space Comfort Control systems only)
10. To increase the efficiency of the cooling system the DDC controller shall include a discharge air temperature reset program for part load operating conditions. The discharge air temperature shall be controlled between a minimum and a maximum discharge air temperature (DAT) based on one of the following inputs:
    a. Return air temperature.
    b. Discharge air temperature.
    c. Outdoor air temperature.
    d. Space air temperature.
    e. Outdoor enthalpy, high/low.
    f. Dirty filter indication.

B. Install condensate drain, minimum connection size, with trap and indirect connection to nearest roof drain or area drain.

C. Install piping adjacent to ERVs to allow service and maintenance.

1. Gas Piping: Comply with applicable requirements in Section Facility Natural-Gas Piping. Connect gas piping to burner, full size of gas train inlet, and connect with union and shutoff valve with sufficient clearance for burner removal and service.

D. Duct installation requirements are specified in other HVAC Sections. Drawings indicate the general arrangement of ducts. The following are specific connection requirements:
1. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.
2. Connect supply ducts to ERVs with flexible duct connectors specified in Section Air Duct Accessories.
3. Install return-air duct continuously through roof structure.

3.2 FIELD QUALITY CONTROL

A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections. Report results in writing.

B. Perform tests and inspections and prepare test reports.

C. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing. Report results in writing.

3.3 TESTS:

A. After installing ERVs and after electrical circuitry has been energized, test units for compliance with requirements.

B. Inspect for and remove shipping bolts, blocks, and tie-down straps.

C. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.

D. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

E. Remove and replace malfunctioning units and retest as specified above.

3.4 CLEANING AND ADJUSTING

A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide site visits to site as required during other-than-normal occupancy hours for this purpose.

B. After completing system installation and testing, adjusting, and balancing RTU and air-distribution systems, clean filter housings and install new filters.

END OF SECTION

1.8 EQUIPMENT START UP AND REPORT

A. Startup shall be performed by the factory-authorized or certified representative of the manufacturer. Startup of equipment shall not be performed by the Contractor. All costs for startup shall be included in the project. Submit credentials of the startup technician to the A/E for acceptance prior to starting up equipment.

B. Startup Report: A written report shall be created that documents all procedures used in starting up and running each piece of equipment installed on this project. The report shall certify that the equipment is running in accordance with the accepted shop drawing design parameters for capacity, performance, and energy usage. Report shall include the name of the manufacturer's representative starting up the equipment, date equipment was started, problems encountered and actions taken to correct problems. Report shall include acceptance of all external connections to the piece of equipment and that the equipment was installed in accordance with manufacturer's documented installation instructions.

1.9 OWNER TRAINING

A. Equipment maintenance and minor repair training shall be provided by the factory-authorized or certified representative of the manufacturer. All costs for training shall be included in the project and include any overnight or travel provisions necessary for the individual doing the training. Submit credentials of the training technician to the A/E for acceptance prior to starting up equipment.

B. A detailed outline of the equipment maintenance and minor repair training session shall be submitted to the A/E for review and acceptance. Schedule training with the Owner and A/E only after startup has been performed and O&M manuals have been accepted. Training shall be completed prior to project substantial completion. Documentation and recording of the Training session must be performed. It is desired to use manufacturer standard videos in the training session if they are available. Video recording of the training shall be included in the Contract. The video shall be clear, with good audio and acceptable to the Owner and A/E or training shall be re-performed until quality is sufficient. Provide four hours of classroom training and four hours of hands on training.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with requirements, provide water source heat pumps by one of the following:
1. Trane
2. Daikin Applied – Basis of design
3. Water Furnace

4. Bosch
5. Florida Heat Pump
6. Carrier

B. ASHRAE Compliance:

1. ASHRAE 15.

C. Comply with NFPA 70.

D. Comply with safety requirements in UL 484 for assembly of free-delivery, water-source heat pumps.

2.2 WATER-SOURCE UNITARY HEAT PUMPS

A. Description: Packaged water-source unitary heat pump with temperature controls; factory assembled, piped, wired, tested, and rated according to ASHRAE/ARI/ISO-13256-1.

1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Cabinet and Chassis: Galvanized-steel casing with the following features:

1. Access panel for access and maintenance of internal components.
2. Knockouts for electrical and piping connections.
3. Discharge duct collar and return collar
4. Cabinet Insulation: Fiberglass liner, minimum 1/2 inch thick, complying with UL 181, ASTM C 1071, and ASTM G 21.

C. Performance: All heat pump units shall be rated in accordance with ARI standard 330 and shall meet minimum efficiencies depicted on Drawings. Unit manufacturer shall have a minimum of three years of successful experience with each unit type at EWT of 25deg F. All units shall operate and have scheduled capacities between 25deg F and 120deg F.

D. Refrigerant to Water Heat Exchangers:
a. The refrigerant to water heat exchanger shall be of a high quality co-axial coil for maximum heat transfer. The copper coil shall be deeply fluted to enhance heat transfer and minimize fouling and scaling. The coil shall have a working pressure of 450 psig on the refrigerant side and 450 psig on the water side. Heat exchanger shall have rubber isolation to the exchanger for sound attenuation.

2. Thermostat – Provide thermostat for each unit provided on this project. Provide controls for the unit that will provide full function of the unit with wall mounted thermostat below.

   a. Wall-Mounted Digital Thermostat:
      1) Exposed temperature set point.
      2) Space Temperature
      3) Error Code
      4) Deg F
      5) Programmable schedule for 7-days with each day individually programmable for temperature setback.
      6) Automatic switchover from cooling to heating
   b. Unoccupied period override push button.

3. DDC interface requirements:
   a. Provide terminal strip for use with external future BMS controller.

M. Electrical Connection: Single electrical connection with fused disconnect.

2.3 ACCESSORIES

A. See Water Source Heat Pump Detail for more information.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

B. Examine roughing-in for piping and electric installations for water-source unitary heat pumps to verify actual locations of piping connections and electrical conduits before installation.

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

3.2 INSTALLATION

A. Equipment Mounting:

1. Install water-source, unitary heat pumps on cast-in-place concrete equipment base(s).

3.3 CONNECTIONS

A. Drawings indicate general arrangement of piping, fittings, and specialties. Specific connection requirements are as follows:

1. Connect supply and return hydronic piping to heat pump with unions and shutoff valves per Detail on Drawings.

B. Install electrical devices furnished by manufacturer but not specified to be factory mounted.

C. Install piping adjacent to machine to allow space for service and maintenance.

3.4 STARTUP SERVICE

A. Engage a factory-authorized service representative to perform startup service.

1. Complete installation and startup checks according to manufacturer's written instructions.
2. Inspect for visible damage to unit casing.
3. Inspect for visible damage to compressor and coils.
4. Inspect internal insulation.
5. Verify that labels are clearly visible.
6. Verify that clearances have been provided for servicing.
7. Verify that controls are connected and operable.
8. Adjust vibration isolators.
9. Start unit according to manufacturer's written instructions.
10. Complete startup sheets and attach copy with Contractor's startup report.
11. Inspect and record performance of interlocks and protective devices; verify sequences.
12. Operate unit for an initial period as recommended or required by manufacturer.
13. Verify thermostat calibration.
14. Inspect controls for correct sequencing of heating, refrigeration, and normal and emergency shutdown.

3.5 ADJUSTING/ FIELD QUALITY CONTROL

A. Adjust initial temperature set points.

B. Set field-adjustable switches and circuit-breaker trip ranges as indicated.

C. Perform the following field tests and inspections:

1. After installing water to water heat pumps and after electrical circuitry has been energized, test units for compliance with requirements.

SECTION 26 00 00 – GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.1 CONTRACTOR'S UNDERSTANDING

A. Contractors bidding work under this Contract shall read and understand Division Zero and Division 1 - General Requirements. If any discrepancies are discovered between Basic Electrical Materials and Methods and General Requirements, the above-mentioned documents shall overrule this section. The Basic Electrical Materials and Methods are intended as a supplement to the above-mentioned documents.

B. The Contractor shall bid as outlined in the above-mentioned Specifications and shall be governed by any alternates or unit prices called for in the form of proposal.

C. Each Contractor bidding on the work included in these Specifications shall view the building site and carefully examine the contract Drawings and Specifications, so that he/she may fully understand what is to be done, and to document existing conditions.

1.2 SCOPE OF WORK

A. Work included in this section of the Specifications includes the furnishing of all labor, material, tools, approvals, utility connection fees, excavation, backfill, and other equipment and services necessary to install the electrical system as shown on the Contract Drawings and as specified herein.

B. It also includes the connection of all equipment included in this Contract but furnished by other contractors or suppliers.

C. It is the general intent that all motors shall be furnished with the particular object of equipment it drives, except where a new motor is to be provided for an item of existing equipment (a replacement motor), then it shall be provided under this Division of the Specifications.

D. The Contractor shall furnish and install all conduit, wire, safety switches and miscellaneous material to make all electrical connections to all items of equipment or wiring devices except as otherwise specified.

E. Equipment connections shall be made with flexible or rigid conduit as required. Controllers for motors, safety switches, and all control, protective and signal devices for motor circuits, except where such apparatus is furnished mounted and connected integrally with the motor driven equipment, shall be installed, connected and left in operating condition. The number and size of conductors between motors and control or protective apparatus shall be as required to obtain the operation described in these

Specifications, and/or by the Contract Documents, and/or as shown in manufacturer furnished Engineer reviewed Shop Drawings.

F. All devices and items of electrical equipment, including those shown on the Contract Drawings but not specifically mentioned in the Specifications or those mentioned in the Specifications but not shown on the Contract Drawings, are to be furnished under this section of the Specifications. Any such device or item of equipment, if not defined in quality, shall be equal to similar equipment and/or devices specified herein.

G. All devices and items of equipment mentioned in this section of the Specifications whether electrical or not or whether furnished under this or other Division of the Specifications, shall be installed under this Division of the Specifications, unless specifically indicated otherwise.

H. Where wiring diagrams are not shown on the Contract Drawings, they are to be provided by the supplier of the equipment served and such diagrams shall be adhered to except as herein modified.

I. All raceways and wiring shall be firestopped where required by code, as indicated in the Contract Drawings, and as specified in Division 07.

1.3 SHOP DRAWINGS, DESCRIPTIVE LITERATURE, INSTALLATION, OPERATION AND MAINTENANCE INFORMATION

A. Shop Drawings including descriptive literature and/or installation, operation and maintenance instructions shall be submitted in the amount of copies indicated in the General Conditions.

B. Shop Drawings shall be clearly marked and or highlighted as to which product, type, option, etc. is being submitted. Non-applicable catalog data shall be marked out. Product literature with one or more styles / configurations for a single product shall have a written description of use for each of the styles / configurations represented on the literature. For example: Device boxes – Styles shall be listed as: For masonry walls, for electrical devices, for ceiling mounted light fixtures, etc.

C. Shop Drawings shall be submitted on the materials listed in individual sections.

D. The Engineer reserves the right to make modifications to motor control and power distribution equipment ratings after Shop Drawing review if the motor control and power distribution Shop Drawings are submitted prematurely (prematurely meaning submitted before all utilization equipment has been reviewed and accepted). Cost of modifications shall be the Contractor's responsibility.

E. Submit for each Section individually. No combined files will be accepted.

C. All salvaged or abandoned electrical materials shall become the property of the Contractor and shall be removed from the job site upon completion of the project, unless otherwise noted on the Contract Drawings or specified herein.

D. Existing fluorescent light fixtures to be abandoned and removed this Contract, shall be assumed to be equipped with PCB filled ballasts. Light fixtures shall be disassembled and the ballast removed prior to salvage and/or disposal. Ballasts containing PCB's shall be disposed per requirements of the Toxic Substances Control Act (TSCA). Manifests shall be submitted to the Owner documenting proper transportation and disposal of PCB contaminated ballasts.

1.10 ERRORS, CORRECTIONS, AND/OR OMISSIONS

A. Should a piece of equipment be supplied of a different size or horsepower than shown on the Contract Drawings, the Contractor shall be responsible for installing the proper size wiring, conduit, starters, circuit breakers, etc., for proper operation of that unit and the complete electrical system at no extra cost to the Owner.

B. It is the intent of these Specifications to provide for an electrical system installation complete in every respect, to operate in the manner and under conditions as shown in these Specifications and on the Contract Drawings. The Contractor shall notify the Engineer, in writing, of any omission or error at least 8 days prior to opening of bids. In the event of the Contractor's failure to give such notice, he/she may be required to correct work and/or furnish items omitted without additional cost. Further requirements on this subject may be found in the General Requirements.

C. Necessary changes or revisions in electrical work to meet any code or power company requirement shall be made by the Contractor without additional charge.

1.11 GUARANTEES AND WARRANTIES

A. The Contractor shall guarantee all work including equipment, materials, and workmanship. This guarantee shall be against all defects of any of the above and shall run for a period of 2 years from the date of acceptance of the work, concurrent with the one-year guarantee period designated for the general construction contract under which electrical work is performed. Date of acceptance shall be considered to be the date on which all "punch list" items are completed ("punch list" is defined to be the written listing of work that is incomplete or deficient that must be finished or replaced/repaired before the Contractor receives final payment).

B. Repair and maintenance for the guarantee period is the responsibility of the Contractor and shall include all repairs and maintenance other than that which is considered as routine. (That is oiling, greasing, etc.) The Engineer shall be the judge of what shall be considered as routine maintenance.

C. See General Conditions and individual equipment's specification sections for additional warranty requirements.

1.12 TESTING

A. After the wiring system is complete, and at such time as the Engineer may direct, the Contractor shall conduct an operating test for acceptance. The equipment shall be demonstrated to operate in accordance with the requirements of these Specifications and the Contract Drawings. The test shall be performed in the presence of the Engineer or his authorized representative. The Contractor shall furnish all instruments and personnel required for the tests, as well as the necessary electrical power.

B. Before energizing the system, the Contractor shall check all connections and set all relays for proper operation. He/she shall obtain all necessary clearances, approvals, and instructions from the serving utility company and/or equipment manufacturers prior to placing power on the equipment.

C. Tests may be performed by the Engineer to determine integrity of insulation on wiring circuits selected by the Engineer at random.

D. Cost of utilities for testing done prior to beneficial occupancy by the Owner shall be borne by the Contractor.

1.13 CLEANUP

A. Cleanup shall be completed as soon as possible after the electrical installation is complete. All light fixtures, outlets, switches, starters, motor control centers, disconnect switches and other electrical equipment shall be free of shipping tags, stickers, etc. All painted equipment shall be left free of scratches or other blemishes, such as splattered or blistered paint, etc. All light fixture diffusers shall be clean and the interior of all motor controls, etc., shall be free of dust, dirt, wire strippings, etc. Surplus material, rubbish and equipment resulting from the work shall be removed from the job site by the Contractor upon completion of the work.

B. During construction, cover all Owner equipment and furnishings subject to damage or contamination in any way.

1.14 CUTTING AND PATCHING

A. Cutting and patching shall be held to an absolute minimum and such work shall be done only under the direction of the Owner's representative. The Contractor shall be responsible for and shall pay for all openings that may be required in the floors or walls, and he shall be responsible for putting said surfaces back in their original condition.

continuous duration. If necessary, cuts shall be performed on premium time. If performed at night, requiring a general outage, the Contractor shall furnish an auxiliary source of light and power as required. Under no circumstances shall an electrical outage of any duration be initiated until the Owner and Engineer have concurred, and as far as possible in advance.

1.23 GROUNDING AND BONDING

A. All metallic conduit, cabinets, equipment, and service shall be grounded in accordance with the latest issue of the National Electrical Code. All supporting framework and other metal or metal clad equipment or materials which are in contact with electrical conduit, cable and/or enclosures, shall be properly grounded to meet the code requirements.

1.24 CONTRACTOR LICENSING

A. The Contractor performing the electrical work on this project shall be a licensed electrical contractor in the state of Kentucky.

1.25 ANCHORING/MOUNTING

A. Electrical conduits and/or equipment shall be rigidly supported. Anchors used shall be metallic expansion type, or if appropriate to prevent spalling concrete, epoxy set type. Plastic or explosive type anchors are prohibited.

B. Contractor shall provide all necessary supports in accordance with KBC Seismic requirements.

1.26 ELECTRICAL COMPONENT MOUNTING HEIGHTS

A. Unless otherwise indicated, mounting height for components shall be as defined on the Drawings.

1.27 RECEIPTS

A. Some sections of the Specifications call for equipment, materials, accessories, etc. to be provided and "turned over to the Owner" or like requirements. The Contractor shall obtain a receipt for each item turned over, signed by the Owner or his representative. A copy of this receipt shall be transmitted to the Engineer.

B. When a question arises concerning whether items have been turned over to the Owner, and there is no signed receipt, it may be assumed that the items were not provided.

1.28 DEFINITIONS

A. Furnish – Procure equipment/materials and deliver and unload at the project site.

B. Install – Enter the equipment/materials permanently into the project and make operational.

C. Remove – Completely remove from site and dispose of properly. Owner assumes no future liability of the item.

D. Provide – Furnish and Install subject to discussion.

E. NEC – National Electrical Code

PART 2 - PRODUCTS

Not Applicable.

PART 3 - EXECUTION

Not Applicable.

END OF SECTION

7. Use pulling means, including fish tape, cable, rope, and basket-weave/cable grips, that will not damage cables or raceway.

8. Ample slack conductors shall be allowed at each terminal point, and pull or junction box, to permit installation with ease and without crowding.

9. All conductors terminating at terminal blocks shall be identified with numbers and/or letters identical to circuit or control identification.

10. No conductors shall be drawn into conduits until all work which may cause wire or cable damage is completed. Wire pulling shall be accomplished utilizing machinery and accessories intended for the purpose.

11. All connections and splices shall be made in accordance with conductor manufacturer's recommendations, and as written herein.

12. If the size and number of conductors in a conduit on the Drawings is not shown, then it shall be assumed to be 4 #12, 3/4" C.

13. Sharing of neutral conductors is prohibited.

14. An equipment grounding conductor, sized per NEC, shall be installed in each power, signaling, or instrumentation circuit whether indicated or not.

B. Feeders

1. Wire shall be factory color coded for each phase and neutral, with green used for the ground conductor. As far as practical, all feeders shall be continuous from origin to panel termination without running splices in intermediate pull boxes.

C. Metal-Clad (MC) Cable Installation

1. **MC cable shall only be used for lighting circuits accessible above suspended acoustical tile ceilings**. A junction box fed with conduit shall be installed in the plenum space above each room for conversion from conduit to MC cable.

2. The use of MC cable in walls, slabs, or to jump between rooms is prohibited.

3. MC Cable shall not be installed in the wall cavity between face brick and block.

4. MC cable termination shall be prepared using a pre-engineered fitting designed specifically for the purpose.

END OF SECTION

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4) ITW Ramset/Red Head; a division of Illinois Tool Works, Inc.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

2.2 FABRICATED METAL EQUIPMENT SUPPORT ASSEMBLIES

A. Description: Welded or bolted, structural-steel shapes, shop or field fabricated to fit dimensions of supported equipment.

B. Materials: Comply with requirements in Section 055000 "Metal Fabrications" for steel shapes and plates.

2.3 PENETRATIONS THROUGH FLOORS

A. Contractor shall coordinate penetration requirements with structural engineer and structural manufacturers. Trade contractors shall coordinate and mark all penetrations larger than 12 inches in diameter/square through precast concrete plank during the structural submittal process. Reinforcement of subsequent field cut opening of 12" or larger shall be the responsibility of the trade contractor requiring such opening.

B. No penetrations larger than 12" in diameter / square shall be field cut in any structural member without approval of the engineer of record for that element. Cutting / coring of adjacent penetrations through precast plank or metal deck, perpendicular to span, shall be avoided. Adjacent penetrations which remove more than 20% of such structural element, in any given 3-foot length, are prohibited.

C. Field cutting/coring of penetrations of any size through structural steel beams and columns, or steel bar joists is prohibited.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, required by NFPA 70. Minimum rod size shall be 1/4 inch (6 mm) in diameter.

C. Supports for MC cable above ceilings shall be independent of ceiling grid supports.

D. Provide two support connections from building structure to light fixtures that are installed in ceiling grids.

E. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with two-bolt conduit clamps.

F. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch (38-mm) and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb (90 kg).

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

B. Field Welding: Comply with AWS D1.1/D1.1M.

C. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION

3.1 PREPARATION

A. Exterior underground metallic conduits shall be degreased, pretreated, and coated with 2 coats of epoxy coating or wrapped with adhesive corrosion control tape. Other finishes may be acceptable upon the Engineer's review.

3.2 INSTALLATION

A. Conduit

1. Conduit shall not be installed in wall cavities between face brick and block. The only time this will be allowed is for serving an exterior receptacle or light fixture.
2. All conduit installed outdoors shall be installed to allow an air gap between the conduit and adjoining surface such as concrete or wall, etc. Provide malleable iron spacers, or galvanized steel strut for support. This is required for ALL conduit materials.
3. All conduits shall have an insulated ground wire pulled to all equipment and receptacles.
4. All raceway runs are shown diagrammatically to outline the general routing of the raceway. The installation shall be made to avoid interference with pipes, ducts, structural members or other equipment. Should structural or other interference prevent the installation of the raceways, or setting of boxes, cabinets, or the electrical equipment, as indicated in the Drawings, deviations must be approved by the Engineer, and after approval, shall be made without additional charges and shown on the Record Drawings.
5. Fire Stop: Where conduits, wireways, and other electrical raceways pass through fire partitions, fire walls, smoke partitions, or floors, install a fire stop that provides an effective barrier against the spread of fire, smoke and gases, with UL listed sealants only. Completely fill and seal clearances between raceways and openings with the fire stop material. See [Section 21 00 00] for complete fire stop requirements.
6. Assure conduit installation does not encroach into the ceiling height head room, walkways, or doorways.
7. No conduit shall be run exposed across roofs without first obtaining permission from the Engineer.
8. Conduit may be run inside concrete slabs as long as the slab is at least 6-inches thick and conduit will have at least 1 ½-inches of cover on both sides.

9. Conduit and wiring under roof decking shall be installed a minimum of 4 inches below roof decking.
10. No conduit shall be run exposed across floors.
11. Electrical conduits and/or equipment shall be rigidly supported. Anchors used shall be metallic expansion type, or if appropriate to prevent spalling concrete, epoxy set type.
12. Contractor shall provide all necessary supports in accordance with KBC Seismic requirements.
13. All conduit shall be installed in a first class workmanship manner. It shall be installed in horizontal and vertical runs in such a manner as to ensure against trouble from the collection of trapped condensation and shall be arranged so as to be devoid of traps wherever possible. Special care shall be used in assuring that exposed conduit runs are parallel or perpendicular to walls, structural members, or intersections of vertical planes and ceilings. No open wiring is allowed.
14. Fittings or symmetrical bends shall be required wherever right angle turns are made in exposed work. Bends and offsets shall be avoided wherever possible, but where necessary, they shall be made with an approved conduit bending machine. All conduit joints shall be cut square, reamed smooth and drawn up tight, using couplings intended for the purpose.
15. Conduits shall be securely fastened to all sheet metal outlets, junction and pull boxes with double galvanized locknuts and insulating-grounding bushings as required by the NEC. Conduit crossings in insulating roof fill will require both conduits to be secured to the roof deck, and these crossings can only be made where the insulating fill is a minimum of 3 inches deep.
16. Runs of exposed conduit shall be supported in accordance with the NEC using cast aluminum or malleable iron one-hole pipe straps with spacers to provide an air space behind the conduit. Stainless steel minerallaac, one-piece conduit clamps shall be acceptable where located such that building occupants are not in danger of inadvertent contact, since this type fitting has several sharp edges. In general terms, they may be considered in areas such as on or above ceilings, or high on walls.
17. All conduit in walls and slabs shall be securely braced, capped (wooden plugs are prohibited), and fastened to the forms to prevent dislodgement during vibration and pouring of concrete.
18. During construction, all conduit work shall be protected to prevent lodgment of dirt, plaster or trash in conduits, fittings or boxes. Conduits which have been plugged shall be entirely freed of accumulations or be replaced. All conduits in

SECTION 26 27 26 - WIRING DEVICES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Receptacles, receptacles with integral GFCI, and associated device plates.
2. Weather-resistant receptacles.
3. Snap switches and wall-box dimmers.
4. Motor Starter Switch

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Receptacles for Owner-Furnished Equipment: Match plug configurations.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: List of legends and description of materials and process used for pre-marking wall plates.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:

1. Cooper Wiring Devices; Division of Cooper Industries, Inc. (Cooper).
2. Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
3. Leviton Mfg. Company Inc. (Leviton).
4. Pass & Seymour/Legrand (Pass & Seymour).
5. Legrand

B. Source Limitations: Obtain each type of wiring device and associated wall plate from single source from single manufacturer.

2.2 GENERAL WIRING-DEVICE REQUIREMENTS

A. Wiring Devices, Components, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

C. Devices that are manufactured for use with modular plug-in connectors may be substituted under the following conditions:

1. Connectors shall comply with UL 2459 and shall be made with stranding building wire.
2. Devices shall comply with the requirements in this Section.

2.3 STRAIGHT-BLADE RECEPTACLES

A. Convenience Receptacles, 125 V, 20 A: Comply with NEMA WD 1, NEMA WD 6 Configuration 5-20R, UL 498, and FS W-C-596.

1. Products: Subject to compliance with requirements, provide one of the following:

a. Cooper; 5351 (single), CR5362 (duplex).
b. Hubbell; HBL5351 (single), HBL5352 (duplex).
c. Leviton; 5891 (single), 5352 (duplex).
d. Pass & Seymour; 5361 (single), 5362 (duplex).

2.4 GFCI RECEPTACLES

A. General Description:

1. Straight blade, feed-through type.
2. Comply with NEMA WD 1, NEMA WD 6, UL 498, UL 943 Class A, and FS W-C-596.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with NECA 1, including mounting heights listed in that standard, unless otherwise indicated. See mounting height table on the Drawings for device height requirements.

B. Coordination with Other Trades:

1. Protect installed devices and their boxes. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of boxes.
2. Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
3. Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
4. Install wiring devices after all wall preparation, including painting, is complete.

C. Conductors:

1. Do not strip insulation from conductors until right before they are spliced or terminated on devices.
2. Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
3. The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
4. Existing Conductors:

a. Cut back and pigtail, or replace all damaged conductors.
b. Straighten conductors that remain and remove corrosion and foreign matter.
c. Pig-tailing existing conductors is permitted, provided the outlet box is large enough.

D. Device Installation:

1. Replace devices that have been in temporary use during construction and that were installed before building finishing operations were complete.
2. Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
3. Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
4. Connect devices to branch circuits using pigtails that are not less than 6 inches (152 mm) in length.

5. When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, two-thirds to three-fourths of the way around terminal screw.
6. Use a torque screwdriver when a torque is recommended or required by manufacturer.
7. When conductors larger than No. 12 AWG are installed on 20-A circuits, splice No. 12 AWG pigtails for device connections.
8. Tighten unused terminal screws on the device.
9. When mounting into metal boxes, remove the fiber or plastic washers used to hold device-mounting screws in yokes, allowing metal-to-metal contact.

E. Receptacle Orientation:

1. For vertically mounted receptacles below 48 inches install so ground pin is on top.
2. Install horizontally mounted receptacles so ground pin is on the right.
3. For vertically mounted receptacles above 48 inches install so ground pin is on bottom.

F. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

G. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical and with grounding terminal of receptacles on top. Group adjacent switches under single, multigang wall plates.

H. Adjust locations of service poles to suit arrangement of partitions and furnishings.

I. Installation of GFIC receptacles shall be wired to protect all downline receptacles if shown, whether indicated as GFIC or not.

3.2 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:

1. Test Instruments: Use instruments that comply with UL 1436.
2. Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated digital-display indicators of measurement.

B. Tests for Convenience Receptacles:

1. Line Voltage: Acceptable range is 105 to 132 V.
2. Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is unacceptable.

SECTION 26 27 28 - WIRE CONNECTIONS AND CONNECTING DEVICES

PART 1 - GENERAL

1.1 SCOPE OF WORK

A. Wire connection and connecting devices shall be as herein specified.

1.2 SUBMITTALS

A. Provide product data for each type of connecting device used. Provide table listing type of connection used for each application.

B. Cross out all non-used items on data sheets.

C. See Section 26 00 00 for additional instructions for submittals.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Connectors, Lugs, etc. - "T & B", "Anderson", "Burndy", or equal.

B. Ties and Servings - "T & B", "Panduit", or equal.

C. Termination and splice connectors - "3M Scotch Lok", "Anderson", "T & B", "Burndy", or equal.

2.2 MATERIALS

A. Wire Splicing and Terminations (600 Volts and Below)

1. Electrical Terminal and Splice Connectors (#22 - #4 AWG)

a. Terminals and splice connectors from #22 - #4 AWG shall be compression types with barrels to provide maximum conductor contact and tensile strength. Performance, construction, and materials shall be in conformance with UL standards for wire connectors and rated for 600 volts and 105 degrees Celsius.

b. Connectors shall be manufactured from high conductivity copper and entirely tin plated. Terminal barrels shall be serrated on the inside surface and have a

chamfered conductor entry. Terminals shall have funnel entry construction to prevent strand fold-back. All barrels shall be brazed seam or seamless construction.

c. Spade type terminals shall be sized for the appropriate stud and shall be locking type that snap firmly onto studs with a close fit for maximum retention. Spade type terminals shall be insulated with an insulation suitable for maintaining a high dielectric strength when crimped and be made from nylon, PVC, or equal.

2. Electrical Lugs and Connectors (#6 AWG - 1000 Kcmil)

a. Lugs and splice connectors from #6 AWG - 1000 Kcmil shall be compression types with barrels to provide maximum conductor contact and tensile strength. They shall be manufactured from high conductivity copper and entirely tin plated. They shall be crimped with standard industry tooling. The lugs and connectors must have a current carrying capacity equal to the conductors for which they are rated and must also meet all UL requirements. All lugs above 4/0 AWG shall be 2-hole lugs with NEMA spacing. The lugs shall be rated for operation through 35 KV. The lugs shall be of closed end construction to exclude moisture migration into the cable conductor.

3. Twist-on Wire Connectors (#22 AWG - #10 AWG)

a. All twist-on wire connectors must have a corrosion resistant spring that is free to expand within a steel jacket. The steel jacket must be insulated with a flexible vinyl jacket capable of withstanding 105 degrees Celsius ambient temperatures and of sufficient length to cover wires that are inadvertently over stripped.

b. Each connector size must be listed by UL for the intended purpose and color coded to assure that the proper size is used on the wire combinations to be spliced. The connectors must be compatible with all common rubber and thermoplastic wire insulations.

4. Solderless/re-usable lugs shall be used only when furnished with equipment such as control panels, furnished by others, where specification of compression type lugs is beyond the Contractor's control. In the event their use is necessary, the Contractor shall be responsible for assuring that they are manufactured to NEMA standards, with proper number and spacing of holes and set screws.

B. Splicer Terminal Blocks (600 Volts and Below)

1. Blocks shall be four pole, 600 Volt, 75 Degree C, high AIC rated, UL listed and configured on the line and load sides per requirements of the project. Provide

SECTION 26 28 16 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Non-fusible switches.
3. Molded-case circuit breakers (MCCBs).
4. Enclosures.

1.2 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated.

1.4 QUALITY ASSURANCE

A. Comply with NFPA 70.

B. All safety switches installed outdoors shall be heavy-duty Nema 3R type.

C. All safety switches installed in welding areas shall be heavy-duty, Nema 12 type.

PART 2 - PRODUCTS

2.1 NON-FUSIBLE SAFETY SWITCHES

A. Equipment shall be the same manufacturer as the Panelboard manufacturer accepted for this project.

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B. Type HD, Heavy Duty, Single Throw, 600-V ac, 1200 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept three padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Lugs: Suitable for number, size, and conductor material.

2.2 MOLDED-CASE CIRCUIT BREAKERS

A. Equipment shall be the same manufacturer as the Panelboard manufacturer accepted for this project.

B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.

D. Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:

1. Instantaneous trip.
2. Long- and short-time pickup levels.
3. Long- and short-time time adjustments.
4. Ground-fault pickup level, time delay, and I^2t response.

E. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.

F. Features and Accessories:

1. Standard frame sizes, trip ratings, and number of poles.
2. Lugs: Suitable for number, size, trip ratings, and conductor material.
3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
4. Ground-Fault Protection: Comply with UL 1053; [integrally mounted, self-powered] type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.

SECTION 265100 – INTERIOR AND EXTERIOR LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Lighting fixtures and ballasts.
2. Emergency lighting units.
3. Lighting fixture supports.

1.2 DEFINITIONS

A. CCT: Correlated color temperature.

B. CRI: Color Rendering Index.

C. Fixture: See "Luminaire."

D. IP: International Protection or Ingress Protection Rating.

E. LED: Light-emitting diode.

F. Lumen: Measured output of lamp and luminaire, or both.

G. Luminaire: Complete lighting unit, including lamp, reflector, and housing.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of lighting fixture, arranged in order of fixture designation. Include data on features, accessories, and finishes.

B. Shop Drawings: Show details of nonstandard or custom lighting fixtures. Indicate dimensions, weights, methods of field assembly, components, features, and accessories. Product Certificates: For each type of ballast for bi-level and dimmer-controlled fixtures, from manufacturer.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

B. Sample warranty.

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1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For luminaires and lighting systems to include in operation and maintenance manuals.

1. Provide a list of all lamp types used on Project; use ANSI and manufacturers' codes.

1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

C. Provide luminaires from a single manufacturer for each luminaire type.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Products: Subject to compliance with requirements, provide products by the following:

1. See Light Fixture Schedule for Manufacturers.

2.2 GENERAL REQUIREMENTS FOR LIGHTING FIXTURES AND COMPONENTS

A. Recessed Fixtures: Comply with NEMA LE 4 for ceiling compatibility for recessed fixtures.

B. Metal Parts: Free of burrs and sharp corners and edges.

C. Sheet Metal Components: Steel unless otherwise indicated. Form and support to prevent warping and sagging.

D. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally when secured in operating position.

E. Diffusers and Globes:

1. Acrylic Lighting Diffusers: 100 percent virgin acrylic plastic. High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.

a. Lens Thickness: At least 0.125 inch minimum unless otherwise indicated.
b. UV stabilized.

2. Glass: Annealed crystal glass unless otherwise indicated.

2.7 LIGHTING FIXTURE SUPPORT COMPONENTS

A. Surface mounted back box: Manufacturer's provided shall be used. Finish same as fixture.

B. Wires: Per Details located on Contract Documents.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Lighting fixtures: Set level, plumb, and square with ceilings and walls. Install lamps in each fixture.

B. Comply with NFPA 70 for minimum fixture supports.

C. Supports for Light Fixtures installed in or on grid type suspended ceilings:

1. Light fixtures shall be installed and secured to structure per Details located on the Contract Documents.
2. Fixtures of Size Less Than Ceiling Grid: Install as indicated on reflected ceiling plans, and support fixtures independently with at least two metal channels spanning and secured to ceiling tees.

D. Adjust aimable lighting fixtures to provide required light intensities.

3.2 FIELD QUALITY CONTROL

A. Test for Emergency Lighting: Interrupt power supply to demonstrate proper operation. Verify transfer from normal power to battery and retransfer to normal.

B. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.

C. Start up, training and labeling: See drawings for requirements.

END OF SECTION