

**OFFICIAL BID DOCUMENT
FOR
HVAC RENOVATIONS AND REPAIRS FOR TRAINING CENTER
LINCOLN VILLAGE YOUTH DEVELOPMENT CENTER
ELIZABETHTOWN, KENTUCKY**

This Official Bid Document consisting of pages 1 through 16 shall be used in submitting a bid document for the work. Copies will be furnished upon request by the authority issuing the Contract Documents.

THIS BID DOCUMENT SUBMITTED BY _____

(Name and Address of Bidder)

DATE: _____ TELEPHONE: _____

**TO: SEALED BID CLERK
COMMONWEALTH OF KENTUCKY
ENGINEERING AND CONTRACT ADMINISTRATION
403 WAPPING STREET, 2nd FLOOR
FRANKFORT, KY 40601-2638
PHONE: (502) 564-3050**

GENTLEMEN:

This Bidder, in compliance with your Request for Bid No. RFB-175-16, and having carefully examined the Drawings and complete Contract Documents as defined in Article 1 of the General Conditions as well as the Specifications for the work as prepared by Studio Kremer Architects, Inc, Phone No. (502) 499-1100; hereby proposes to furnish all labor, materials, supplies and services required to perform the specifics of the Contract Documents, within the time set forth therein and for the stated Lump Sum Bid Amount.

The Bidder hereby acknowledges receipt of the following Addenda:

ADDENDUM NO. _____	DATED _____	ADDENDUM NO. _____	DATED _____
ADDENDUM NO. _____	DATED _____	ADDENDUM NO. _____	DATED _____
ADDENDUM NO. _____	DATED _____	ADDENDUM NO. _____	DATED _____
ADDENDUM NO. _____	DATED _____	ADDENDUM NO. _____	DATED _____

(IF NONE HAVE BEEN ISSUED AND RECEIVED, INSERT THE WORD NONE.)

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ALL BLANKS IN THE BID DOCUMENTS SHALL BE COMPLETED AND ALL REQUIRED SUPPORT DATA SHALL BE FURNISHED. IF INDICATED IN THE BIDDING DOCUMENTS, SUMS SHALL BE EXPRESSED IN BOTH WORDS AND FIGURES. IN THE CASE OF DISCREPANCY BETWEEN THE TWO, THE AMOUNT IN WORDS SHALL PREVAIL.

LUMP SUM BASE BID:

The Bidder agrees to furnish all labor, materials, supplies and services required to complete this project defined as, HVAC Renovations and Repairs for Training Center, Lincoln Village Youth Development Center, Elizabethtown, Kentucky, , , for the Department for Facilities and Support Services, Commonwealth of Kentucky, in accordance with the Drawings, Specifications, and Contract Documents, and any duly issued Addenda for the LUMP SUM BID AMOUNT set forth below:

LUMP SUM BASE BID AMOUNT:

_____ DOLLARS

(USE WORDS)

_____ CENTS (\$ _____)

(USE WORDS) (USE FIGURES)

REFER TO PAGE 5 FOR THE EXPERIENCE MODIFICATION RATING AFFIDAVIT

NOTE: THE AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION AND NON-CONFLICT OF INTEREST PAGE MUST BE PROPERLY EXECUTED FOR THE LUMP SUM BASE BID TO BE VALID.

OFFICIAL BID DOCUMENT

AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION AND NON-CONFLICT OF INTEREST

I, HEREBY CERTIFY:

1. That I am the bidder (if the bidder is an individual), a partner in the bidder (if the bidder is a partnership), or an officer and employee of the bidding corporation having authority to sign on it's behalf (if the bidder is a corporation);
2. That the submitted bid or bids covering Division of Engineering and Contract Administration Request for Bid No. RFB-175-16 have been arrived at by the bidder independently and have 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 Request for Bid, designed to limit independent bidding or competition; as prohibited by provision KRS 45A.325;
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, 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 contract with the Commonwealth of Kentucky and is not in violation of any prohibited conflict of interest, including those prohibited by the provisions of KRS 164.390; and 45A.330 to 45A.340 and 45A.455;
5. This offer is for thirty (30) calendar days from the date this bid is opened. In submitting the above it is expressly agreed that upon proper acceptance by the Division of Engineering and Contract Administration of any or all items bid above, a contract shall thereby be created with respect to the items accepted;
6. That I have fully informed myself regarding and affirm the accuracy of all statements made in this Official Bid Document including Bid Amount.
7. Unless otherwise exempted by KRS 45.590, the bidder intends to comply in full with all requirements of the Kentucky Civil Rights Act and to submit data required by the Kentucky Equal Employment Act upon being designated the successful bidder.
8. That the bidder, if awarded a contract, would not be in violation of the Executive Branch Code of Ethics established by KRS 11A.001 through KRS 11A.990.
9. That the bidder is not debarred from doing business with federal agencies and that, if debarred during the life of the contract, the bidder will notify the Commonwealth buyer of record within seventy-two (72) hours of the federal debarment.

READ CAREFULLY – SIGN IN SPACE BELOW – FAILURE TO SIGN INVALIDATES BID

SIGNED BY: _____ **FIRM:** _____

PRINT NAME: _____ **ADDRESS:** _____

TITLE: _____

DATE: _____ **CITY** _____ **STATE** _____ **ZIP CODE** _____

_____ **TELEPHONE NO:** _____

_____ **FEDERAL ID. NO. OR SOCIAL SECURITY NO.** _____ **EMAIL:** _____

<p>*Disadvantaged Contractors, check type of certification:</p> <p><input type="checkbox"/> WBE <input type="checkbox"/> MBE <input type="checkbox"/> DBE</p>
--

***Disadvantaged Contractors attach a copy of certification.**

OFFICIAL BID DOCUMENT – SUBMITTAL DATA

THE FOLLOWING ITEMS ARE HEREWITH ENCLOSED AS REQUIRED:

- Experience Modification Rating (EMR) Affidavit
- Sworn Required Affidavit for Bidders, Offerors and Contractors
- Sworn Affidavit for Claiming Resident Bidder Status
- Vendor Report of Prior Violations of KRS Chapters, 136, 139, 141, 337, 338, 341 and 342.
- Bidder's Qualifications.
- Disadvantaged Business Enterprises (DBE) Participation

The utilization of minority/disadvantaged vendors and subcontractors is encouraged, whenever possible, on public projects. The bidder and contractor should make full efforts to locate disadvantaged business persons.

Bidders may use the following resources:

Commonwealth of Kentucky's SMALL BUSINESS CONNECTION website: <https://secure.kentucky.gov/sbc/default.aspx>

Kentucky Transportation Cabinet Disadvantaged Business Enterprise directories: <http://transportation.ky.gov/Civil-Rights-and-Small-Business-Development/Pages/Certified-DBE-Directory.aspx>

Finance and Administration Cabinet, Office of EEO/Contract Compliance: email Finance.ContractCompliance@ky.gov or call 502-564-2874

U.S. Small Business Administration, Dynamic Small Business Search website: http://dsbs.sba.gov/dsbs/search/dsp_dsbs.cfm

Louisville/ Jefferson County Metropolitan Sewer District website: <http://www.msdlouky.org/insidemsd/diverse/find.html>

For assistance with identifying potential small business vendors or subcontractors, contact the Cabinet for Economic Development's Procurement Assistance Program at ced.kpap@ky.gov or call (800) 838-3266.

A bidder must include a list of all disadvantaged vendors and/or subcontractors contacted in order to prepare a bid (ATTACH TO OFFICIAL BID DOCUMENT).

If the bidder fails to utilize any disadvantaged vendors and/or subcontractors, a statement must be included to describe actions to include disadvantaged vendors and/or subcontractors (ATTACH TO OFFICIAL BID DOCUMENT).

The Finance and Administration Cabinet will review all submissions by bidders to determine compliance with this provision.

- List of Unit Prices
 - List of Proposed Subcontractors
 - List of Materials and Equipment
- Bid Guaranty in the amount of no less than five percent (5%) of the TOTAL BID AMOUNT.

**COMMONWEALTH OF KENTUCKY
FINANCE AND ADMINISTRATION CABINET
SWORN STATEMENT REGARDING CAMPAIGN FINANCE LAWS
PURSUANT TO KRS 45A.110 AND KRS 45A.115**

The following form (page 6) relative to Campaign Finance Laws shall be completed in total, notarized and returned with your bid. Responsibility of a bidder or offeror for a contract award shall not be made until the bidder or offeror provides this sworn statement.

EXPERIENCE MODIFICATION RATING (EMR):

This form must be filled out by your Kentucky Workers Compensation Carrier/Agent. The insurance carrier/agent must certify your EMR. This form shall be submitted correctly with your bid or your company will receive zero (0) points awarded for this requirement. THIS FORM IS FOR RFB-175-16 ONLY. IF THIS FORM IS NOT TURNED IN WITH BID DOCUMENTS, CONTRACTOR WILL BE DEEMED NON-RESPONSIVE.

CONTRACTOR/VENDOR Information: (please print)

Name: _____

Address: _____

Phone: _____

Contact: _____

EMR: _____ **EFFECTIVE DATE:** _____

The bidder with the lowest Experience Modification Rating (EMR) will receive 5 points. The bidder with the next lowest EMR receives points by dividing the lowest EMR by the next lowest and multiplying that percentage by the available points. Failure to submit this affidavit with your bid will result in 0 points being awarded for this requirement.

The Contractor may be required to provide Worksheet, i.e. NCCI, KY AGC, etc. as documentation of their current score. Failure to fill out this form will result in zero (0) points being awarded for the EMR criteria.

NOTARIZED STATEMENT OF COMPLIANCE

Insurance Company providing KY Workers' Compensation:

I certify, under penalty of perjury, that I have provided all pertinent information required by this form and this information is true and accurate.

SIGNATURE

Printed Name

Title

Date

Company Full Legal Name _____

Address _____

Subscribed and sworn to before me by _____,

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

Notary Public

[seal of notary] My commission expires: _____

REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS**FOR BIDS AND CONTRACTS IN GENERAL:**

- I. Each bidder or offeror swears and affirms under penalty of perjury, that:
- a. In accordance with [KRS 45A.110](#) and [KRS 45A.115](#), neither the bidder or offeror as defined in [KRS 45A.070\(6\)](#), nor the entity which he/she represents, has knowingly violated any provisions of the campaign finance laws of the Commonwealth of Kentucky; and the award of a contract to the bidder or offeror or the entity which he/she represents will not violate any provisions of the campaign finance laws of the Commonwealth.
 - b. The bidder or offeror swears and affirms under penalty of perjury that, to the extent required by Kentucky law, the entity bidding, and all subcontractors therein, are aware of the requirements and penalties outlined in [KRS 45A.485](#); have properly disclosed all information required by this statute; and will continue to comply with such requirements for the duration of any contract awarded.
 - c. The bidder or offeror swears and affirms under penalty of perjury that, to the extent required by Kentucky law, the entity bidding, and its affiliates, are duly registered with the Kentucky Department of Revenue to collect and remit the sales and use tax imposed by [KRS Chapter 139](#), and will remain registered for the duration of any contract awarded.
 - d. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding is not delinquent on any state taxes or fees owed to the Commonwealth of Kentucky and will remain in good standing for the duration of any contract awarded.
 - e. Pursuant to [KRS 45A.480](#) the bidder or offeror swears and affirms under penalty of perjury, that all contractors and subcontractors employed, or that will be employed, under the provisions of this contract shall be in compliance with the requirements for worker's compensation insurance according to [KRS Chapter 342](#) and unemployment insurance according to [KRS Chapter 341](#).
 - f. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding is properly authorized under the laws of the Commonwealth of Kentucky to conduct business in this state; is duly registered with the Kentucky Secretary of State to the extent required by Kentucky law; and will remain in good standing to do business in the Commonwealth of Kentucky for the duration of any contract awarded.
 - g. By his signature, the offeror certifies that he is legally entitled to enter into this contract with the Commonwealth of Kentucky, and by holding and performing this contract will not be violating any conflict-of-interest statute ([KRS 45A.330](#), [KRS 45A.335](#), [KRS 45.340](#), [KRS 45A.990](#), [KRS 164.390](#)) or [KRS 11A.040](#) of the Executive Branch Code of Ethics, relating to employment of former public servants.
 - h. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding, and all subcontractors therein, are aware of the requirements of Executive Order 2015-370 and will pay all workers working on or in connection with any contract awarded a minimum of \$10.10 per hour for all regular, hourly employees and a minimum of \$4.90 per hour for all tipped employees for the duration of any contract awarded.

FOR "NON-BID" CONTRACTS (I.E. SOLE-SOURCE; NOT-PRACTICAL OR FEASIBLE TO BID; OR EMERGENCY CONTRACTS, ETC):

- II. Each contractor further swears and affirms under penalty of perjury, that:
- a. In accordance with [KRS 121.056](#), and if this is a non-bid contract, neither the contractor, nor any member of his/her immediate family having an interest of 10% or more in any business entity involved in the performance of any contract awarded, have contributed more than the amount specified in [KRS 121.150](#) to the campaign of the gubernatorial slate elected in the election last preceding the date of contract award.
 - b. In accordance with [KRS 121.330\(1\) and \(2\)](#), and if this is a non-bid contract, neither the contractor, nor officers or employees of the contractor or any entity affiliated with the contractor, nor the spouses of officers or employees of the contractor or any entity affiliated with the contractor, have knowingly contributed more than \$5,000 in aggregate to the campaign of a candidate elected in the election last preceding the date of contract award that has jurisdiction over this contract award.

REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS CLAIMING RESIDENT BIDDER STATUS

FOR BIDS AND CONTRACTS IN GENERAL:

The bidder or offeror hereby swears and affirms under penalty of perjury that, in accordance with KRS 45A.494(2), the entity bidding is an individual, partnership, association, corporation, or other business entity that, on the date the contract is first advertised or announced as available for bidding:

1. Is authorized to transact business in the Commonwealth;
2. Has for one year prior to and through the date of advertisement
 - a. Filed Kentucky income taxes;
 - b. Made payments to the Kentucky unemployment insurance fund established in KRS 341.49; and
 - c. Maintained a Kentucky workers' compensation policy in effect.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder's claim of resident bidder status. Failure to provide such documentation upon request shall result in disqualification of the bidder or contract termination.

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: _____

**VENDOR REPORT OF PRIOR VIOLATIONS
ON CONSTRUCTION SEALED BIDS**

This form is applicable to all sealed bids for construction projects issued by the Finance and Administration Cabinet, Division of Engineering and Contract Administration (DECA) in accordance with KRS 45A.080.

The **Prime Bidder** on any construction sealed bid **shall** complete and provide a signed and notarized form with the required information attached, for the Prime Bidder, as **an attachment to the bid**.

The information required is specifically - **any final determination(s) of violations within the last five (5) calendar years of the following:**

1. Violations of KRS Chapter 136 (Corporation and Utility Taxes);
2. Violations of KRS Chapter 139 (Sales and Use Taxes);
3. Violations of KRS Chapter 141 (Income Taxes);
4. Violations of KRS Chapter 337 (Wages and Hours);
5. Violations of KRS Chapter 338 (Occupational Safety and Health of Employees);
6. Violations of KRS Chapter 341 (Unemployment Insurance);
7. Violations of KRS Chapter 342 (Workers Compensation); and
8. Violations of Occupational Safety and Health Laws **in any other states and at the federal level**.

If there are no violations for a particular category, vendor should attach a statement to that effect.

If there are violations for a particular category, the vendor should list them and provide the following information for each: the date of the violation, a short description of the violation (including statutory citation), the name of the governmental enforcement agency involved, and the amount of any penalties imposed as a result of the final determination.

Please note that this information may be provided to other governmental agencies, such as the Kentucky Labor Cabinet, as part of the bid process. DECA reserves the unqualified right to disqualify any vendors from participating further in this bid process if appropriate under law.

In addition, the successful prime bidder and subcontractors shall remain in continuous compliance with KRS 45A.485 during the life of any contract awarded, and shall notify DECA of any new final determinations of violations in **any** of the above-mentioned categories, which occur after contract award, and during the life of any contract awarded. Failure to comply with these requirements may result in the bidder and subcontractors being disqualified from participating in future bid opportunities for the Commonwealth.

COMPANY NAME: _____

TAX PAYER ID #: _____

THIS VENDOR VIOLATION FORM MAY BE SENT TO THE LABOR CABINET FOR VERIFICATION. PLEASE MAKE SURE ALL YOUR VIOLATIONS ARE LISTED WITHIN THE LAST FIVE (5) YEARS. IF A BIDDER LISTS "NONE" AND HAS SOME, THEIR BID MAY BE REJECTED. FOR A LIST OF YOUR VENDOR VIOLATIONS, YOU CAN FAX OR EMAIL THE LABOR CABINET WITH YOUR REQUEST. FAX NUMBER IS (502) 696-1984 OR EMAIL: labor.desam@ky.gov.

Violation Category	Date	Description	Govt. Enforcement Agency	Amount of Penalties

NOTARIZED STATEMENT OF COMPLIANCE

I certify, under penalty of perjury, that I have provided all pertinent information required by this form and this information is true and accurate. I also certify that I have completely read and understand this form and will comply with these requirements during the life of any contract awarded.

SIGNATURE

Printed Name

Title

Date

MAKE SURE YOU PUT COMPANY'S FULL LEGAL NAME

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: _____

BIDDER'S QUALIFICATIONS

The Bidder's Qualifications are required by the owner to be submitted as set forth herewith:

1. This firm is a Corp. _____, Partnership _____, or Proprietorship _____.
2. A permanent place of business is maintained at:

STREET	CITY	STATE	ZIP CODE
--------	------	-------	----------

TELEPHONE NUMBER

3. The following construction plant and equipment will be made available for use on this contract:

4. In the event the contract is awarded the undersigned, surety bonds will be furnished by:

5. Experience of Contractor on other similar work:

6. We now have the following jobs under contract and bonded:

JOB	TOTAL CONTRACT	PERCENT COMPLETED
_____	\$ _____	_____ %
_____	\$ _____	_____ %
_____	\$ _____	_____ %
_____	\$ _____	_____ %
_____	\$ _____	_____ %

P-2

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION

- 1.01 **CERTIFICATION OF DBE:** Any DBE utilized pursuant to this Section shall be certified as a DBE by one of the following: Kentucky Transportation Cabinet or other state Transportation agencies, the Louisville Metropolitan Sewer District, the Kentucky Minority Supplier Development Council or other state Minority Supplier Development Councils, the Kentucky Certification Cooperative, or the Small Business Administration.
- 1.02 **OBLIGATION OF BIDDER/CONTRACTOR:** Bidder/Contractor shall make a good faith effort to meet the DBE contract goal set by the Commonwealth by including DBE's as subcontractors and/or material suppliers on 10% of the total estimated cost of the Contract. The failure to meet the foregoing goal shall not result in disqualification from bidding or being awarded a contract. However, Bidders/Contractors not meeting the DBE goal shall be expected to provide written proof of their good faith efforts. Award of the contract shall be conditioned upon satisfaction of the requirements established by this section. The Bidder/Contractor shall attempt to divide the work in the contract to facilitate use of DBE's (however, there is no requirement that the work be artificially divided or divided in a way that raises the bid price of the Bidder/Contractor).
- 1.03 **PROOF REQUIRED:** Each bidder shall furnish written proof in their bid package that they reached the DBE participation goal for this Contract, or of their good faith efforts to meet the DBE participation goal. A copy of each participating DBE's certification shall accompany the required forms. All submissions shall be subject to verification of the Commonwealth.
- A. Proof that the apparent successful bidder reached the DBE goal shall consist of the following and shall be made on form DB-2-A, attached hereto:
1. The names and addresses of DBE firms that will participate in the contract;
 2. A description of the work each named DBE firm will perform;
 3. The dollar amount of participation by each named DBE firm;
 4. The percentage amount of participation by each named DBE firm;
- B. Proof that the apparent successful bidder made a good faith efforts to meet the DBE participation goal may include the following:
1. Advertisement by the Bidder/Contractor of DBE contracting opportunities associated with this contract in at least one of each of the following periodicals: a periodical in general circulation throughout the Commonwealth, a trade periodical focused on DBE contractors/suppliers in general circulation throughout the Commonwealth, and a minority-focused periodical in general circulation throughout the Commonwealth. The Bidder/Contractor shall include copies of the dated advertisements in his bid package;
 2. Written notice of DBE opportunities in this contract to at least five pertinent DBE's at least seven days prior to the bid opening date. Copies of the written notices shall be included in the bid package;
 3. The Bidder/Contractor's response(s) to those DBE's who requested plans, specifications and/or contracting requirements. Copies of said responses shall be included in the bid package;
 4. Documentation on form DB-2-B of good faith negotiations with at least three DBE's, with no rejection of a qualified DBE without sound reason, including price quotes that are above other subcontractor's price quotes;
 5. Utilization of the Finance and Administration Cabinet's Office of Equal Employment Opportunity and Contract Compliance for referrals to organizations that assist in locating DBE's. Proof of use of such referrals and contacts made as a result thereof shall be included in the bid package.

DB-2-A

DISADVANTAGED BUSINESS AVAILABILITY VERIFICATION

_____ does commit itself that on the following project:
NAME OF COMPANY

_____ REQUEST FOR BID NUMBER
PROJECT NAME

The Bidder agrees to furnish information required by the Commonwealth of Kentucky to indicate the Disadvantaged Business which it intends to utilize. Breach of this commitment constitutes breach of the Bidder's contract if awarded.

NAME OF DISADVANTAGED BUSINESS	TELEPHONE	TYPE OF WORK

DOLLAR VALUE	PERCENT	DISADVANTAGED CLASSIFICATION

The undersigned shall enter into a formal agreement with the disadvantaged business firms for work listed in this schedule conditioned upon execution of a contract with the Commonwealth of Kentucky.

Disadvantaged business firms listed above by the Bidder and accepted by the Owner and the Architect/Engineer shall be used on the work for which they were proposed and accepted and shall not be changed except with the written approval of the Owner and the Architect/Engineer. The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the Bidder to the commitment herein set forth.

Signature and title of authorized official of the company and the data shall be properly executed on this document or the bid will be deemed nonresponsive.

_____ TITLE
NAME OF AUTHORIZED OFFICER

_____ DATE
SIGNATURE

If you are bidding as a General Contractor on this project i.e. direct bidding and a Disadvantaged business as defined herein, please provide a copy of your DBE Certification.

Submit with Bid.
(Please copy additional Disadvantaged Business Availability Forms as necessary.)

DB-2-B

DISADVANTAGED BUSINESS UNAVAILABILITY VERIFICATION

I, _____, _____
(TITLE)

of _____
(PRIME BIDDER)

certify that on _____ I contacted the following disadvantaged business by: (circle one) Certified Mail, Phone, In Person to obtain a bid for work items to be performed on the Contract.

DISADVANTAGE CERT.	CONTRACTOR	WORK ITEMS SOUGHT	FORM OF BID SUPPORT (I.E., UNIT PRICE, MATERIALS LABOR & LABOR ONLY)

To the best of my knowledge and belief, said disadvantaged business was unavailable (exclusive of unavailability due to lack of agreement on price) for work on this project, or unable to prepare a bid, for the following reason(s):

SIGNATURE _____

DATE _____

_____ was offered an
(NAME OF DISADVANTAGED BUSINESS)

opportunity to bid on the above-identified work on _____ by

(SOURCE)

The above statement is a true and accurate account of why I did not submit a bid on this project.

(SIGNATURE OF DISADVANTAGED BUSINESS)

(TITLE)

(DATE)

Submit with Bid if Applicable.
(Please copy additional Disadvantaged Business Unavailability Forms as needed.)

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ELIZABETHTOWN, KENTUCKY**

LIST OF PROPOSED SUBCONTRACTORS:
(Must be submitted with Bid)

The following list of proposed subcontractors is required by the owner to be executed, completed, and submitted with the Bidder's Bid Document. All subcontractors are subject to approval by the Division of Engineering and Contract Administration, Department of Facilities and Support Services, Frankfort, Kentucky. Failure to submit this list, completely filled out, may result in bid rejection.

If certain branches of work are to be done by the Prime Contractor, so state. Review/evaluation of subcontractors will occur on the bid opening day. If the Commonwealth requests replacement of a subcontractor, on bid opening day, then the apparent low bidder will provide a replacement subcontractor prior to close of the Commonwealth's business day on that day. Failure of the apparent low bidder to comply with the preceding sentence will result in bid rejection. If subcontractor review/evaluation is not completed on the bid opening day, then procedures for any replacement will be issued based on the uniqueness of each situation. The responsibility for selection, offering of qualified, competent subcontractors to accomplish the work intended is solely the responsibility of the bidder to the Commonwealth.

<u>BRANCH OF WORK</u>	<u>NAME AND ADDRESS OF SUBCONTRACTOR</u> (If Prime/General, please state.)
1. Concrete	_____
2. Ceramic tile	_____
3. Masonry	_____
4. Metal studs/gypsum board	_____
5. Movable partitions	_____
6. Acoustical ceiling system	_____
7. HVAC	_____
8. Plumbing	_____
9. Sheetmetal	_____
10. Electrical	_____
11. Mechanical Insulation	_____

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ELIZABETHTOWN, KENTUCKY**

LIST OF MATERIALS AND EQUIPMENT:

Every item listed under the different phases of construction must be clearly identified so that the Owner will definitely know what the bidder proposes to furnish. Bidders be hereby advised that this list shall be required to be filled out completely by the apparent low bidder within ONE (1) HOUR from the close of the official reading of the bids.

The above requirement does not preclude any bidder from submitting this list, fully executed, at the time the bids are submitted.

The use of the manufacturer's dealer's name only, or stating "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.

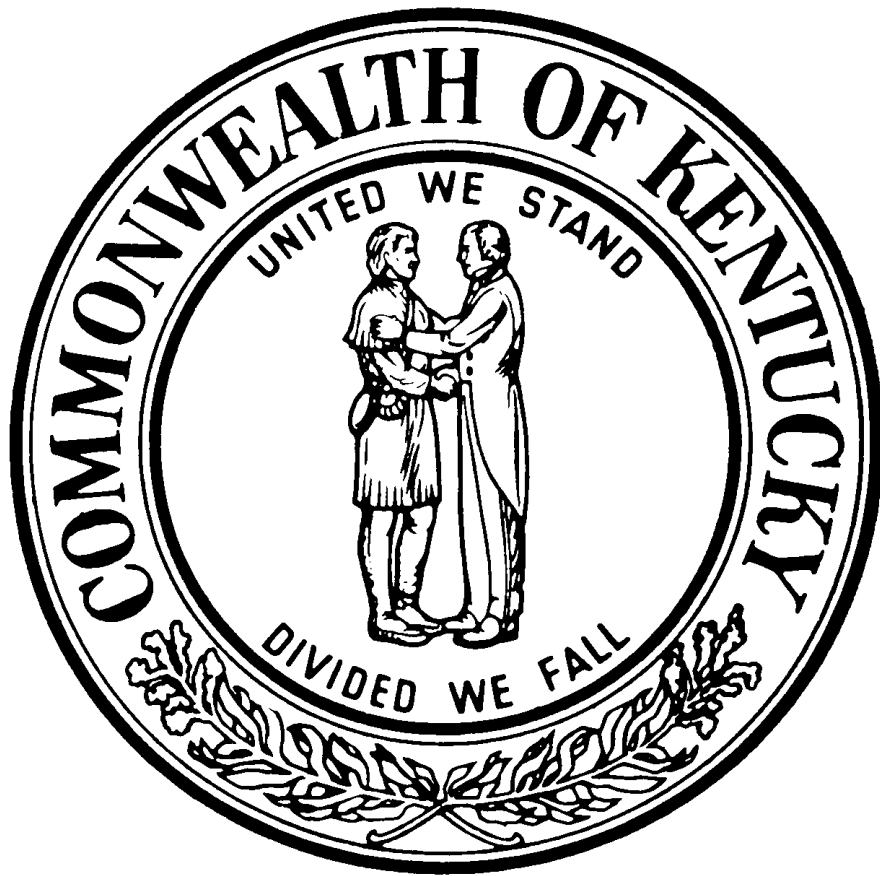
Failure to submit a proper list may result in rejection of Bidder's Bid Document.

MATERIAL AND/OR EQUIPMENT:

MANUFACTURER AND BRAND NAME:

- | | |
|-------------------------------------|-------|
| 1. Masonry | _____ |
| 2. Doors & Hardware | _____ |
| 3. Ceramic Tile | _____ |
| 4. Movable Partitions | _____ |
| 5. Acoustical Ceiling System | _____ |
| 6. Energy Recovery Unit ERV-1 | _____ |
| 7. Plumbing Fixtures | _____ |
| 8. Grilles, Registers and Diffusers | _____ |
| 9. Light Fixtures | _____ |
| 10. Power Poles | _____ |

**FINANCE AND ADMINISTRATION
DEPARTMENT FOR FACILITIES AND SUPPORT SERVICES
DIVISION OF ENGINEERING AND CONTRACT ADMINISTRATION**



REQUEST FOR BID NO. RFB-175-16

**HVAC RENOVATIONS AND REPAIRS FOR TRAINING CENTER
LINCOLN VILLAGE YOUTH DEVELOPMENT CENTER
ELIZABETHTOWN, KENTUCKY**

**Agency: 523
Fund: C7RN**



1INDEX
RFB-175-16
HVAC RENOVATIONS AND REPAIRS FOR TRAINING CENTER
LINCOLN VILLAGE YOUTH DEVELOPMENT CENTER
ELIZABETHTOWN, KENTUCKY

OFFICIAL BID DOCUMENT
NOTICE TO CONTRACTORS
PART I ADVERTISEMENT FOR BIDS
PART II INSTRUCTIONS TO BIDDERS
PART III GENERAL CONDITIONS
PART IV PAYMENT BOND
PART V PERFORMANCE BOND
PART VI AGREEMENT BETWEEN OWNER AND CONTRACTOR
EO 2015-370 EXECUTIVE ORDER
KENTUCKY PREVAILING WAGE
SPECIFICATIONS

PLEASE NOTE THE FOLLOWING:

THE VENDOR VIOLATION FORM IN THE BID DOCUMENTS IS BEING SENT TO THE LABOR CABINET FOR VERIFICATION. PLEASE MAKE SURE ALL YOUR VIOLATIONS ARE LISTED WITHIN THE LAST FIVE (5) YEARS. IF A BIDDER LISTS "NONE" AND HAS SOME, THEIR BID MAY BE REJECTED. FOR A LIST OF YOUR VENDOR VIOLATIONS, YOU CAN FAX OR EMAIL THE LABOR CABINET WITH YOUR REQUEST. FAX NUMBER IS (502) 696-1984 OR EMAIL: labor.desam@ky.gov. CONTRACTORS MUST ALLOW THREE (3) DAYS IN ORDER TO GET INFORMATION FROM THE LABOR CABINET.

SEE PAGE 5 OF THE OFFICIAL BID DOCUMENT ON PROJECTS REQUIRING THE EXPERIENCE MODIFICATION RATING (EMR). THIS AFFIDAVIT MUST BE FILLED OUT BY YOUR KENTUCKY WORKERS COMPENSATION CARRIER.

THERE IS A CHECKLIST ON PAGE 4 OF THE OFFICIAL BID DOCUMENT FOR CONTRACTORS TO MAKE SURE ALL OF BID DOCUMENT IS ENCLOSED WHEN SUBMITTING THEIR BID.

**OFFICIAL BID DOCUMENT
FOR
HVAC RENOVATIONS AND REPAIRS FOR TRAINING CENTER
LINCOLN VILLAGE YOUTH DEVELOPMENT CENTER
ELIZABETHTOWN, KENTUCKY**

This Official Bid Document consisting of pages 1 through 16 shall be used in submitting a bid document for the work. Copies will be furnished upon request by the authority issuing the Contract Documents.

THIS BID DOCUMENT SUBMITTED BY _____

(Name and Address of Bidder)

DATE: _____ TELEPHONE: _____

**TO: SEALED BID CLERK
COMMONWEALTH OF KENTUCKY
ENGINEERING AND CONTRACT ADMINISTRATION
403 WAPPING STREET, 2nd FLOOR
FRANKFORT, KY 40601-2638
PHONE: (502) 564-3050**

GENTLEMEN:

This Bidder, in compliance with your Request for Bid No. RFB-175-16, and having carefully examined the Drawings and complete Contract Documents as defined in Article 1 of the General Conditions as well as the Specifications for the work as prepared by Studio Kremer Architects, Inc, Phone No. (502) 499-1100; hereby proposes to furnish all labor, materials, supplies and services required to perform the specifics of the Contract Documents, within the time set forth therein and for the stated Lump Sum Bid Amount.

The Bidder hereby acknowledges receipt of the following Addenda:

ADDENDUM NO. _____	DATED _____	ADDENDUM NO. _____	DATED _____
ADDENDUM NO. _____	DATED _____	ADDENDUM NO. _____	DATED _____
ADDENDUM NO. _____	DATED _____	ADDENDUM NO. _____	DATED _____
ADDENDUM NO. _____	DATED _____	ADDENDUM NO. _____	DATED _____

(IF NONE HAVE BEEN ISSUED AND RECEIVED, INSERT THE WORD NONE.)

**OFFICIAL BID DOCUMENT
FOR
HVAC RENOVATIONS AND REPAIRS FOR TRAINING CENTER
LINCOLN VILLAGE YOUTH DEVELOPMENT CENTER
ELIZABETHTOWN, KENTUCKY**

ALL BLANKS IN THE BID DOCUMENTS SHALL BE COMPLETED AND ALL REQUIRED SUPPORT DATA SHALL BE FURNISHED. IF INDICATED IN THE BIDDING DOCUMENTS, SUMS SHALL BE EXPRESSED IN BOTH WORDS AND FIGURES. IN THE CASE OF DISCREPANCY BETWEEN THE TWO, THE AMOUNT IN WORDS SHALL PREVAIL.

LUMP SUM BASE BID:

The Bidder agrees to furnish all labor, materials, supplies and services required to complete this project defined as, HVAC Renovations and Repairs for Training Center, Lincoln Village Youth Development Center, Elizabethtown, Kentucky, , , for the Department for Facilities and Support Services, Commonwealth of Kentucky, in accordance with the Drawings, Specifications, and Contract Documents, and any duly issued Addenda for the LUMP SUM BID AMOUNT set forth below:

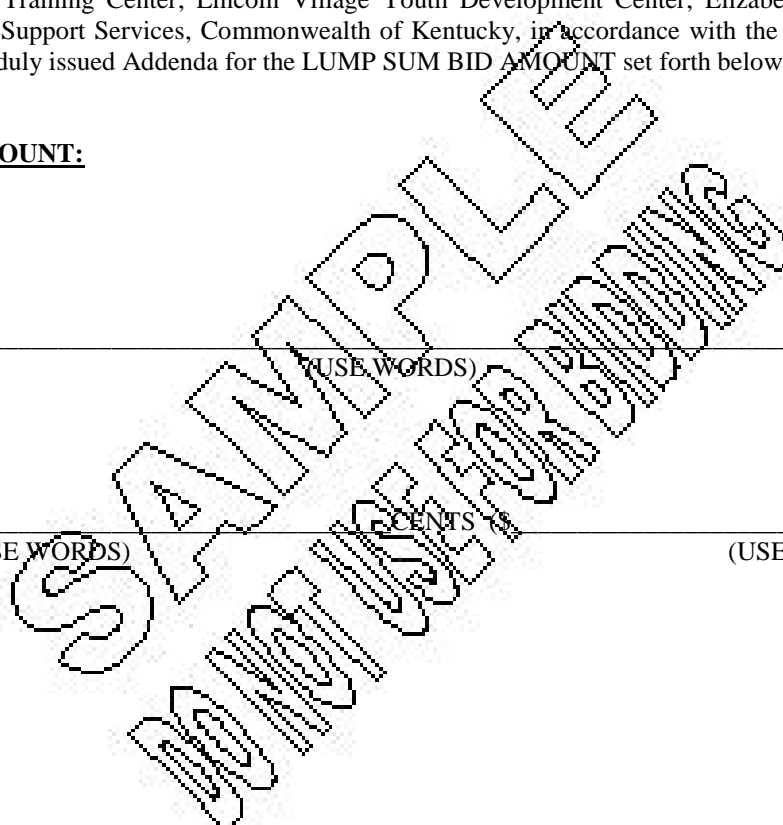
LUMP SUM BASE BID AMOUNT:

_____ DOLLARS

(USE WORDS)

CENTS

(USE WORDS) _____ (USE FIGURES)



REFER TO PAGE 5 FOR THE EXPERIENCE MODIFICATION RATING AFFIDAVIT

NOTE: THE AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION AND NON-CONFLICT OF INTEREST PAGE MUST BE PROPERLY EXECUTED FOR THE LUMP SUM BASE BID TO BE VALID.

OFFICIAL BID DOCUMENT

AUTHENTICATION OF BID AND STATEMENT OF NON-COLLUSION AND NON-CONFLICT OF INTEREST

I, HEREBY CERTIFY:

1. That I am the bidder (if the bidder is an individual), a partner in the bidder (if the bidder is a partnership), or an officer and employee of the bidding corporation having authority to sign on it's behalf (if the bidder is a corporation);
2. That the submitted bid or bids covering Division of Engineering and Contract Administration Request for Bid No. RFB-175-16 have been arrived at by the bidder independently and have 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 Request for Bid, designed to limit independent bidding or competition; as prohibited by provision KRS 45A.325;
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, 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 contract with the Commonwealth of Kentucky and is not in violation of any prohibited conflict of interest, including those prohibited by the provisions of KRS 164.390; and 45A.330 to 45A.340 and 45A.455;
5. This offer is for thirty (30) calendar days from the date this bid is opened. In submitting the above it is expressly agreed that upon proper acceptance by the Division of Engineering and Contract Administration of any of all items bid above, a contract shall thereby be created with respect to the items accepted;
6. That I have fully informed myself regarding and affirm the accuracy of all statements made in this Official Bid Document including Bid Amount.
7. Unless otherwise exempted by KRS 45.590, the bidder intends to comply in full with all requirements of the Kentucky Civil Rights Act and to submit data required by the Kentucky Equal Employment Act upon being designated the successful bidder.
8. That the bidder, if awarded a contract, would not be in violation of the Executive Branch Code of Ethics established by KRS 11A.001 through KRS 11A.990.
9. That the bidder is not debarred from doing business with federal agencies and that, if debarred during the life of the contract, the bidder will notify the Commonwealth buyer of record within seventy-two (72) hours of the federal debarment.

READ CAREFULLY – SIGN IN SPACE BELOW – FAILURE TO SIGN INVALIDATES BID

SIGNED BY: _____ **FIRM:** _____

PRINT NAME: _____ **ADDRESS:** _____

TITLE: _____ **CITY** _____ **STATE** _____ **ZIP CODE** _____

DATE: _____ **TELEPHONE NO:** _____

FEDERAL ID. NO. OR SOCIAL SECURITY NO. _____ **EMAIL:** _____

<p>*Disadvantaged Contractors, check type of certification:</p> <p><input type="checkbox"/> WBE <input type="checkbox"/> MBE <input type="checkbox"/> DBE</p>
--

***Disadvantaged Contractors attach a copy of certification.**

OFFICIAL BID DOCUMENT – SUBMITTAL DATA**THE FOLLOWING ITEMS ARE HEREWITH ENCLOSED AS REQUIRED:**

- Experience Modification Rating (EMR) Affidavit
- Sworn Required Affidavit for Bidders, Offerors and Contractors
- Sworn Affidavit for Claiming Resident Bidder Status
- Vendor Report of Prior Violations of KRS Chapters, 136, 139, 141, 337, 338, 341 and 342.
- Bidder's Qualifications.
- Disadvantaged Business Enterprises (DBE) Participation

The utilization of minority/disadvantaged vendors and subcontractors is encouraged, whenever possible, on public projects. The bidder and contractor should make full efforts to locate disadvantaged business persons.

Bidders may use the following resources:

Commonwealth of Kentucky's SMALL BUSINESS CONNECTION website: <https://secure.kentucky.gov/sbc/default.aspx>
 Kentucky Transportation Cabinet Disadvantaged Business Enterprise directories: <http://transportation.ky.gov/Civil-Rights-and-Small-Business-Development/Pages/Certified-DBE-Directory.aspx>
 Finance and Administration Cabinet, Office of EEO/Contract Compliance: email Finance.ContractCompliance@ky.gov or call 502-564-2874

U.S. Small Business Administration, Dynamic Small Business Search website: http://dsbs.sba.gov/dsbs/search/dsp_dsbs.cfm

Louisville/ Jefferson County Metropolitan Sewer District website: <http://www.msdkva.org/insidemsd/diverse/find.html>

For assistance with identifying potential small business vendors or subcontractors, contact the Cabinet for Economic Development's Procurement Assistance Program at ced.kgap@ky.gov or call (800) 839-3276.

A bidder must include a list of all disadvantaged vendors and/or subcontractors contacted in order to prepare a bid (ATTACH TO OFFICIAL BID DOCUMENT).

If the bidder fails to utilize any disadvantaged vendors and/or subcontractors, a statement must be included to describe actions to include disadvantaged vendors and/or subcontractors (ATTACH TO OFFICIAL BID DOCUMENT).

The Finance and Administration Cabinet will review all submissions by bidders to determine compliance with this provision.

- List of Unit Prices
- List of Proposed Subcontractors
- List of Materials and Equipment
- Bid Guaranty in the amount of no less than five percent (5%) of the TOTAL BID AMOUNT.

**COMMONWEALTH OF KENTUCKY
 FINANCE AND ADMINISTRATION CABINET
 SWORN STATEMENT REGARDING CAMPAIGN FINANCE LAWS
 PURSUANT TO KRS 45A.110 AND KRS 45A.115**

The following form (page 6) relative to Campaign Finance Laws shall be completed in total, notarized and returned with your bid. Responsibility of a bidder or offeror for a contract award shall not be made until the bidder or offeror provides this sworn statement.

EXPERIENCE MODIFICATION RATING (EMR):

This form must be filled out by your Kentucky Workers Compensation Carrier/Agent. The insurance carrier/agent must certify your EMR. This form shall be submitted correctly with your bid or your company will receive zero (0) points awarded for this requirement. THIS FORM IS FOR RFB-175-16 ONLY. IF THIS FORM IS NOT TURNED IN WITH BID DOCUMENTS, CONTRACTOR WILL BE DEEMED NON-RESPONSIVE.

CONTRACTOR/VENDOR Information: (please print)

Name: _____

Address: _____

Phone: _____

Contact: _____

EMR: _____

EFFECTIVE DATE: _____

The bidder with the lowest Experience Modification Rating (EMR) will receive 5 points. The bidder with the next lowest EMR receives points by dividing the lowest EMR by the next lowest and multiplying that percentage by the available points. Failure to submit this affidavit with your bid will result in 0 points being awarded for this requirement.

The Contractor may be required to provide Worksheet, i.e. NCCI, KY AGC, etc as documentation of their current score. Failure to fill out this form will result in zero (0) points being awarded for the EMR criteria.

NOTARIZED STATEMENT OF COMPLIANCE

Insurance Company providing KY Workers' Compensation:

I certify, under penalty of perjury, that I have provided all pertinent information required by this form and this information is true and accurate.

SIGNATURE

Printed Name

Title

Date

Company Full Legal Name _____

Address _____

Subscribed and sworn to before me by _____,

of _____ (Affiant) this _____ day of _____, 20____ (Title)
(Company Name)

Notary Public

[seal of notary] My commission expires: _____

REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS**FOR BIDS AND CONTRACTS IN GENERAL:**

- I. Each bidder or offeror swears and affirms under penalty of perjury, that:
- a. In accordance with [KRS 45A.110](#) and [KRS 45A.115](#), neither the bidder or offeror as defined in [KRS 45A.070\(6\)](#), nor the entity which he/she represents, has knowingly violated any provisions of the campaign finance laws of the Commonwealth of Kentucky; and the award of a contract to the bidder or offeror or the entity which he/she represents will not violate any provisions of the campaign finance laws of the Commonwealth.
 - b. The bidder or offeror swears and affirms under penalty of perjury that, to the extent required by Kentucky law, the entity bidding, and all subcontractors therein, are aware of the requirements and penalties outlined in [KRS 45A.485](#); have properly disclosed all information required by this statute; and will continue to comply with such requirements for the duration of any contract awarded.
 - c. The bidder or offeror swears and affirms under penalty of perjury that, to the extent required by Kentucky law, the entity bidding, and its affiliates, are duly registered with the Kentucky Department of Revenue to collect and remit the sales and use tax imposed by [KRS Chapter 139](#), and will remain registered for the duration of any contract awarded.
 - d. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding is not delinquent on any state taxes or fees owed to the Commonwealth of Kentucky and will remain in good standing for the duration of any contract awarded.
 - e. Pursuant to [KRS 45A.480](#) the bidder or offeror swears and affirms under penalty of perjury, that all contractors and subcontractors employed, or that will be employed, under the provisions of this contract shall be in compliance with the requirements for worker's compensation insurance according to [KRS Chapter 342](#) and unemployment insurance according to [KRS Chapter 341](#).
 - f. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding is properly authorized under the laws of the Commonwealth of Kentucky to conduct business in this state, is duly registered with the Kentucky Secretary of State to the extent required by Kentucky law, and will remain in good standing to do business in the Commonwealth of Kentucky for the duration of any contract awarded.
 - g. By his signature, the offeror certifies that he is legally entitled to enter into this contract with the Commonwealth of Kentucky, and by holding and performing this contract will not be violating any conflict-of-interest statute ([KRS 45A.330](#), [KRS 45A.335](#), [KRS 45.340](#), [KRS 45A.999](#), [KRS 164.390](#)) or [KRS 11A.040](#) of the Executive Branch Code of Ethics, relating to employment of former public servants.
 - h. The bidder or offeror swears and affirms under penalty of perjury that the entity bidding, and all subcontractors therein, are aware of the requirements of Executive Order 2015-370 and will pay all workers working on or in connection with any contract awarded a minimum of \$10.10 per hour for all regular, hourly employees and a minimum of \$4.90 per hour for all tipped employees for the duration of any contract awarded.

FOR "NON-BID" CONTRACTS (I.E. SOLE-SOURCE; NOT-PRACTICAL OR FEASIBLE TO BID; OR EMERGENCY CONTRACTS, ETC):

- II. Each contractor further swears and affirms under penalty of perjury, that:
- a. In accordance with [KRS 121.056](#), and if this is a non-bid contract, neither the contractor, nor any member of his/her immediate family having an interest of 10% or more in any business entity involved in the performance of any contract awarded, have contributed more than the amount specified in [KRS 121.150](#) to the campaign of the gubernatorial slate elected in the election last preceding the date of contract award.
 - b. In accordance with [KRS 121.330\(1\) and \(2\)](#), and if this is a non-bid contract, neither the contractor, nor officers or employees of the contractor or any entity affiliated with the contractor, nor the spouses of officers or employees of the contractor or any entity affiliated with the contractor, have knowingly contributed more than \$5,000 in aggregate to the campaign of a candidate elected in the election last preceding the date of contract award that has jurisdiction over this contract award.

REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS

- c. In accordance with [KRS 121.330\(3\) and \(4\)](#), and if this is a non-bid contract, to the best of his/her knowledge, neither the contractor, nor any member of his/her immediate family, his/her employer, or his/her employees, or any entity affiliated with any of these entities or individuals, have directly solicited contributions in excess of \$30,000 in the aggregate for the campaign of a candidate elected in the election last preceding the date of contract award that has jurisdiction over this contract.

As a duly authorized representative for the bidder, offeror, or contractor, I have fully informed myself regarding the accuracy of all statements made in this affidavit, and acknowledge that the Commonwealth is reasonably relying upon these statements, in making a decision for contract award and any failure to accurately disclose such information may result in contract termination, repayment of funds and other available remedies under law.

Signature _____ Printed Name _____

Title _____ Date _____

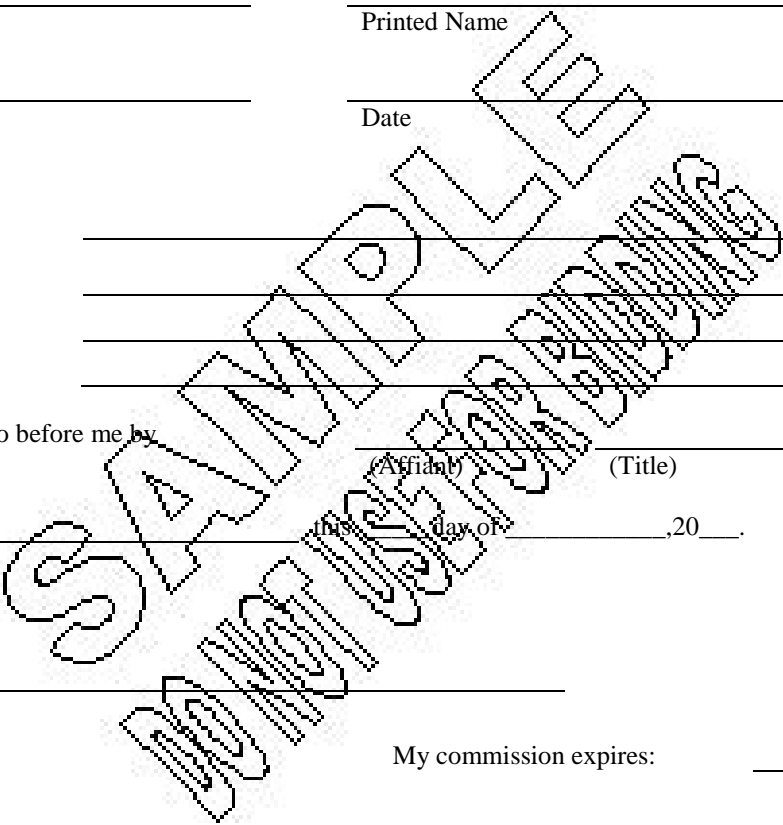
Company Name _____

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: _____



REQUIRED AFFIDAVIT FOR BIDDERS, OFFERORS AND CONTRACTORS CLAIMING RESIDENT BIDDER STATUS

FOR BIDS AND CONTRACTS IN GENERAL:

The bidder or offeror hereby swears and affirms under penalty of perjury that, in accordance with KRS 45A.494(2), the entity bidding is an individual, partnership, association, corporation, or other business entity that, on the date the contract is first advertised or announced as available for bidding:

1. Is authorized to transact business in the Commonwealth;
2. Has for one year prior to and through the date of advertisement
 - a. Filed Kentucky income taxes;
 - b. Made payments to the Kentucky unemployment insurance fund established in KRS 341.49; and
 - c. Maintained a Kentucky workers' compensation policy in effect.

The BIDDING AGENCY reserves the right to request documentation supporting a bidder's claim of resident bidder status. Failure to provide such documentation upon request shall result in disqualification of the bidder or contract termination.

Signature

Printed Name

Title

Date

Company Name _____

Address _____

Subscribed and sworn to before me by _____

(Name)

(Title)

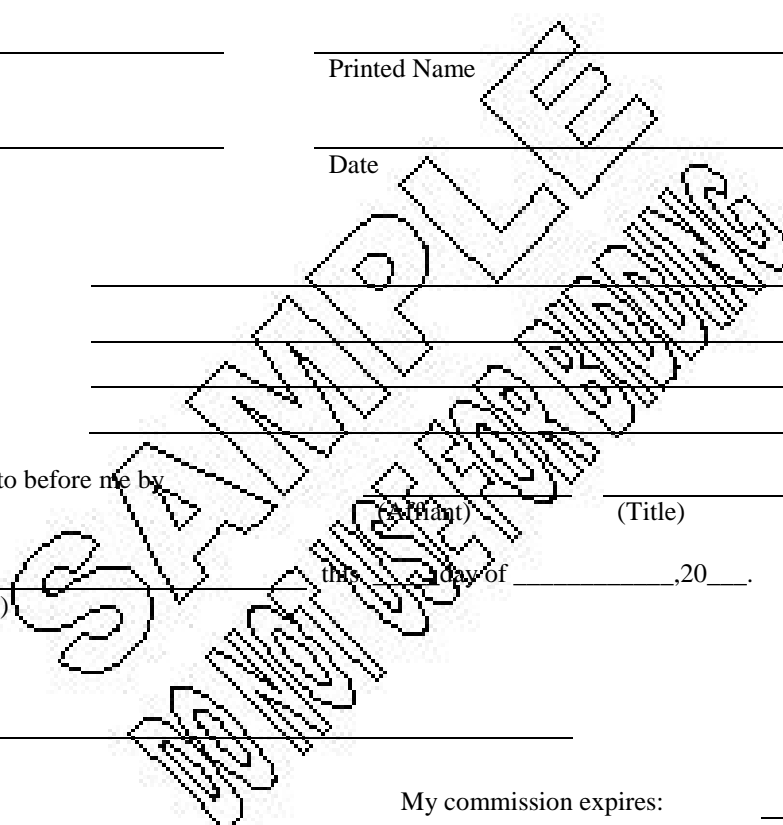
of _____ this _____ day of _____, 20____.

(Company Name)

Notary Public

[seal of notary]

My commission expires: _____



VENDOR REPORT OF PRIOR VIOLATIONS ON CONSTRUCTION SEALED BIDS

This form is applicable to all sealed bids for construction projects issued by the Finance and Administration Cabinet, Division of Engineering and Contract Administration (DECA) in accordance with KRS 45A.080.

The **Prime Bidder** on any construction sealed bid **shall** complete and provide a signed and notarized form with the required information attached, for the Prime Bidder, as **an attachment to the bid**.

The information required is specifically - **any final determination(s) of violations within the last five (5) calendar years of the following:**

1. Violations of KRS Chapter 136 (Corporation and Utility Taxes);
2. Violations of KRS Chapter 139 (Sales and Use Taxes);
3. Violations of KRS Chapter 141 (Income Taxes);
4. Violations of KRS Chapter 337 (Wages and Hours);
5. Violations of KRS Chapter 338 (Occupational Safety and Health of Employees);
6. Violations of KRS Chapter 341 (Unemployment Insurance);
7. Violations of KRS Chapter 342 (Workers Compensation); and
8. Violations of Occupational Safety and Health Laws ~~in any other states and at the federal level.~~

If there are no violations for a particular category, vendor should attach a statement to that effect.

If there are violations for a particular category, the vendor should list them and provide the following information for each: the date of the violation, a short description of the violation (including statutory citation), the name of the governmental enforcement agency involved, and the amount of any penalties imposed as a result of the final determination.

Please note that this information may be provided to other governmental agencies, such as the Kentucky Labor Cabinet, as part of the bid process. DECA reserves the unqualified right to disqualify any vendors from participating further in this bid process if appropriate under law.

In addition, the successful prime bidder and subcontractors shall remain in continuous compliance with KRS 45A.485 during the life of any contract awarded, and shall notify DECA of any new final determinations of violations in **any** of the above-mentioned categories, which occur after contract award, and during the life of any contract awarded. Failure to comply with these requirements may result in the bidder and subcontractors being disqualified from participating in future bid opportunities for the Commonwealth.

COMPANY NAME: _____

TAX PAYER ID #: _____

THIS VENDOR VIOLATION FORM MAY BE SENT TO THE LABOR CABINET FOR VERIFICATION. PLEASE MAKE SURE ALL YOUR VIOLATIONS ARE LISTED WITHIN THE LAST FIVE (5) YEARS. IF A BIDDER LISTS "NONE" AND HAS SOME, THEIR BID MAY BE REJECTED. FOR A LIST OF YOUR VENDOR VIOLATIONS, YOU CAN FAX OR EMAIL THE LABOR CABINET WITH YOUR REQUEST. FAX NUMBER IS (502) 696-1984 OR EMAIL: labor.desam@ky.gov.

Violation Category	Date	Description	Govt. Enforcement Agency	Amount of Penalties

NOTARIZED STATEMENT OF COMPLIANCE

I certify, under penalty of perjury, that I have provided all pertinent information required by this form and this information is true and accurate. I also certify that I have completely read and understand this form and will comply with these requirements during the life of any contract awarded.

SIGNATURE

Printed Name

Title

Date

MAKE SURE YOU PUT COMPANY'S FULL LEGAL NAME

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: _____

BIDDER'S QUALIFICATIONS

The Bidder's Qualifications are required by the owner to be submitted as set forth herewith:

- 1. This firm is a Corp. _____, Partnership _____, or Proprietorship _____.
- 2. A permanent place of business is maintained at:

STREET	CITY	STATE	ZIP CODE
--------	------	-------	----------

TELEPHONE NUMBER

- 3. The following construction plant and equipment will be made available for use on this contract:

- 4. In the event the contract is awarded the undersigned, surety bonds will be furnished by

- 5. Experience of Contractor on other similar work

- 6. We now have the following jobs under contract and bonded:

JOB	TOTAL CONTRACT	PERCENT COMPLETED
_____	\$ _____	_____ %
_____	\$ _____	_____ %
_____	\$ _____	_____ %
_____	\$ _____	_____ %
_____	\$ _____	_____ %



P-2

DISADVANTAGED BUSINESS ENTERPRISE (DBE) PARTICIPATION

- 1.01 **CERTIFICATION OF DBE:** Any DBE utilized pursuant to this Section shall be certified as a DBE by one of the following: Kentucky Transportation Cabinet or other state Transportation agencies, the Louisville Metropolitan Sewer District, the Kentucky Minority Supplier Development Council or other state Minority Supplier Development Councils, the Kentucky Certification Cooperative, or the Small Business Administration.
- 1.02 **OBLIGATION OF BIDDER/CONTRACTOR:** Bidder/Contractor shall make a good faith effort to meet the DBE contract goal set by the Commonwealth by including DBE's as subcontractors and/or material suppliers on 10% of the total estimated cost of the Contract. The failure to meet the foregoing goal shall not result in disqualification from bidding or being awarded a contract. However, Bidders/Contractors not meeting the DBE goal shall be expected to provide written proof of their good faith efforts. Award of the contract shall be conditioned upon satisfaction of the requirements established by this section. The Bidder/Contractor shall attempt to divide the work in the contract to facilitate use of DBE's (however, there is no requirement that the work be artificially divided or divided in a way that raises the bid price of the Bidder/Contractor).
- 1.03 **PROOF REQUIRED:** Each bidder shall furnish written proof in their bid package that they reached the DBE participation goal for this Contract, or of their good faith efforts to meet the DBE participation goal. A copy of each participating DBE's certification shall accompany the required forms. All submissions shall be subject to verification of the Commonwealth.
- A. Proof that the apparent successful bidder reached the DBE goal shall consist of the following and shall be made on form DB-2-A, attached hereto:
1. The names and addresses of DBE firms that will participate in the contract;
 2. A description of the work each named DBE firm will perform;
 3. The dollar amount of participation by each named DBE firm;
 4. The percentage amount of participation by each named DBE firm;
- B. Proof that the apparent successful bidder made a good faith efforts to meet the DBE participation goal may include the following:
1. Advertisement by the Bidder/Contractor of DBE contracting opportunities associated with this contract in at least one of each of the following periodicals: a periodical in general circulation throughout the Commonwealth, a trade periodical focused on DBE contractors/suppliers in general circulation throughout the Commonwealth, and a minority-focused periodical in general circulation throughout the Commonwealth. The Bidder/Contractor shall include copies of the dated advertisements in his bid package;
 2. Written notice of DBE opportunities in this contract to at least five pertinent DBE's at least seven days prior to the bid opening date. Copies of the written notices shall be included in the bid package;
 3. The Bidder/Contractor's response(s) to those DBE's who requested plans, specifications and/or contracting requirements. Copies of said responses shall be included in the bid package;
 4. Documentation on form DB-2-B of good faith negotiations with at least three DBE's, with no rejection of a qualified DBE without sound reason, including price quotes that are above other subcontractor's price quotes;
 5. Utilization of the Finance and Administration Cabinet's Office of Equal Employment Opportunity and Contract Compliance for referrals to organizations that assist in locating DBE's. Proof of use of such referrals and contacts made as a result thereof shall be included in the bid package.

DB-2-A

DISADVANTAGED BUSINESS AVAILABILITY VERIFICATION

_____ does commit itself that on the following project:

NAME OF COMPANY

PROJECT NAME

REQUEST FOR BID NUMBER

The Bidder agrees to furnish information required by the Commonwealth of Kentucky to indicate the Disadvantaged Business which it intends to utilize. Breach of this commitment constitutes breach of the Bidder's contract if awarded.

NAME OF DISADVANTAGED BUSINESS

TELEPHONE

TYPE OF WORK

DOLLAR VALUE

PERCENT

DISADVANTAGED CLASSIFICATION

The undersigned shall enter into a formal agreement with the disadvantaged business firms for work listed in this schedule conditioned upon execution of a contract with the Commonwealth of Kentucky.

Disadvantaged business firms listed above by the Bidder and accepted by the Owner and the Architect/Engineer shall be used on the work for which they were proposed and accepted and shall not be changed except with the written approval of the Owner and the Architect/Engineer. The undersigned hereby certifies that he or she has read the terms of this commitment and is authorized to bind the Bidder to the commitment herein set forth.

Signature and title of authorized official of the company and the data shall be properly executed on this document or the bid will be deemed nonresponsive.

NAME OF AUTHORIZED OFFICER

TITLE

SIGNATURE

DATE

If you are bidding as a General Contractor on this project i.e. direct bidding and a Disadvantaged business as defined herein, please provide a copy of your DBE Certification.

Submit with Bid.
(Please copy additional Disadvantaged Business Availability Forms as necessary.)

DB-2-B

DISADVANTAGED BUSINESS UNAVAILABILITY VERIFICATION

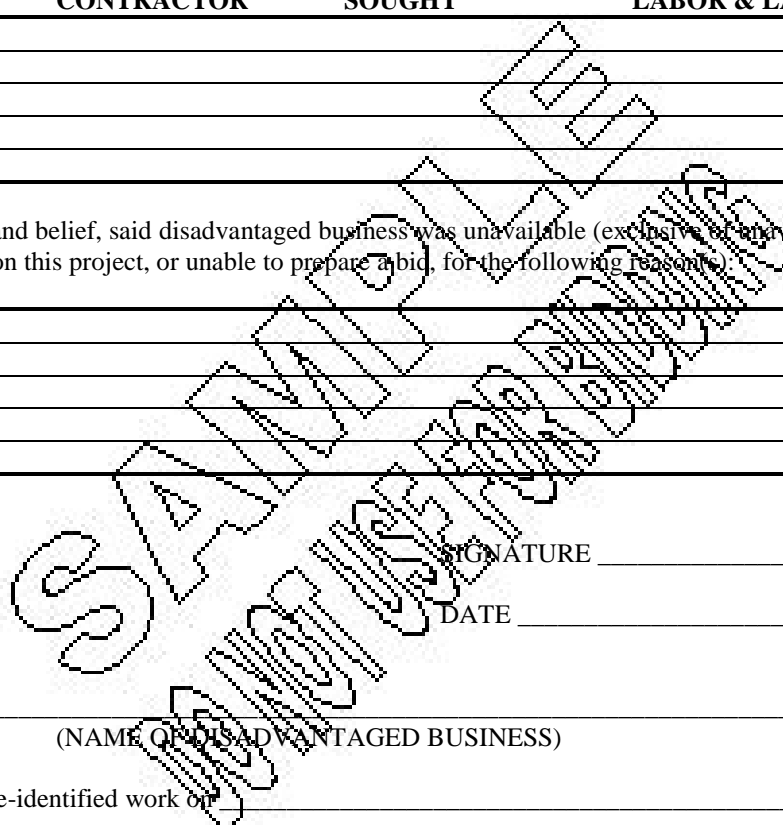
I, _____, _____
(TITLE)

of _____
(PRIME BIDDER)

certify that on _____ I contacted the following disadvantaged business by: (circle one) Certified Mail, Phone, In Person to obtain a bid for work items to be performed on the Contract.

DISADVANTAGE CERT.	CONTRACTOR	WORK ITEMS SOUGHT	FORM OF BID SUPPORT (I.E., UNIT PRICE, MATERIALS LABOR & LABOR ONLY)

To the best of my knowledge and belief, said disadvantaged business was unavailable (exclusive of unavailability due to lack of agreement on price) for work on this project, or unable to prepare a bid, for the following reasons:



SIGNATURE _____

DATE _____

_____ was offered an
(NAME OF DISADVANTAGED BUSINESS)

opportunity to bid on the above-identified work of _____ by

(SOURCE)

The above statement is a true and accurate account of why I did not submit a bid on this project.

(SIGNATURE OF DISADVANTAGED BUSINESS)

(TITLE) (DATE)

Submit with Bid if Applicable.
(Please copy additional Disadvantaged Business Unavailability Forms as needed.)

**OFFICIAL BID DOCUMENT
FOR
HVAC RENOVATIONS AND REPAIRS FOR TRAINING CENTER
LINCOLN VILLAGE YOUTH DEVELOPMENT CENTER
ELIZABETHTOWN, KENTUCKY**

LIST OF PROPOSED SUBCONTRACTORS:
(Must be submitted with Bid)

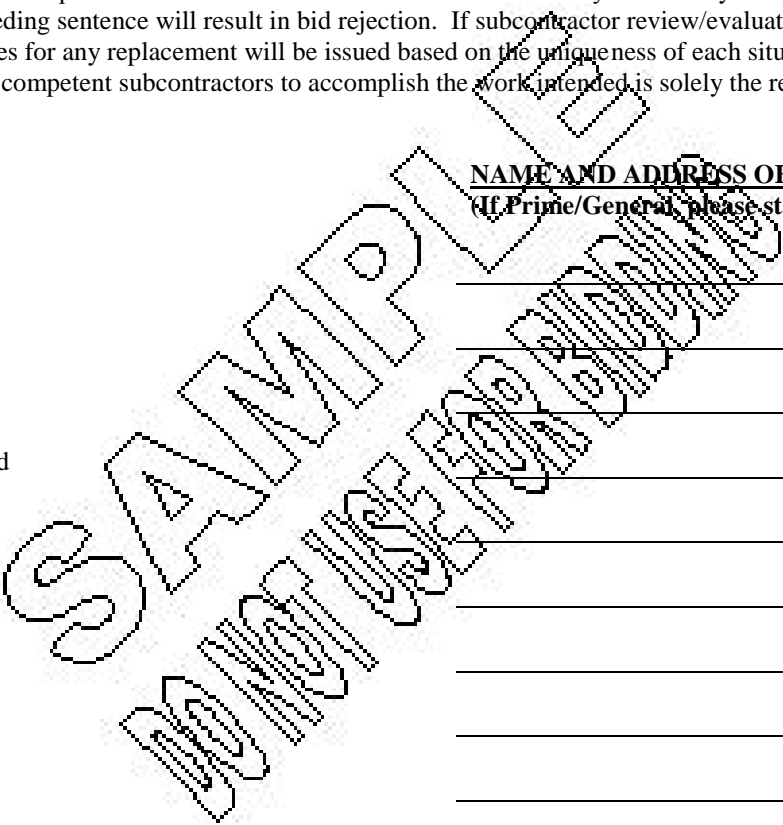
The following list of proposed subcontractors is required by the owner to be executed, completed, and submitted with the Bidder's Bid Document. All subcontractors are subject to approval by the Division of Engineering and Contract Administration, Department of Facilities and Support Services, Frankfort, Kentucky. Failure to submit this list, completely filled out, may result in bid rejection.

If certain branches of work are to be done by the Prime Contractor, so state. Review/evaluation of subcontractors will occur on the bid opening day. If the Commonwealth requests replacement of a subcontractor, on bid opening day, then the apparent low bidder will provide a replacement subcontractor prior to close of the Commonwealth's business day on that day. Failure of the apparent low bidder to comply with the preceding sentence will result in bid rejection. If subcontractor review/evaluation is not completed on the bid opening day, then procedures for any replacement will be issued based on the uniqueness of each situation. The responsibility for selection, offering of qualified, competent subcontractors to accomplish the work intended is solely the responsibility of the bidder to the Commonwealth.

BRANCH OF WORK

NAME AND ADDRESS OF SUBCONTRACTOR
(If Prime/General, please state.)

1. Concrete
2. Ceramic tile
3. Masonry
4. Metal studs/gypsum board
5. Movable partitions
6. Acoustical ceiling system
7. HVAC
8. Plumbing
9. Sheetmetal
10. Electrical
11. Mechanical Insulation



**OFFICIAL BID DOCUMENT
FOR
HVAC RENOVATIONS AND REPAIRS FOR TRAINING CENTER
LINCOLN VILLAGE YOUTH DEVELOPMENT CENTER
ELIZABETHTOWN, KENTUCKY**

LIST OF MATERIALS AND EQUIPMENT:

Every item listed under the different phases of construction must be clearly identified so that the Owner will definitely know what the bidder proposes to furnish. Bidders be hereby advised that this list shall be required to be filled out completely by the apparent low bidder within ONE (1) HOUR from the close of the official reading of the bids.

The above requirement does not preclude any bidder from submitting this list, fully executed, at the time the bids are submitted.

The use of the manufacturer's dealer's name only, or stating "as per plans and specifications", will not be considered as sufficient identification.

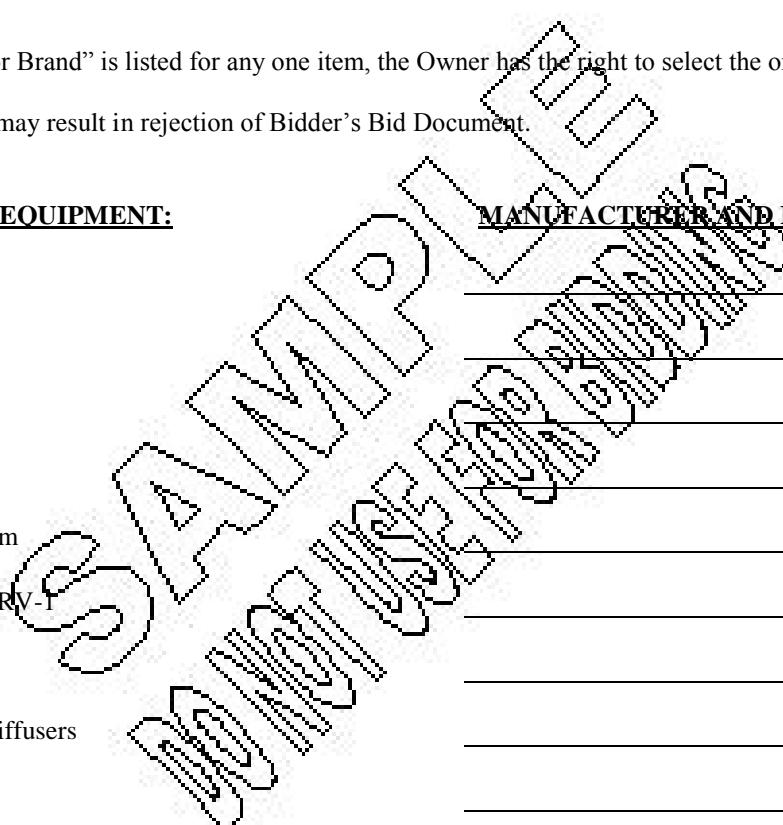
Where more than one "Make or Brand" is listed for any one item, the Owner has the right to select the one to be used.

Failure to submit a proper list may result in rejection of Bidder's Bid Document.

MATERIAL AND/OR EQUIPMENT:

MANUFACTURER AND BRAND NAME:

- | | |
|-------------------------------------|-------|
| 1. Masonry | _____ |
| 2. Doors & Hardware | _____ |
| 3. Ceramic Tile | _____ |
| 4. Movable Partitions | _____ |
| 5. Acoustical Ceiling System | _____ |
| 6. Energy Recovery Unit ERV-1 | _____ |
| 7. Plumbing Fixtures | _____ |
| 8. Grilles, Registers and Diffusers | _____ |
| 9. Light Fixtures | _____ |
| 10. Power Poles | _____ |





MATTHEW G. BEVIN
GOVERNOR

COMMONWEALTH OF KENTUCKY
FINANCE AND ADMINISTRATION CABINET
DEPARTMENT FOR FACILITIES AND SUPPORT SERVICES
DIVISION OF ENGINEERING AND CONTRACT ADMINISTRATION
403 WAPPING STREET, 1ST FLOOR
FRANKFORT, KY 40601-2638
(502) 564-3050
FAX NO. (502) 564-6822

WILLIAM M LANDRUM III
SECRETARY

CHARLES BUSH
ACTING COMMISSIONER

JENNIFER LINTON
EXECUTIVE DIRECTOR

12/18/2015

**NOTICE TO CONTRACTORS
FOR
HVAC RENOVATIONS AND REPAIRS FOR TRAINING CENTER
LINCOLN VILLAGE YOUTH DEVELOPMENT CENTER
ELIZABETHTOWN, KENTUCKY**

Attached hereto is a copy of the "Advertisement for Bids" for furnishing all labor, equipment, appliances and materials necessary for HVAC Renovations and Repairs for Training Center, Lincoln Village Youth Development Center, Elizabethtown, Kentucky,

SAME IS DESIGNATED AS:

REQUEST NO. Request for Bid No. RFB-175-16

BID ON: HVAC RENOVATIONS AND REPAIRS FOR TRAINING
CENTER
LINCOLN VILLAGE YOUTH DEVELOPMENT CENTER
ELIZABETHTOWN, KENTUCKY

BID DATE: January 20, 2016
2:00 P.M., Eastern Time

Responsible Contractors who have proper experience, equipment and qualifications are invited to bid on this work. These factors will be considered in the Award of Contract and all work will be performed under the standard regulations for construction of the Commonwealth of Kentucky.



**PART I
ADVERTISEMENT FOR BIDS**

1. **INVITATION:**

Sealed bid documents for the following work will be received by the Division of Engineering and Contract Administration, 2nd Floor Bush Building, 403 Wapping Street, Commonwealth of Kentucky, Frankfort, KY 40601, in the manner and on the date hereinafter specified for the furnishing of all labor, materials, supplies, tools, appliances, equipment, services, etc., necessary for HVAC Renovations and Repairs for Training Center, Lincoln Village Youth Development Center, Elizabethtown, Kentucky, as set forth in the specifications and as shown on the drawings prepared by Herb Shulhafer, Studio Kremer Architects, Inc., Vince Schmidt, ESTU, and approved by the Department for Facilities and Support Services of the Commonwealth of Kentucky and under the terms and conditions to this Request for Bid.

2. **PROJECT DESCRIPTION:**

Work of the project is a Renovation of the Adult Training Center of Lincoln Village for Department of Juvenile Justice in Elizabethtown, Kentucky. The project will be administered thru DECA/Lynn Imaging systems. The work consists of: Selective demolition of walls. New Restrooms, Enlarged Classroom & New Office work. Installation of movable partition. Renovation of sprinkler system to work with changes in the building renovations. Plumbing work for new restrooms. HVAC work to work with changes in building renovation & new energy recovery ventilation system. Electrical work to work with changes in building renovation.

3. **METHOD OF BIDDING:**

Bids will be received from Prime Contractors on a Lump Sum Bid Basis for the total project. All phases of work shall be bid to and through the Prime Contracting Firms. Bids shall be submitted in the manner herein described and on the official bid document form included with the conditions and specifications and shall be subject to all the conditions as set forth and described in the Bid Documents.

SPECIAL NOTE:

Bids shall be submitted on the Official Form supplied by the Division of Engineering and Contract Administration. Failure to comply with the foregoing requirements will be cause for invalidation of bid.

4. **METHOD OF AWARD:**

Award shall be issued on the lowest responsive bid by a responsible bidder. The Bid Document will contain all qualifying requirements and forms. It is the intent of the Commonwealth of Kentucky to use all available funds.

5. **PROJECT CONTACTS:**

1. Architect: Studio Kremer Architects, Inc. . Phone: (502) 499-1100, herbs@studiokremer.com
2. Consultant: ESTU; . Phone: 502-938-3244, vincent.schmidt@estuinc.com
3. Project Manager: Tony Yates, Division of Engineering and Contract Administration, 403 Wapping Street, 2nd Floor, Frankfort, KY 40601. Phone: (502) 782-0338, Tony.Yates@ky.gov
4. Agency: Richard Dugas, Dept. of Juvenile Justice, , . Phone: (502) 573-3747, richardl.dugas@ky.gov
5. Purchasing Agent: Susan Ward, Division of Engineering Contract Administration, 403 Wapping Street, 2nd Floor, Frankfort, KY 40601. Phone: (502) 782-0345, Susan.Ward@ky.gov
6. Site: Michael Rice, Lincoln Village Youth Development Center, , . Phone: 2707665250, michael.rice@ky.gov

6. **BID SUBMITTAL:**

Bidders must submit the bid in a sealed envelope addressed as follows:

Sealed Bid Clerk
403 Wapping Street, 2nd Floor
Division of Engineering and Contract Administration
Commonwealth of Kentucky
Frankfort, Kentucky 40601-2638

The envelope must contain the following information on the outside lower left-hand corner:

Sealed Request for Bid No: RFB-175-16

**Bid Receipt Closing Date: January 20, 2016
2:00 P.M., Eastern Time**

The bid must be received before the specified closing hour and date for receipt of bids. All bids are time stamped showing the hour and date officially received. A bid received after the scheduled closing time for reception of bids is a "late bid" and may not be considered for award providing any legal bid has been received on said Request for Bid. The time/date clock on the Bid Receipt Clerk's desk is the official bid time/date receipt indicator.

Bidder assumes full responsibility for timely delivery of the bid in compliance with the above described procedures and conditions.

7. **BID WITHDRAWAL:**

No bidder may withdraw his bid for a period of thirty (30) days after the date set for the opening of bids. Bids may be withdrawn in person only, prior to the closing date for receipt of bids.

8. **BONDING:**

All bids shall be accompanied by a bid guarantee (in the form of a bid bond or certified check) of not less than five (5%) percent of the amount of the lump sum base bid. A 100% Performance Bond and a separate 100% Payment Bond shall be furnished by the successful bidder. All bonding and insurance requirements are contained in the Instructions to Bidders and/or General Conditions. Bonds should be executed by a surety company authorized to do business in the Commonwealth of Kentucky.

9. **RIGHT TO REJECT:**

The Division of Engineering and Contract Administration, Commonwealth of Kentucky, reserves the right to reject any and all bids and to waive all informalities and/or technicalities where the best interest of the Commonwealth may be served.

10. **GENERAL INFORMATION:**

- A. Bidder's Qualifications, Unit Prices, Proposed Subcontractors are required to be submitted with the bid and List of Materials are to be submitted within one (1) hour after the bid opening.
- B. All documents related to this project shall be submitted, transmitted, transferred, reviewed, approved or rejected, and/or otherwise processed using the Owner's Document Collaboration System (eCommunications) which is the Owner's web-based document collaboration system that shall be used by all project participants. No submission, transmittal, transfer, review, approval or processing shall be deemed Official without the use of this system.
- C. KRS 337.550 (1) Provides that if any contractor or subcontractor is found to be in violation of any provisions of KRS 337.505 to 337.550 by the Department of Labor and upon notification to the Commissioner of the Department for Facilities and Support Services, the Commissioner of the Department for Facilities and Support Services shall hold such contractor or subcontractor ineligible to bid on public works until such a time as that contractor or subcontractor is in substantial compliance as determined by the Commissioner of Labor.
- D. Each demolition/renovation project must comply with Kentucky Division of Air Pollution Control Regulation 401 KAR 57:011. This includes notification, in writing, to the Division of Air Pollution Control, ten (10) days before start of the project.
- E. **Tobacco-Free:** Pursuant to Executive Order, use of any tobacco products (including e-cigarettes) is prohibited in all Executive Branch buildings and parking lots and on the grounds. Please refer to Executive Order # 2014-747 for complete details.

For FAQ's go to: <http://tobacco-free.ky.gov/Pages/FAQs.aspx>

F. **REGISTRATION WITH SECRETARY OF STATE:**

Domestic and foreign corporations shall be registered with the Kentucky Secretary of State and declared to be in "good standing" prior to award of contract. Offerors should verify status at the following website: <http://www.sos.ky.gov> and click on "Business Services". Failure to comply with this requirement within (5) days after notification may render your bid non-responsive.

G. **REGISTRATION WITH SECRETARY OF STATE BY A FOREIGN ENTITY:**

Pursuant to KRS 45A.480(1)(b), an agency, department, office, or political subdivision of the Commonwealth of Kentucky shall not award a state contract to a person that is a foreign entity required by [KRS 14A.9-010](#) to obtain a certificate of authority to transact business in the Commonwealth ("certificate") from the Secretary of State under [KRS 14A.9-030](#) unless the person produces the certificate within fourteen (14) days of the bid or proposal opening. Therefore, foreign entities should submit a copy of their certificate with their solicitation response. If the foreign entity is not required to obtain a certificate as provided in [KRS 14A.9-010](#), the foreign entity should identify the applicable exception in its solicitation response. Foreign entity is defined within [KRS 14A.1-070](#).

For all foreign entities required to obtain a certificate of authority to transact business in the Commonwealth, if a copy of the certificate is not received by the contracting agency within the time frame identified above, the foreign entity's solicitation response shall be deemed non-responsive or the awarded contract shall be cancelled.

Businesses can register with the Secretary of State at <https://secure.kentucky.gov/sos/ftbr/welcome.aspx>

H. **REGISTRATION with eMars (eProcurement):**

In order to receive a contract in the State's electronic procurement system (eMars/eProcurement), a vendor/contractor shall be registered to conduct business therein. Business entities not already registered may register by visiting the eProcurement website at (<https://emars.ky.gov/online/vss/AltSelfService>) and complete the registration information. The website has phone numbers and email addresses to facilitate answering any questions you may have with the registration or update process. Failure to comply with this requirement within (5) days after notification may render your bid non-responsive.

I. **LABOR LAW INFORMATION:**

Kentucky Prevailing Wage Rates are applicable to this project. The Kentucky Department of Labor has assigned Project No. 047-B-00361-15-2, Determination Number CR 2-010, dated , for Hardin County to this project. This project number is to be included on all data and correspondence submitted to the Department for Facilities and Support Services and/or Department of Labor

J. **PRE-BID MEETING:**

There will be a pre-bid meeting on the above referenced project. Representatives of the Facilities and Support Services, and Dept. of Juvenile Justice will meet contractors at 11:00 A.M., Eastern Time on 1/6/2016 at the Education Building, which is directly behind the main building at the Lincoln Village Youth Development Center, 820 New Glendale Rd. Elizabethtown, Kentucky This is the only time a site tour will be conducted and all interested contractors are encouraged to attend.

SUBJECT: INSTRUCTIONS FOR BIDDERS FOR CONSTRUCTION SOLICITATIONS

1. DEFINITIONS

- a. "Addenda" means written or graphic instruments issued by the purchasing agency prior to the execution of the contract that modify or interpret the bidding documents by addition, deletion, clarification, or correction.
- b. "Alternate" means an optional item stated in the bid the amount of which is to be added to or deducted from the amount of the base bid.
- c. "Architect or engineer" means the architectural or engineering firm that prepared the drawings and specifications.
- d. "Bid" means the sum stated in the Bid Response for which the bidder offers to perform the work described in the specifications and detailed on the plans.
- e. "Bidder" means one who submits a bid directly to the owner for the work described in the bidding documents.
- f. "Bidding documents" means the Solicitation, Including Instructions to Bidders, General Conditions, Special and Supplemental Conditions, Forms for Response, Plans and Specifications and Addenda issued prior to receipt of bids.
- g. "Bid Response" means a complete and properly signed document, offering to do the work or designated portion thereof, supported by data called for by the bidding documents.
- h. "Owner" means the Commonwealth of Kentucky.
- i. "Purchasing agency" means the Finance and Administration Cabinet, Department for Facilities Management, Division of Contracting and Administration.
- j. "Purchasing officer" or "contracting officer" means the director, Division of Contracting and Administration, or an authorized representative of that individual.
- k. "Sub-bidder" or "subcontractor" means one who submits a bid to a prime bidder for materials or labor for a portion of the work described in the bidding documents.
- l. "Unit price" means an amount stated in the bid as a price per unit of measurement for materials or services as described in the bidding documents.
- m. "Using agency" means the state government entity that utilizes the work being contracted.

2. BIDDER'S REPRESENTATIONS: Each bidder, by submitting a bid, swears or affirms, under penalty of law, that:

- a. The bidder has read and understands the bidding documents and the bid is made in accordance with the bidding documents.
- b. The bidder has carefully examined the site of the proposed work and is familiar with the local conditions under which the work is to be performed.

FAP 220-05-00

- c. The bid is premised upon furnishing the work required by the bidding documents.
- d. The bid amount 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 solicitation, that is designed to limit independent bidding or competition.
- e. The contents of the bid 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 and will not be communicated to any such person prior to the bid opening.
- f. The bidder is legally entitled to enter into a contract with the Commonwealth and the award of a contract will not create any conflict of interest, including those set out in KRS 45A.330 to 45A.340, 45A.455 and 164.390.

3. BIDDING DOCUMENTS

- a. A bidder, sub-bidder, sub-contractor, and others may obtain bidding documents in the manner and for the charge, if any, stated in the solicitation.
- b. A complete set of bidding documents shall be used in preparing bids. The Commonwealth assumes no responsibility for misinterpretations resulting from the use of incomplete sets of bidding documents.
- c. The Commonwealth, in providing bidding documents, does so only for the purpose of obtaining bids on the work and does not confer a license or grant for any other use.
- d. A bidder shall promptly notify the purchasing officer of any ambiguity, inconsistency or error, which they may discover upon examination of the bidding documents or of the site and local conditions.
- e. All questions regarding the meaning or interpretation of the bidding documents shall be directed in writing to the purchasing officer. Questions received less than ten (10) calendar days prior to the date for receipt of bids may not be answered.
- f. Any interpretation, correction or change of the bidding documents shall be made by an addendum issued by the purchasing agency. Interpretations, corrections or changes of the bidding documents made in any other manner shall not be binding and bidders shall not rely upon such interpretations, corrections or changes.
- g. Unless otherwise indicated in the bidding documents, the materials, products and equipment described or referenced by manufacturers' or vendors' names, trade names, and catalog numbers are intended to establish a standard of required function, dimension, appearance and quality. Unless otherwise stated, equal items may be furnished or used if approved by the purchasing officer in consultation with the architect.
- h. Addenda shall be published on the Commonwealth's procurement website and may be mailed to all who are known by the purchasing officer to have been furnished bidding documents.
- i. Copies of addenda shall be made available for inspection wherever bidding documents are on file.

FAP 220-05-00

- j. No addenda of a material nature shall be issued later than seven (7) calendar days prior to the date for receipt of bids, except for addenda postponing the date for receipt of bids or withdrawing the solicitation.
- k. The bidder shall ascertain, prior to submitting a bid, that the bidder has received all addenda issued by the purchasing officer for the particular solicitation. The bidder shall acknowledge receipt of all addenda on the Bid Documents or by a separate letter to the purchasing officer, which shall be received at or prior to the hour and date specified for receipt of bids.

4. BIDDING PROCEDURE

- a. Bids shall be submitted on the Bid Documents provided by the purchasing officer.
- b. All blanks in the Bid Documents shall be completed and all required support data shall be furnished.
- c. If indicated in the bidding documents, sums shall be expressed in both words and figures. In the case of discrepancy between the two, the amount in words shall prevail.
- d. The authorized representative of the bidder who signed the Bid Response shall initial any alteration or erasure in ink.
- e. All alternates specifically called for by the owner shall be bid. Voluntary alternate bids or an alternate to a lump sum bid shall not be considered unless specifically permitted by the solicitation.
- f. The bidder shall make no stipulations on the Bid Response nor qualify the bid in any manner.
- g. A person legally authorized to bind the bidder to a contract shall sign the Bid Response. The Bid Response shall also include the legal name of the bidder and a statement indicating whether the bidder is a sole proprietorship, a partnership, a corporation, or other legal entity. A bid by a corporation shall also identify the state of incorporation and federal employer identification number.
- h. Bids shall be accompanied by a bid guarantee of not less than five percent (5%) of the amount of the base bid executed with a licensed resident or non-resident agent who represents insurance companies authorized to do business in Kentucky. This bid security secures the bidder's promise (1) to enter into a contract with the owner on the terms stated in his bid, and (2) if required, to furnish bonds covering the faithful performance of the contract and the payment of all obligations. If the bidder refuses to enter into a contract or fails to furnish the required performance and payment bonds, the amount of the bid security shall be forfeited to the owner as liquidated damages, not as a penalty.
- i. The purchasing officer may retain the bid security of bidders until either (1) the contract has been executed and performance and payment bonds have been furnished, or (2) the specified time has elapsed so that bids may be withdrawn, or (3) all bids have been rejected.
- j. The completed Bid Response, bid security, and required support data shall be enclosed in a sealed envelope. The envelope shall be addressed to the bid receipt clerk stated in the solicitation and shall identify the bidder's name and address, the invitation number stated in the bidding documents, closing date and hour. If the bid is sent by mail, the sealed envelope should contain the notation "BID ENCLOSED" on the face thereof.

FAP 220-05-00

- k. Bids shall be received at the designated location prior to the closing time and date for receipt of bids indicated in the solicitation or any extension thereof made by addendum. Bids received after the closing time and date for receipt of bids may be considered for evaluation and award only if (1) no other bids were received within the legal advertisement period; (2) the readvertisement time delay would seriously affect the operations of the using agency; and (3) in the reasonable judgment of the purchasing officer, the bid was finalized prior to the official closing time and date for the receipt of bids.
- l. A bidder shall assume full responsibility for timely delivery at the location designated for receipt of bids.
- m. Oral, telephonic, facsimile or telegraphic bids or changes in bids by such methods are not permitted and shall not be considered.

5. MODIFICATION OR WITHDRAWAL OF BID

- a. A bid may be withdrawn prior to the closing time and date for receipt of bids by (1) a properly identified representative of the bidder whose name appears on the bid envelope, or (2) written request by an authorized representative of the bidder, received by the receipt clerk stated in the solicitation prior to bid closing time.
- b. Withdrawn bids may be resubmitted up to the closing time designated for the receipt of bids.
- c. No bidder may withdraw, modify or cancel its bid for a period of thirty (30) calendar days following closing time and date for receipt of bids without the bid security being subject to forfeiture.

6. CONSIDERATION OF BIDS

- a. Unless the bidding documents indicate otherwise, all properly identified, timely bids shall be publicly opened, read aloud, and listed on the official bid tabulation, which shall be made available to bidders upon request.
- b. The Commonwealth retains the right to cancel the solicitation, to reject any and all bids, and to waive technicalities and minor irregularities in bids, if such action is determined to be in the best interest of the Commonwealth.
- c. Grounds for the rejection of bids are stated in 200 KAR 5:306.
- d. Minor or technical deficiencies or irregularities in a bid may be waived by the purchasing officer on behalf of the owner if all of the following circumstances are present:
 - (1.) The purchasing officer determines that it is in the owner's best interest to do so; and
 - (2.) The technicalities or irregularities are mere matters of form not affecting the material substance of a bid, represent an immaterial deviation from or variation in the precise requirements of the solicitation, and have no more than a trivial or negligible effect on price, quality, quantity or delivery of supplies or performance of services being procured; and
 - (3.) The correction or waiver of the technicality or irregularity does not affect the relative standing of, or prejudice other bidders.

If the Owner does not waive the deficiency, the deficient bid shall be rejected.

FAP 220-05-00**7. ACCEPTANCE OF BID**

- a. A contract shall be awarded, after a reasonable bid evaluation period, to the responsive and responsible bidder whose bid is determined to be the best value to the Commonwealth, if the acceptable bid is within the amount budgeted by the agency.
- b. The owner reserves the right to accept or reject any alternate bid. If alternates designated by the owner are considered in the award, the alternates shall be accepted in the sequence in which they are listed on the Bid Documents and the lowest bid sum shall be computed on the basis of the sum of the base bid plus any alternates accepted.

8. QUALIFICATION OF CONTRACTORS

- a. A bidder shall submit a statement of the bidder's qualifications as part of the bid response. The purchasing officer shall have the right to make such inquiry as deemed necessary to determine the ability of the bidder to perform the work in a prompt and efficient manner in accordance with the contract documents. The failure of a bidder to promptly supply information in connection with the purchasing officer's inquiry may be grounds for a determination that such bidder is nonresponsive.
- b. In determining the qualifications and responsibility of a bidder, the purchasing officer shall consider the bidder's experience, facility, previous work standing, financial standing, skill, quality and efficiency of construction plant, and equipment proposed to be utilized on the project.
- c. The owner may reject any bid if an investigation and evaluation of the bidder's qualifications give reasonable doubt that the bidder can perform the work in a prompt and efficient manner in accordance with the contract documents.

9. SUBCONTRACTOR, MATERIAL AND EQUIPMENT LISTING

- a. A bidder shall, if requested in the solicitation, list the names of subcontractors proposed for each of the principal portions of the work, including those persons or entities who are to furnish material or equipment fabricated to a special design, in the designated place on the Bid Documents.
- b. A bidder shall establish to the satisfaction of the purchasing officer, the reliability and responsibility of the listed subcontractors. The bidder may be required by the purchasing officer to provide additional information regarding listed subcontractors.
- c. If, after due investigation, there is reasonable objection to the qualifications of a listed subcontractor, the bidder shall, upon written direction of the purchasing officer, submit the name of an acceptable substitute subcontractor with no change in bid price. The failure of the bidder to promptly comply with this requirement may be grounds for rejection of the bid.
- d. Any listed subcontractor to whom the purchasing officer does not make written objection prior to the giving of the Notice of Intent to Award shall be deemed acceptable to the owner.
- e. A bidder shall make no other substitution for any listed subcontractor without first receiving the approval of the purchasing officer in writing of the intended substitution and the specific reason for the substitution. A substitution may be disapproved if the purchasing officer has reasonable objection.

FAP 220-05-00

- f. Nothing contained in the bidding documents shall be deemed to create a contractual relationship between the owner and any subcontractor.

10. LIST OF MATERIALS AND EQUIPMENT

- a. A bidder shall, if requested in the solicitation, submit a listing of major materials and equipment, including manufacturer's name, brand and catalog number. The materials and equipment listing shall be bound with the Bid Response, or completed in the time period designated in section 18.
- b. Prior to the acceptance of a bid, the purchasing officer shall make a preliminary review of the bidder's list of materials and equipment. The purchasing officer shall advise the bidder of the tentative acceptability of such materials and equipment, subject to satisfactory completion and approval of shop drawings, or direct such other action as may be necessary in order to meet the requirements of the contract documents. If any of the listed material or equipment is determined not to meet the requirements of the contract documents, the bidder shall be required to furnish other material or equipment meeting those requirements at no change in bid price. Preliminary review and acceptance of the above list shall not relieve the bidder, as the contractor, of the obligation to furnishing equipment and materials in accordance with the contract documents.

11. UNIT PRICES

- a. A bidder shall, if requested in the solicitation, submit with the bid a list of unit prices as designated on the Bid Documents, which shall include all necessary labor, materials, equipment, appliances, supplies, overhead and profit.
- b. Unit prices shall be used for the pricing of changes in the quantity of work from that indicated by the contract drawings and specifications, if the owner has authorized such changes in writing.
- c. Only one unit price shall be quoted for each designated item of work. The unit price shall be used to calculate price adjustments based on deductive as well as additive changes.
- d. Unit prices shall apply to all phases of the work whether the work is performed by the bidder or by the bidder's subcontractor.
- e. For unit prices of a lump sum bid contract, the owner reserves the right, prior to an award of contract, to evaluate the unit prices and adjust or reject any unit price that is determined by the purchasing officer to be unreasonable in amount.
- f. If a total sum bid is made by line item, and unit prices are quoted for estimated quantities of units of work, such unit prices are not subject to change. However, the purchasing officer reserves the right to correct mathematical errors in extensions and additions by the bidder. In the latter case, the purchasing officer's corrected bid sum total shall supersede the bidder's incorrect computed bid sum total.

- 12. BID BONDS** - The Division of Contracting and Administration or an agency may require a bid bond as surety that a bidder will hold his offer firm for a specified period of time. If the Solicitation requires a bid bond, a bidder shall file with the requesting agency a bid bond or certified check in the amount and form specified by the Solicitation. The bond shall be received either with the bid or prior to the bid closing, or the bid shall not be considered.

- a. The amount of the bond shall be specified in the Solicitation.

FAP 220-05-00

- b. In addition to signing the bid bond as principal, the bidder shall have the bond signed by a surety company authorized to do business in the Commonwealth of Kentucky. A list of surety companies may be obtained from the Department of Insurance. If the surety on a bond has its authority to do business in Kentucky revoked or, if for any reason it ceases to do business in the Commonwealth, the bidder shall promptly obtain another surety on the bond.
- c. The bond shall be conditioned on full performance of all obligations imposed on the bidder by the Solicitation, including the obligation to keep his price firm for as long a period as specified in the Solicitation, and the obligation to file a performance bond if required by contract. The bid bond shall provide that upon failure to perform an obligation, the Commonwealth of Kentucky may recover from the bidder and the surety, or either of them, any and all damages suffered because of the failure.
- d. A bidder may file a continuing bond for all bids made during a certain period of time up to a stated amount.
- e. If submitting an online bid response in the state's procurement system for a Solicitation that requires a bid bond, the bidder shall attach the scanned bond document to the formal bid or, if the bidder does not have access to a scanner, shall submit a hard copy of the bond document with a copy of the online response. The vendor shall sign the hard copy of the online bid document in ink, attach the online bidding confirmation page, attach the bond document, and deliver the documents to the Commonwealth no later than the published date and time for bid opening. A successful bidder shall provide hard copies of all scanned bond documents prior to contract execution, in accordance with the terms of the Solicitation.
- f. If a bidder elects to submit a certified check in lieu of a bid bond, it shall be security for full performance of all obligations referred to in subsection c of this Section.
- g. If a bidder is not awarded a contract, the certified check shall be returned to that bidder promptly after the award is made. The successful bidder's check shall be returned after the contract is awarded or as soon as the bidder has filed a performance bond, if required. Checks may be returned by certified mail, return receipt requested. The return receipts shall be electronically attached or hard copies attached to each bidder's bid and filed in the bid folder.

13. PERFORMANCE AND PAYMENT BONDS

- a. A bidder shall deliver the required bonds to the purchasing agency at the date of execution of the bond notification of intent to award, or, with the approval of the purchasing officer, within fourteen (14) calendar days after that date. Otherwise, the owner may at its option determine that the awardee has abandoned the contract and the proposal shall become null and void.
- b. A bidder shall require the attorney-in-fact who executes required bonds on behalf of the surety to affix thereto a certified and current copy of his Power of Attorney. The date of the Power of Attorney shall not precede the date of the bonds. The bonds shall be executed with a licensed resident or non-resident agent who represents insurance companies authorized to do business in Kentucky.

14. AWARD OF CONTRACT

- a. The issuance of an award of a contract is contingent upon (1) securing an acceptable bid that is within the amount of budgeted funds and (2) determining that the award of contract is in the best interest of the Commonwealth of Kentucky.

FAP 220-05-00

- b. Unless otherwise provided in the bidding documents, the Agreement Between Owner and Contractor shall be written on the standard form of agreement bound within the Solicitation
- c. The Commonwealth's acceptant of the bidder's offer in response to the Solicitation, indicated by the issuance of a contract award, shall create a contract between the parties consisting of the following documents. In the event of a conflict between the provisions contained in the contract, the order of precedence shall be as follows.
 - (1.) Solicitation including any special conditions, plans, specifications, and addenda;
 - (2.) General Conditions;
 - (3.) Bid in response to the Solicitation; and
 - (4.) Written Clarification concerning the bid.

15. LEGAL REQUIREMENTS

- a. A foreign corporation submitting a bid shall be registered with the Kentucky Secretary of State and be declared in good standing prior to the issuance or receipt of a contract.
- b. A domestic corporation submitting a bid shall be in good standing in accordance with the requirements of the Kentucky Secretary of State.

16. TAXES

- a. The winning bidder shall be liable for payment of Kentucky sales and use tax.
- b. The winning bidder is deemed the end user of all building materials used in construction projects for the Commonwealth of Kentucky.
- c. The winning bidder may not separately state Kentucky sales or use tax payable by the Commonwealth of Kentucky.

17. PLANHOLDER'S LIST

- a. A request for plans and specifications for a particular project shall be regarded as showing intent to submit a bid. Unless the purchasing agency is otherwise notified, the names of all firms making such requests shall appear on the planholder's list showing all planholders, and all issued addenda.
- b. The published planholder and addenda listing is for general information purposes and the exclusion or inclusion of any firm in no way expresses or implies owner approval or disapproval of the qualifications of any listed bidder, subcontractor, or material or equipment supplier. If the bidder or planholder is not in receipt of any of the listed addenda, he shall obtain copies from the purchasing officer or review the addenda at any of the designated reporting agencies where bidding documents have been placed.

18. POST-BID REVIEW AND MATERIAL SUBMITTAL

- a. A bidder may have an authorized representative at the bid opening for (1) submittal of the material and equipment listing and (2) post-bid review of the apparent winning bid.

FAP 220-05-00

- b. Unless otherwise provided in the bidding documents or authorized by the purchasing officer, the apparent winning bidder shall submit the material and equipment listing no later than one (1) hour after the close of the reading of the bids. The materials and equipment listing shall be that listing bound with the Bid Documents.
- c. After opening, bids shall be reviewed by representatives of the purchasing agency, the using agency, the architect or engineer, and the apparent winning bidder. Review shall be directed toward subcontractors, material listing, unit prices, and qualifications of the bidder.
- d. The bidder's representative shall have the authority and ability to respond to questions that arise during the review.

19. EQUAL EMPLOYMENT AND NONDISCRIMINATION

- a. The Commonwealth of Kentucky is committed to a policy of providing equal job opportunities on public contracts and prohibiting discrimination based on race, creed, color, sex, age, religion, national origin, or disability in employment.
- b. The utilization of minority vendors and subcontractors is encouraged, whenever possible, on public works contracts. The bidder and contractor should make full efforts to locate minority businesspersons. For assistance in identifying vendors and subcontractors, bidders may contact the Kentucky Office for Minority Business Enterprises, 2329 Capital Plaza Tower, Frankfort, Kentucky 40601, or Office of Equal Opportunity, Contract Compliance, New Capitol Annex Building, Frankfort, Kentucky 40601.
- c. Unless exempted in accordance with KRS 45.590, the provisions of KRS 45.560 to 45.640, known as the Kentucky Equal Employment Act of 1978, shall be binding upon the declared successful bidder and the resulting contract shall contain the provisions set out at KRS 45.570(2).
- d. Any bidder not exempted from the affirmative action or reporting requirements of KRS 45.560 to 45.640 shall, within five (5) calendar days after being declared the apparent low bidder, submit to the Office of Equal Employment Opportunity, Contract Compliance, Finance and Administration Cabinet, through the purchasing agency, the information required by KRS 45.600, on forms provided by the purchasing agency, bound within the bid documents, and submitted in the manner prescribed on the forms.

Revised 11/13/07



**FINANCE AND ADMINISTRATION CABINET
DEPARTMENT FOR FACILITIES MANAGEMENT
DIVISION OF ENGINEERING AND CONTRACT ADMINISTRATION**

GENERAL CONDITIONS

These General Conditions apply to each section of the specifications and are binding upon the Contractor and all Subcontractors as each are subject to the provisions contained herein:

These General Conditions are intended to define and establish certain rules and provisions of the Contract governing the operation so that the Work may be continued and be completed in an orderly, expeditious and workmanlike manner.

These General Conditions, together with the specifications and Contract Documents, shall further establish the standards of material and workmanship for the Work.

1. Definitions of Terms Wherever used in these General Conditions or in other Contract Documents, the following terms have the meaning indicated which are applicable to both the singular and plural thereof:

'1.1 Agency is the state government entity which utilizes the Work being contracted.

'1.2 Architect is the person or entity, either architect, engineer, or consultant, who is identified as such in the Contract Documents and on the drawings or any replacement architect, engineer, or consultant identified by the Owner.

'1.3 Certification of Payment is the Owners Progress Payment Forms, DOA-24 and DOA-25.

'1.4 Change Order means a written order to the Contractor executed by the Owner and the Architect after execution of the Contract, directing a change in the Work and may include a change in the Contract Price or the Contract Completion Time, or any combination thereof.

'1.5 Contract is the legal relationship, duties and obligations between the Owner and Contractor as evidenced by the Contract Documents for the Project.

'1.6 Contract Completion Time is the number of calendar days between the Date of Commencement and the dates set for Substantial Completion and Final Completion of the Work, including any adjustments thereto, all as established in the Contract between Owner and Contractor.

- ‘1.7 Contract Documents** include the Invitation for Bids, the Instructions to Bidders, the Payment and Performance Bonds, the General Conditions, the Special or Supplemental Conditions, the drawings, specifications, solicitation addenda, the contractors response to the solicitation, any written clarification of the response, the award document containing the Agreement between Owner and Contractor, and modifications issued after execution of the Contract. Modifications include (1) Change Orders issued as provided in Article 14, and (2) Field Orders for minor changes in the work issued by the Architect as provided in Article 14. Documents not included or expressly contemplated in this Paragraph, 1.7, do not, and shall not, form any part of the Contract between the Owner and the Contractor.
- ‘1.8 Contract Sum** means the sum stated in the Contract including any authorized adjustments thereto and is the total amount payable by the Owner to the Contractor for the performance of the Work under the Contract Documents.
- ‘1.9 Contractor** means the person or entity with whom the Owner has executed the Contract for construction.
- ‘1.10 Date of Commencement** is the date specified in the Contract as the date upon which the Contractor is authorized to begin work.
- ‘1.11 Direct Expenses** is defined as “All items of expenses directly incurred by or attributable to a specific project, assignment or task” and “Direct costs consist of direct materials, direct labor, subcontract costs, and other miscellaneous direct costs such as bonding and equipment rentals, that are directly related to and can be specifically attributed to an individual contract.”
- ‘1.12 Drawings** are the graphic and pictorial portions of the Contract Documents, wherever located and whenever issued, showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams.
- ‘1.13 Extra Work** as used in Article 14 is defined as Work not part of the existing Contract Documents which is being added to the Contract by Change Order.
- ‘1.14 A Field Order** is a written order issued by the Architect which clarifies or interprets the Contract Documents, or orders minor changes in the Work which does not require a change under Article 14.
- ‘1.15 Final Completion** is defined as the Work being acceptable under the Contract Documents and the Contract fully performed in accordance with the terms and conditions of the Contract Documents and the entire payment balance due the Contractor is due and payable.
- ‘1.16 Final Completion Date** shall have the meaning as described to it in Paragraph 19.3.
- ‘1.17 Notice of Intent to Award** is a written letter issued to the apparent successful contractor after acceptance of bid price, unit prices, subcontractors and equipment and materials to inform them of such acceptance and request the required additional documentation to initiate the Contract. **This is NOT an authorization to proceed.**
- ‘1.18 Owner** means the Commonwealth of Kentucky, acting through the Finance and Administration Cabinet and its Administrative Agent, the Department for Facilities Management.

'1.19 The **Project** is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner or by separate Contractors.

'1.20 Resident Observer means an individual who has a direct contract with the Owner to observe and report on activities at the work site. A Resident Observer employed by the Owner is not authorized to serve as the Owners Representative, unless so designated by the Owner in writing.

'1.21 Retainage means money earned by a contractor for work accepted by the Owner, but withheld to ensure proper performance by the contractor.

'1.22 Shop Drawings means drawings, completion diagrams, schedules, and other data specially prepared for the Work by the Contractor or any Subcontractor, lower tier subcontractors, manufacturer, supplier, or distributor to illustrate some portion of the Work.

'1.23 Subcontractor means the person or entity having a direct contract with the Contractor for the performance of a part of the Work.

'1.24 Substantial Completion is the point at which, as certified in writing by the Architect, the Project is at a level of completion in strict compliance with the Contract, and necessary approval by public authorities has been given, such that the Owner or the Agency can enjoy beneficial use or occupancy and can use, operate and maintain (the Owner has received all required warranties and documentation) it in all respects, for its intended purpose. Partial use or occupancy of the Project shall not result in the Project being deemed substantially complete and such partial use or occupancy shall not be evidence of Substantial Completion.

'1.25 Substantial Completion Date shall have the meaning as described to it in Paragraph 19.2.

'1.26 The **Work** includes the construction and services required by the Contract Documents, whether completed or partially completed, and includes all labor, supervision, materials, equipment, services, and things provided or to be provided by the Contractor to fulfill the Contractor's obligations.

'2. Intent and Interpretation

'2.1 Anything that may be required, implied or inferred by the documents which make up the Contract, or any one or more of them, shall be provided by the Contractor for the Contract Sum;

'2.2 Nothing contained in the Contract Documents shall create, nor be interpreted to create, privity or any other relationship whatsoever between the Owner and any person except the Contractor;

'2.3 When a word, term, or phrase is used in the Contract Documents, it shall be interpreted or construed first, as defined herein; second, if not defined, according to its generally accepted meaning in the construction industry; and third, if there is no generally accepted meaning in the construction industry, according to its common and customary usage;

'2.4 The words "include", "includes", or "including", shall be deemed to be followed by the phrase, "without limitation".

- '2.5** The specification herein of any act, failure, refusal, omission, event, occurrence or condition as constituting a material breach of the resulting Contract shall not imply that any other, non-specified act, failure, refusal, omission, event, occurrence or condition shall be deemed not to constitute a material breach of the resulting Contract;
- '2.6** In the event of any conflict, discrepancy, or inconsistency, the following shall control:
- '2.6.1** As between figures given on plans and scaled measurements, the figures shall govern;
 - '2.6.2** As between large scale plans and small scale plans, the large scale plans shall govern;
 - '2.6.3** As between plans and specifications, the requirements of the specifications shall govern;
- '2.7 Meaning of Execution.** Execution of the Contract Documents by the Contractor is a representation that the Contractor has thoroughly examined the site of the Work, become familiar with the local conditions under which the Work is to be performed, and correlated personal observations with the requirements of the Contract Documents. Execution of the Contract Documents is a further representation that Contractor has received, reviewed and carefully examined all of the Contract Documents, and has found them in all respects to be complete, accurate, adequate, consistent, coordinated and sufficient for construction, the Contractor is fully qualified to act as the contractor for the Project and has, and shall maintain, any and all licenses, permits or other authorizations necessary to act as the contractor for, and to construct the Project.
- '2.8 Prior Agreements.** The Contract Documents supersede any and all prior discussions, communications, representations, understandings, negotiations or agreements between the Owner and the Contractor and the Agency and the Contractor.
- '2.9 Contractor's Performance.** The Contractor shall perform all of the Work required, implied or reasonably inferable from the Contract including, but not limited to, the following:
- '2.9.1** Construction of the Project;
 - '2.9.2** The furnishing of any required surety bonds and insurance;
 - '2.9.3** The provision or furnishing, and prompt payment therefor, of labor, supervision, services, materials, supplies, equipment, fixtures, appliances, facilities, tools, transportation, storage, power, fuel, heat, light, cooling, or other utilities, required for construction and all necessary building permits and other permits required for the construction of the Project;
 - '2.9.4** The creation and submission to the Owner of detailed and comprehensive as-built drawings, depicting all as-built construction. Said as-built drawings shall be submitted to the Owner upon final completion of the Project and receipt of same by the Owner shall be a condition precedent to final payment to the Contractor.

'2.10 Time. All limitations of time set forth in the Contract Documents are material and are of the essence of the Contract.

'2.11 Intent of Contract Documents. The intent of the Contract Documents is to include all items necessary for the proper completion of the Work by the Contractor. Labor or materials which are evidently necessary to produce the desired results, even though not specifically mentioned in the Contract Documents, shall be included in the Work.

'2.12 Contract Documents Complementary, etc. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all. In case of conflicts between the various Contract Documents, the order of precedence shall be as follows: (1) Addenda, (2) Division 1 - General Requirements of the Specifications; (3) Special Conditions, (4) General Conditions, (5) Technical provisions of the Specifications; (6) Drawings.

'2.13 Questions to Architect. In the event a question arises regarding the meaning or intent of the drawings and specifications, the Contractor shall report it at once to the Architect. The Architect shall furnish, with reasonable promptness, additional instructions, by means of drawings or otherwise, necessary for the proper execution of the work, consistent with the requirements of Article 3.

'2.14 Paragraph, titles or headings are for convenience only and form no operative part of the Contract.

'3. The Architect Unless otherwise directed by the Owner in writing, the Architect shall perform those duties and discharge those responsibilities allocated to the Architect in the Contract Documents. The duties, obligations and responsibilities of the Architect shall include, but are not limited to, the following:

'3.1 Owner's Representative. The Architect will be the Owner's Agent during construction and until final payment has been made. The Architect will advise and consult with the Owner. In the event the Owner should find it necessary or convenient to replace the Architect, the Owner shall retain a replacement architect and the role of the replacement architect shall be the same as the role of the Architect.

'3.2 Communication Through Architect. Except as otherwise provided in the Contract Documents, the Owner's instructions to the Contractor shall be forwarded through the Architect, and the Contractor's communications with the Owner shall be through the Architect.

'3.3 Review of Work. The Architect shall approve, or respond otherwise as necessary concerning shop drawings or other submittals received from the Contractor. The Architect shall be authorized to refuse to accept work which is defective or otherwise fails to comply with the requirements of the Contract. If the Architect deems it appropriate, the Architect shall be authorized to call for extra inspection or testing of the work for compliance with requirements of the Contract. The Architect shall review the Contractor's Payment Requests and shall approve in writing those amounts which, in the opinion of the Architect, are properly owing to the Contractor as provided in the Contract. The Architect shall perform those inspections required by the Owner.

'3.4 Interpretation of Contract Documents. The Architect shall be the interpreter of the requirements of the Contract Documents and the judge of the performance thereunder by the Contractor, subject to the provisions of Article 26.

Claims, disputes, and other matters in question that arise relating to the execution or progress of the Work shall be referred initially to the Architect for decision, which he will render in writing within a reasonable time. Either party may appeal the Architect's decision to the Secretary of the Finance and Administration Cabinet in accordance with the provision of Article 26. The Architect shall have authority to reject Work which does not conform to the Contract Documents. In the event of rejection, the Architect may recommend withholding payment to the Contractor for the rejected Work, and such recommendation shall give the Owner the authority to withhold payment for such Work.

- '3.5 Review of Shop Drawings, etc.** The Architect shall review and approve, or take other appropriate action upon Contractor's submittals (such as Shop Drawings, product data, and samples) for conformance with the design concept and the information given in the Contract Documents. Such action shall be taken with reasonable promptness so as to cause no delay. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component. The Architect's approval of Shop Drawings or samples shall not relieve the Contractor from his responsibility for any deviations from the requirements of the Contract Documents unless the Contractor has in writing called the Architect's attention to such deviation at the time of submission and the Architect has given written approval to the specific deviation, nor shall any approval by the Architect relieve the Contractor from responsibility for errors or omissions in the Shop Drawings.
- '3.6 Preparation of Change Orders.** The Architect, in consultation with the Owner, shall prepare Change Orders. The Architect shall also have authority to order minor changes in the Work as provided in Article 14.2.
- '3.7 Final Inspections, Certification.** The Architect shall conduct inspections to determine the dates of Substantial Completion and Final Completion. The Architect shall also receive and forward to the Owner, for the Owner's review, written warranties and related documents required by the Contract and assembled by the Contractor.
- '3.8 Payment Requests.** The Architect shall review the Contractor's Payment Requests and shall approve in writing those amounts which, in the opinion, of the Architect, are properly owing to the Contractor as provided in the Contract. The Architect's approval of payment requests shall not relieve the Contractor from his responsibility for any deviations from the requirements of the Contract Documents
- '3.9** The Architect shall be authorized to require the Contractor to make changes which do not involve a change in the Contract Sum or in the Contract Completion Time for the Contractor's performance consistent with the intent of the Contract.
- '3.10** The duties, obligations and responsibilities of the Contractor under the Contract shall in no manner whatsoever be changed, altered, discharged, released, or satisfied by any duty, obligation or responsibility of the Architect. The Contractor is not a third-party beneficiary of any Contract by and between the Owner and the Architect. It is expressly acknowledged and agreed that the duties of Contractor to the Owner are independent of, and are not diminished by, any duties of the Architect to the Owner.
- '3.11** The duties, obligations and responsibilities of both the Architect and the Contractor, under their respective Contracts, shall in no manner whatsoever be changed,

altered, discharged, released, or satisfied by any duty, obligation or responsibility of the Resident Observer. It is expressly acknowledged and agreed that the duties of Contractor and/or Architect to the Owner are independent of, and are not diminished by, any duties of the Resident Observer to the Owner. A copy of the Resident Observers Duties, Responsibilities and Limitations are attached hereto and made a part thereof.

'4. Construction Schedule The Contractor, within fifteen (15) days of the Date of Commencement shall prepare and submit for the Owner and Architect's approval a construction schedule for completing the Work. The schedule shall indicate the starting and completion dates of the various stages of the Work, shall not exceed time limits established by the Contract Documents for the various stages of Work, shall be updated monthly and furnished to the Owner and Architect, shall be related to the Work of any other contractors on the Project to the extent required by the circumstances, and shall provide for expeditious and practicable execution of the Work. The original schedule shall be accompanied by a proposed schedule of values as described in Article 18.1. The Contractor shall promptly notify the Architect and Owner if the Contractor is materially ahead of, or behind the updated construction schedule. Failure to so notify the Architect and Owner shall relieve the Owner from liability for damages caused by delay or impact. Strict compliance with the requirements of this paragraph shall be a condition precedent to payment to the Contractor, and failure by the Contractor to strictly comply with said requirements shall constitute a material breach of the Contract.

For projects with a contract amount of \$1,000,000 or greater the schedule shall be in critical path format. The schedules shall include all activities necessary for performance of the work showing logic (sequences, dependencies, etc.) duration of each activity with the critical path highlighted. The schedules shall include, but not be limited to, submittal processing, fabrication and delivery of materials, construction, testing clean-up, work and/or materials to be provided by the Owner, dates and durations for major utility outages requiring coordination with the Owner and the Owner's operations, and significant milestones related to the completion of the Project.

'5. Shop Drawings; Submittals

'5.1 Schedule for Submittals. Prior to submission of the first application for payment and in sufficient time to allow the Architect reasonable time for review, the Contractor shall submit to the Architect a schedule of submittals which shall be coordinated with the construction schedule. The Contractor shall keep the schedule of submittals current.

'5.2 Submittals of Shop Drawings, Samples, etc. The Contractor shall review, approve, and submit Shop Drawings, samples, and product data in accordance with the approved schedule as herein detailed. The Contractor's stamp of approval on any Shop Drawing or sample shall constitute a representation to Owner and Architect that the Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data, or he assumes full responsibility for doing so, and that he has reviewed or coordinated each Shop Drawing or sample with the requirements of the Work and the Contract Documents. The Architect shall review and approve, with reasonable promptness, the Shop Drawings, or return for corrections as required. The review and approval shall be for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The approval of a separate item will not indicate approval of the assembly in which the item functions. The Contractor shall make any corrections required by the Architect for compliance to the Contract and shall return the required number of corrected copies of Shop Drawings and resubmit new samples until approved. The

Contractor shall direct specific attention, in writing, or on resubmitted Shop Drawings, to revisions other than the corrections called for by the Architect on previous submissions.

Where a Shop Drawing or sample submission is required by the specifications, no related work shall be commenced until the submission has been approved by the Architect. A copy of each approved Shop Drawing and each approved sample shall be kept in good order by the Contractor at the site and shall be available to the Architect.

The Architect's approval of Shop Drawings or samples shall not relieve the Contractor from his responsibility for any deviations from the requirements of the Contract Documents unless the Contractor has in writing called the Architect's attention to such deviation at the time of submission and the Architect has given written approval to the specific deviation, nor shall any approval by the Architect relieve the Contractor from responsibility for errors or omissions in the Shop Drawings.

The Contractor shall maintain a submittal log which shall include, at a minimum, the date of each submittal, the date of any resubmittal, the date of any approval or rejection, and the reason for any approval or rejection.

'6. Documents and Samples at the Site Unless otherwise provided in the Contract Documents, the Contractor shall be furnished, free of charge, sufficient copies of the drawings and specifications as are reasonably necessary for the execution of the Work. However, the number of free copies shall not exceed twenty (20) unless otherwise determined by the Department Project Architect/Engineer and Purchasing Officer. If the number of copies required exceed twenty (20) or the number established by the Department Project Architect/Engineer, they shall be purchased by the Contractor at production cost. The Contractor shall maintain at the site one record copy of the drawings, specifications, addenda, Change Orders and other modifications, in good order and marked currently to record changes and selections made during construction. Unless otherwise directed, the Contractor shall also keep approved Shop Drawings, product data, samples and similar required submittals on hand. These shall be available to the Architect and Owner as requested. Upon completion of the Work, the record documents described above shall be delivered to the Architect for submittal to the Owner along with the as-built drawings.

'7. Contract Documents Property of Owner The Contract Documents, and each of them, as well as any other documents furnished by the Owner, shall remain the property of the Owner. The Contractor shall have the right to keep one (1) copy of the Contract Documents upon completion of the Project; provided, however, that in no event shall the Contractor use, or permit to be used, any portion or all of such Contract Documents on other projects without the Owner's prior written authorization.

'8. Supervision and Construction Procedures

'8.1 Supervision of the Work. The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention so as to ensure expeditious, workmanlike performance in accordance with the requirements of the Contract Documents. The Contractor shall be solely responsible for and have control over construction means, methods, techniques, sequences and procedures. He shall be responsible for the acts and omissions of persons directly employed by him, as he is for Subcontractors and others under Article 17. He shall be responsible for coordinating all portions of the Work under the Contract unless the Contract Documents give other specific instructions concerning these matters.

'8.2 Obligation to Follow Contract Requirements. The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents by

the activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons other than the Contractor.

- '8.3 The Contractor shall not perform Work without adequate plans and specifications, or, as appropriate, approved Shop Drawings, or other submittals. If the Contractor performs Work knowing or believing it involves an error, inconsistency or omission without first providing written notice to the Architect and Owner, the Contractor shall be responsible for such Work and pay the cost of correcting same.
- '8.4 All Work shall strictly conform to the requirements of the Contract Documents.
- '8.5 The Work shall be strictly supervised, the Contractor bearing full responsibility for any and all acts or omissions of those engaged in the Work on behalf of the Contractor.
- '8.6 The Contractor shall at all times enforce strict discipline and good order among his employees and Subcontractors and shall not employ on the Work any person not skilled in the Work assigned to him.
- '8.7 The Contractor shall employ and maintain at the Project site only competent supervisory personnel.
- '8.8 The Contractor shall have a continuing duty to read, examine, review, compare and contrast each of the Contract Documents, Shop Drawings, and other submittals and shall give written notice to the Owner and the Architect of any potential conflict, ambiguity, error or omission which the Contractor may find with respect to these documents and their adequacy and sufficiency for construction as required by the Contract before proceeding with the affected Work. The express or implied approval by the Owner or the Architect of any Shop Drawings or other submittals shall not relieve the Contractor of the continuing duties imposed hereby, nor shall any such approval be evidence of the Contractor's compliance with the resulting Contract. The Owner has relied upon the Architect to prepare documents for the Project, including the plans and specifications for the Project, which are accurate, adequate, consistent, coordinated and sufficient for construction, and in issuing the Contract to the Contractor, the Owner's established legal duties to the Contractor notwithstanding, the Owner has relied upon the Architect's professional expertise in fulfilling its legal duty to the Owner in addition to the Contractor's full and good faith compliance with its duties set forth above.
- '8.9 **Superintendent.** The Contractor shall employ a qualified, competent superintendent and any necessary assistants who shall be in attendance at the Project site during performance of the Work. The Department reserves the right to approve the Superintendent selected by the Contractor. The superintendent shall have full authority to act in behalf of the Contractor and all instructions given to the superintendent shall be considered as given to the Contractor. It shall be the responsibility of the Contractor's superintendent to coordinate the work of all the Subcontractors.
The superintendent shall not be changed except under the following circumstances:
- '8.9.1 where the superintendent proves to be unsatisfactory to the Contractor or ceases to be in his employ, in which case the Contractor shall give timely

prior written notice to the Owner of the impending change in superintendent and a reasonable explanation for the change; or

'8.9.2 where the Owner has reasonable grounds for dissatisfaction with the performance of the superintendent and gives written notice to the Contractor of these grounds. The Contractor, upon receiving such written notice, shall replace the existing superintendent with a successor, to whom the Owner has no objection.

'9. Labor, Material

'9.1 Contractor Provisions. Unless otherwise stipulated, the Contractor shall provide and pay for all materials, supervision, labor, water, tools, equipment, light, power, temporary heat, hoist, supplies, appliances, transportation, and other facilities and things necessary for the execution and completion of the Work. In the event the Owner elects to make available the electric power, at no cost, to the Contractor for construction purposes, it shall not be utilized as a means for temporary heat.

'9.2 Contractor Warranty. The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will strictly conform with the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

'9.3 Substitution - Materials and Equipment. Substitution of previously approved equipment and materials shall be considered only for the following reasons:

'9.3.1 unavailability of the material or equipment due to conditions beyond the control of the Contractor

'9.3.2 inability of the supplier to meet Contract schedule; or

'9.3.3 technical and immaterial noncompliance to specifications. Inclusion of a certain, make or type of materials or equipment by the Contractor shall not obligate the Owner to accept such material or equipment if it does not meet the requirements of the plans and specifications. Substitutions not properly approved and authorized may be considered defective work. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials and equipment.

'9.4 Recycled Content

KRS 45A.520 mandates that every state agency require a minimum recycled content for those materials it purchases. In accordance with 200 KAR 5:330, all listed are to be offered by the awarded contractor ONLY as a recycled product. Except as provided in KRS 45A.510, construction related materials requiring a minimum recycled content include Building Insulation, Aluminum products, concrete, cement and steel products. For a complete listing of those items requiring minimum recycled content please refer to 200 KAR 5:330

<http://www.lrc.state.ky.us/kar/200/005/330.htm>

'10. Surveys, Permits, Fees, Notices, and Tests

'10.1 Owner-Furnished Surveys. The Owner shall furnish whatever surveys are specifically required by the Contract Documents. Approvals, assessments, easements for permanent structures or permanent changes in existing facilities, and utility tap-on fees shall be secured and paid for by the Owner, unless otherwise provided in the Contract Documents.

'10.2 Permits. Building, sewer, and water permits and similar kinds of permits required by local ordinances shall be obtained by the General Contractor, but no fee shall be charged to or paid by the Contractor as the Commonwealth is exempt from such charges. The Contractor shall procure and pay for any necessary licenses to do business in the locale of the Work.

'10.3 Notices. The Contractor shall comply with and give notices required by laws, ordinances, rules, regulations and lawful orders of public authorities bearing on the performance of the Work.

'10.4 Required Regulatory Tests and Inspections. Regulatory agencies of the government having jurisdiction may require any Work to be inspected, tested or approved. The Contractor shall assume full responsibility therefore, including related costs, unless otherwise noted, and shall furnish the Architect the required certifications of inspection, testing or approval.

'10.5 Any delays by governmental agencies in obtaining Permits, Notices, Required Regulatory Tests and Inspections (10.2, 10.3, 10.4) and not the fault of one of the parties shall be shared by the Contractor and Owner with appropriate time extensions only. Liquidated damages and Contractor compensation for such delays or impact are not applicable and shall not be payable.

'10.6 Payment for Tests. Tests of materials, products and equipment in place, required by the Architect or the Owner, to prove quality standards shall be paid by the Contractor. Should results of testing indicate that construction is not in compliance with Contract Documents, the Contractor shall bear the cost of any additional tests of the materials, products or equipment. The Contractor shall give the Architect timely notice of readiness of the Work for all inspections, tests or approvals.

'11. Protection of Work, Property, Employees and Public

'11.1 Safety Precautions and Programs. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Project.

'11.2 Safety of Persons and Property. The Contractor shall continuously maintain adequate protection of all Work from damage and shall protect the Owner's property from injury or loss arising in connection with this Contract. He shall make good any such damage, injury, or loss, except such as may be directly due to errors in the Contract Documents or caused by agents or employees of the Owner. He shall adequately protect adjacent property as provided by law and the Contract Documents.

The Contractor shall take all necessary precautions for the safety of employees on the Work site, and shall comply with all applicable provisions of federal, state, and municipal safety laws and building codes to prevent accidents or injury to

persons on, about, or adjacent to the premises where the Work is being performed.

The Contractor shall designate a responsible member of his organization on the Work site as safety officer whose duty shall be to enforce safety regulations. The name and position of the person so designated shall be reported to the Architect by the Contractor.

In an emergency affecting the safety of life, or of the Work, or of adjoining property, the Contractor, without special instruction or authorization from the Architect or Owner, shall act at his discretion to prevent such threatened loss or injury.

'11.3 Hazardous Materials. In the event the Contractor unexpectedly encounters on the site material reasonably believed to be asbestos, polychlorinated biphenyl (PCB) or other classified hazardous substances/materials which have not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner and Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner and Contractor if in fact the material is asbestos, polychlorinated biphenyl (PCB), or other classified hazardous substances/materials which have not been rendered harmless. The Work in the affected area shall be resumed in the absence of any classified hazardous substances/materials or when it is determined that they have been rendered harmless.

'12. Inspection of Work/Discovering and Correcting Defective or Incomplete Work

The Owner, the Architect, and their representatives shall at all times have access to the Work whenever it is in preparation or progress and the Contractor shall provide proper facilities for such access and for inspection. The Contractor shall be given timely notification in order to arrange for proper inspection of any Work performed outside of the normal working day or week.

If the specifications, the Architect's instructions, laws, ordinances, or any public authority require any Work to be specially tested or approved, the Contractor shall give the Architect timely notice of its readiness for inspection. Inspections by the Architect shall be made promptly.

In the event that the Contractor covers, conceals or obscures its Work in violation of the Contract or in violation of a directive from the Owner or the Architect, such Work shall be uncovered and displayed for the Owner's or Architect's inspection upon request, and shall be reworked at no cost in time or money to the Owner.

If any of the Work is covered, concealed or obscured in a manner not covered by the above paragraph, it shall, if directed by the Owner or the Architect be uncovered and displayed for the Owner's or Architect's inspection. If the uncovered Work conforms strictly with the Contract, the costs incurred by the Contractor to uncover and subsequently, replace such Work shall be borne by the Owner. Otherwise, such costs shall be borne by the Contractor.

The Contractor shall, at no cost in time or money to the Owner, correct Work rejected by the Owner or by the Architect as defective or failing to conform to the Contract. Additionally, the Contractor shall reimburse the Owner for all testing, inspections and other expenses incurred as a result thereof.

The Owner may, but shall in no event be required to, choose to accept defective or nonconforming Work. In such event, the Contract Price shall be reduced by the greater of (1) the reasonable costs of removing and correcting the defective or nonconforming

Work, and (2) the difference between the fair market value of the Project as constructed and the fair market value of the Project had it not been constructed in such a manner as to include defective or nonconforming Work. If the remaining portion of the unpaid Contract Sum, if any, is insufficient to compensate the Owner for the acceptance of defective or nonconforming Work, the Contractor shall, upon written demand from the Owner, pay the Owner such remaining compensation for accepting defective or nonconforming Work.

'13. Royalties and Patents The Contractor shall pay all royalties and license fees and shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof.

'14. Changes in the Work/Change Orders

'14.1 Change Orders. One or more changes to the Work within the general scope of the Contract may be ordered by Change Order. The Contractor shall proceed with any such changes, (including additions, reductions, deletions, other revisions), and same shall be accomplished in strict accordance with the following:

Change Order means a written order to the Contractor executed by the Owner and the Architect after execution of the Contract, directing a change in the Work and may include a change in the Contract Price, or the Contract Completion Time, or any combination thereof.

Any change in the Contract Sum resulting from a Change Order shall be determined by one of the following methods:

- (1) by mutual agreement of a lump sum amount between the Owner and the Contractor as evidenced by (a) the Change in the Contract Sum being set forth in the Change Order, (b) such change in the Contract Sum, together with any conditions or requirements relating thereto, being initialed by both parties and (c) the Contractor's execution of the Change Order;
- (2) by unit prices stated in the Contract Documents or subsequently agreed upon; or
- (3) If no mutual agreement occurs between the Owner and the Contractor, the Change in the Contract Sum, if any, shall be derived by determining the reasonable actual costs or savings achieved resulting from revisions in the Work.

Items (1) and (3) above shall include a component for all overhead, profit, indirect costs or other items not to exceed fifteen percent (15%). Any such costs or savings shall be documented in the format, and with such content and detail as the Owner or the Architect requires. The Contractor shall only receive one fifteen percent (15%) for the "jobsite overhead and profit" component whether such work be done by the Contractor or by his Subcontractor.

For all charges relating to any Change Order, whether determined under subparagraph 1, 2 or 3 above, the following provisions shall apply:

- (1) The Contractor shall keep and present in such form as the Architect may direct, a correct account of all items in such form comprising the net cost of such Work, together with vouchers. The determination of the Architect shall be final upon all questions of the amount and cost of Changes in the Work, and it shall include in such cost, the cost to the Contractor of all materials used, of all labor, common and skilled, or foremen, trucks and teams, and the fair rental of all machinery used and for the period of such use. If said Work requires the use of machinery not already upon the work or to be otherwise used upon the Work, then the cost of

transportation of such machinery to and from the Work shall be added to the fair rental, but said transportation shall not cover a distance exceeding one hundred (100) miles.

- (2) The Architect shall not include in the net cost of Work any cost or rental or small tools, or any portion of time of the Contractor or his Superintendent, or any allowance for the use of capital, or any additional bond premium, insurance cost applicable to the Work or any actual or anticipated profit, or any job or office overhead not previously mentioned, these items being considered as being covered by the added fifteen (15%) percent for the jobsite overhead and profit component.
- (3) In all cases where Changes in the Work are covered by unit prices set forth in the Contract, the value of such Work shall be determined only upon the basis of such unit prices.
- (4) Pending final determination of value, payments on Changes in Work shall be made only upon the estimate of the Architect.

If the Contractor claims that any instructions by the Architect involve additional cost and/or time extension, he shall give the Architect written notice thereof **within a reasonable time after the receipt of such instructions and before proceeding to execute the change in Work.**

On all Change Orders that exceed \$25,000 the Contractor shall submit the following certification:

"I (the Contractor) certify to the best of my knowledge and belief, the cost or pricing data submitted is accurate, complete and current as of the date of the proposed change."

If the Owner and Contractor cannot agree on the effect of an ordered change on the adjustment to the Contract Sum or Contract Completion Time, this matter may also be referred to the Architect for determination.

If the Owner and/or Contractor do not agree with the Architect's determination regarding the valuation of a change, the related adjustment to the Contract Sum or to the Contract Completion Time, the matter shall be subject to the disputes procedure set out in Article 26.

The execution of a Change Order by the Contractor shall constitute conclusive evidence of the Contractor's agreement to the ordered changes in the Work, the resulting Contract as thus amended, the Contract Sum and the time for performance by the Contractor. The Contractor, by executing the Change Order, waives and forever releases any claim against the Owner for additional time or compensation for matters relating to or arising out of or resulting from the Work included within or affected by the executed Change Order.

The Contractor shall notify and obtain the consent and approval of the Contractor's Payment and Performance Bond sureties with reference to all Change Orders if such notice, consent or approval are required by the Owner, the Architect, the Contractor's sureties or by law. The Contractor's execution of the Change Order shall constitute the Contractor's warranty to the Owner that the sureties have been notified of, and consent to, such Change Order and the sureties shall be conclusively deemed to have been notified of such Change Order and to have expressly consented thereto.

'14.2 Minor Changes. The Architect may authorize minor changes in the Work which do not involve additional cost or extension of the Contract Completion Time, and which are not inconsistent with the intent of the Contract Documents. Such changes shall be effected by a Field Order issued by the Architect, which shall be binding on the Owner and Contractor. The Contractor shall carry out such orders promptly. However, if the Contractor claims that a Field Order involves additional cost or a delay to completion of the Work, he shall give the Architect written notice thereof within a reasonable time after receipt of the Field Order. Otherwise, he shall be deemed to have waived any right to claim an adjustment to the Contract Sum or to the Contract Completion Time.

'15 Project Records All documents relating in any manner whatsoever to the Project, or any designated portion thereof, which are in the possession of the Contractor, or any Subcontractor of the Contractor, shall be made available to the Owner or the Architect for inspection and copying upon written request by the Owner. Furthermore, said documents shall be made available, upon request by the Owner, to any state, federal or other regulatory authority and any such authority may review, inspect and copy such records. Said records include, but are not limited to all drawings, plans, specifications, submittals, correspondence, minutes, memoranda, tape recordings, videos, or other writings or things which document the Project, its design, and its construction. Said records expressly include those documents reflecting the cost of construction to the Contractor. The Contractor shall maintain and protect these documents for no less than ten (10) years after final completion of the Project, or for any longer period of time as may be required by law or good construction practice.

'16. Delays and Extensions of Time It is agreed that time is of the essence for each and every portion of the resulting Contract and where under the Contract an additional time is allowed for the completion of any Work, the new time limit fixed by such extension shall be of the essence of the Contract. Provided, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work is due to:

- (1) any preference, priority, or allocation order duly issued by the government;
- (2) unforeseeable cause beyond the control and without the fault or negligence of the Contractor, including, but not restricted to, acts of God, or of the public enemy, acts of the Owner, acts of another contractor in the performance of a contract with the Owner, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes and unusually severe weather; or
- (3) any delays of Subcontractors or suppliers occasioned by any of the causes specified in subsections (1) and (2) of this Article:

The Contractor shall, within fifteen (15) calendar days of the occurrence of the event, notify the Architect in writing. The Architect shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of its decision in the matter. Any change in the Contract Completion Time resulting from any such claim shall be incorporated in a Change Order. An extension of time shall not be construed as cause for extra compensation under the Contract. Extensions of time relating to concealed conditions as defined in Article 26 shall be governed by the provisions of that Article.

'17 Subcontractors

'17.1 Contractor Fully Responsible for Subcontractors. The Contractor is fully responsible to the Owner for the acts and omissions of his Subcontractors and of persons and entities either directly or indirectly employed by them.

Nothing contained in the Contract Documents shall create any contractual relationship between the Owner and a Subcontractor.

'17.2 Flow-down Requirement. By contract, the Contractor shall require each Subcontractor:

- (1) to be bound to the Contractor by the terms of the Contract Documents insofar as they apply to the Work to be performed by the Subcontractor; and
- (2) to assume toward the Contractor all the obligations which the Contractor, by the Contract Documents, assumes toward the Owner.

'17.3 Contracts with SubContractors. The Contractor shall contract with those Subcontractors listed in the Contractors Bid Response and deemed acceptable by the Owner in accordance with the procedure outlined in the Instruction to Bidders. All subcontracts shall afford the Contractor rights against the Subcontractor which correspond to those rights afforded to the Owner against the Contractor herein, including those rights of Contract termination as set forth herein.

'17.4 Substitution of SubContractors. The Contractor shall not contract with any substitute Subcontractor or change a Subcontractor without providing timely written notice of the proposed substitution to the Architect, Project Engineer and Purchasing Officer. The substitution shall not be made if the Owner, Architect, Project Engineer, or Purchasing Officer object in writing to such change.

'18. Payment The Owner shall make payments, less ten percent (10%) retainage, to the Contractor on the amount of the Work performed or materials furnished for the Work in accordance with the following procedures:

'18.1 Schedule of Values. At the same time it submits a construction schedule, within fifteen (15) days of the Date of Commencement, as provided in Article 4, the Contractor shall submit a Schedule of Values apportioning the Contract Sum among the different elements of the Project for purposes of periodic and final payment, prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. The Contractor shall not imbalance its Schedule of Values, nor artificially inflate any element thereof. The violation of this provision by the Contractor shall constitute a material breach of the Contract. Upon written approval by the Architect and the Owner, the Schedule of Values and construction schedule shall become the basis for the Contractor's Payment Requests during construction.

'18.2 Application for Progress Payment. Not more often than once a month, the Contractor shall submit to the Architect a signed application for payment (sometimes referred to as Payment Request), for the Work completed as of the date of the application and accompanied by such data and schedules as the Architect may reasonably require. Therein, the Contractor may request payment for ninety percent (90%) of that part of the Contract Sum allocable to Contract requirements properly provided, labor, materials and equipment properly incorporated in the Project. If payment is requested on the basis of materials and equipment not incorporated in the Project, but delivered and suitably stored at the Project site or at another location agreed to in writing by the Owner, the application for payments shall also be accompanied by such data, satisfactory to Owner, as will establish the Owner's title to the material and equipment and protect his interest therein, including written documentation of full insurance against loss or damage and the bonding of the storage sites. Storage sites must be bonded. Each subsequent application for payment shall include an affidavit of

the Contractor stating that all previous progress payments received on account of the Work have been applied to discharge in full all of the Contractor's obligations reflected in prior applications for payment. Each Payment Request shall be signed by the Contractor and shall constitute the Contractor's representation that the quantity of Work has reach the level for which payment is requested, that the Work has been properly installed or performed in strict compliance with this Contract, and that the Contractor knows of no reason why payment should not be made as requested.

'18.3 Approval of Payments. The Architect shall review the application for payment and shall review the work at the Project site or elsewhere to determine whether the quantity and quality of the Work is as represented in the application for payment and is as required by this Contract. The Architect shall, within ten (10) business days after receipt of each application for payment, approve in writing the amount which, in the opinion of the Architect, is properly owing to the Contractor. The Owner shall make payment to the Contractor within twenty (20) business days following the Architect's written approval of each application for payment. A reasonable delay on the part of the Owner in making payment to the Contractor for any given payment shall not be a breach of contract. The amount of each such payment shall be the amount approved for payment by the Architect less such amounts, if any, otherwise owing by the Contractor to the Owner or which the Owner shall have the right to withhold as authorized by this Contract. The Architect's approval of the Contractor's application for payment shall not preclude the Owner from the exercise of any of its rights as set forth herein. The Contractor warrants and represents that, upon payment of the application for payment, title to all Work included in such payment shall be vested in the Owner.

'18.4 Contractor's Warranty of Title. The 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 at the time of payment free and clear of all encumbrance.

'18.5 Retainage Reduction. Until fifty percent (50%) of the construction work has been completed in accordance with the contract, the Owner may withhold no more than ten percent (10%) retainage from the amount of any undisputed payment due, and retainage held after fifty-one percent (51%) of the construction project has been completed shall not be more than five percent (5%) of the total contract amount.

'18.6 Completion, Acceptance and Final Payment. Upon certification by the Architect of Substantial Completion of the Work, the Contractor shall continue to make normal pay requests as defined within this document. Within thirty (30) days after substantial completion, the Owner shall release the retainage less an amount equal to two hundred percent (200%) of the Owner's reasonably estimated cost of the balance of any contractor's contractually obligated, yet uncompleted, work remaining.

Final payment, shall be made by the Owner to the Contractor when the Contract has been fully performed by the Contractor in accordance with the Contract Documents and a final Certificate of Payment is issued by the Architect. Such final payment shall be made by the Owner not more than 30 business days after the issuance of the final Certificate of Payment. The Contractor shall submit with the application for final payment an affidavit that all payrolls, bills for materials, supplies and equipment, and other indebtedness connected with the Work have been paid or otherwise satisfied, along with such supporting evidence of payment

as the Architect requires. Final payment is conditioned on satisfactory compliance with this requirement.

'18.7 Waiver of Claims. The making of final payment shall constitute a waiver of all claims by the Owner except those arising from:

'18.7.1 unsettled liens;

'18.7.2 faulty or defective Work appearing after Substantial Completion;

'18.7.3 failure of the Work to comply with the requirements of the Contract Documents; or

'18.7.4 terms of any special warranties required by the Contract Documents. The acceptance of final payment by the Contractor shall constitute a waiver of all claims except those previously made in writing and identified by the Contractor as unsettled at the time of the final application for payment.

'18.8 Contractor's Payment to Subcontractors. When payment is received from the Owner, the Contractor shall immediately pay all Subcontractors, materialmen, laborers and suppliers the amounts they are due for the Work covered by such payment. In the event the Owner becomes informed that the Contractor has not paid a Subcontractor, materialman, laborer, or supplier as provided herein, the Owner shall have the right, but not the duty, to issue future checks and payment to the Contractor of amounts otherwise due hereunder naming the Contractor and any such Subcontractor, materialman, laborer, or supplier as joint payees. Such joint check procedure, if employed by the Owner, shall create no rights in favor of any person or entity beyond the right of the named payees to payment of the check and shall not be deemed to commit the Owner to repeat the procedure in the future. The Contractor shall, by an appropriate agreement with each Subcontractor, require each Subcontractor to make payment to his subcontractors in similar manner.

The Architect may, on request, furnish to any Subcontractor information regarding the percentage of completion of the amounts applied for by the Contractor and the action thereon by the Architect.

Neither the Owner nor the Architect shall have any obligation to make payment to any Subcontractor except as may otherwise be required by law.

'18.9 Owner's Rights Relating to Payments. Neither payment to the Contractor, utilization of the project for any purpose by the Owner, nor any act or omission by the Owner shall be interpreted or construed as an acceptance of any Work of the Contractor not strictly in compliance with this Contract.

The Owner shall have the right to refuse to make payment and, if necessary, may demand the return of a portion or all of the amount previously paid to the Contractor due to:

'18.9.1 The quality of a portion, or all, of the Contractor's Work not being in accordance with the requirements of this Contract;

'18.9.2 The quantity of the Contractor's Work not being as represented in the Contractor's Payment Request, or otherwise;

'18.9.3 The Contractor's rate of progress being such that, in the Owner's opinion, substantial or final completion, or both, may be inexcusably delayed;

'18.9.4 Claims made, or likely to be made, against the Owner;

'18.9.5 Loss caused by the Contractor;

'18.9.6 The Contractor's failure or refusal to perform any of its obligations to the Owner.

In the event that the Owner makes written demand upon the Contractor for amounts previously paid by the Owner as contemplated in this Paragraph, the Contractor must promptly comply with such demand.

'19. Completion

'19.1 Commencement and Completion of Work. The Contractor shall begin the Work on the Date of Commencement as specified in the Contract issued by the Owner. He shall diligently and expeditiously continue the performance of the Contract to and until Substantial Completion and Final Completion of the Project. The Contractor shall accomplish the Work in accordance with the construction schedule so as to achieve Substantial Completion and Final Completion dates as defined in the Contract Documents. All time limits stated in the Contract Documents are the essence of the Contract.

'19.2 Substantial Completion of the Work. The Substantial Completion Date shall be that date certified by the Architect in accordance with the following procedures.

'19.2.1 When the Contractor determines that Substantial Completion has been achieved, the Contractor shall notify the Owner and the Architect in writing. The notification shall be accompanied by a Contractor prepared list of those items of Work still to be completed or corrected. The failure of the Contractor to include any item or items on such list not completed or needing correction shall not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

'19.2.2 The Architect shall, within a reasonable time after receipt of notification from the Contractor of Substantial Completion, make such inspection to confirm that the Work has achieved Substantial Completion.

'19.2.3 Upon its confirmation that the Contractor's work is substantially complete, the Architect shall prepare a Certificate of Substantial Completion which shall establish the Substantial Completion Date and the responsibilities between the Owner and Contractor for security, maintenance, heat, utilities and insurance, if not otherwise provided for in the Contract Documents, and a tentative list of items to be completed or corrected, within thirty (30) calendar days from the Substantial Completion Date. The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of the responsibilities assigned to them in the certificate.

'19.2.4 If, after making the inspection, the Architect fails to find that the Contractor's Work has achieved Substantial Completion, he will notify the Contractor in writing, giving the reasons therefore.

'19.2.5 If the Architect through its inspection fails to find that the Contractor's Work has achieved Substantial Completion and is required to repeat all, or any portion, of its, the Contractor shall bear the cost of such repeat

inspections which cost may be deducted by the Owner from any payment then or thereafter due the Contractor.

'19.3 Final Completion of the Work. The Architect, upon receipt of written notice from the Contractor that the Work is finally complete and is ready for final inspection and acceptance, will promptly make such inspection and when he finds the Work completed and acceptable under the Contract Documents and the Contract fully performed, he will so notify the Contractor in writing and promptly issue a final Certificate of Payment to the Owner. If the Architect is unable to issue its final Certificate of Payment and is required to repeat its final inspection of the Project, the Contractor shall bear the cost of such repeat inspection(s), which costs may be deducted by the Owner from the Contractor's final payment; When the Owner accepts and occupies a building, all operations, maintenance, utilities and insurance become the responsibility of the Owner.

'19.4 Use of Substantially Complete Portions. The Owner may use or occupy a specified portion of the Work at any stage, provided that:

'19.4.1 such use or occupancy is consented to by insurers and

'19.4.2 it is authorized by public regulatory bodies having jurisdiction over the Work; and

'19.4.3 prior to such use or occupation, the affected portion of the Work is jointly inspected by the Owner, Contractor and Architect to determine the precise stage of completion.

Such possession and use shall not be deemed an acceptance of any Work not completed in accordance with the Contract Documents.

'19.5 Liquidated Damages

'19.5.1 The Contractor shall pay the Owner an amount identified in the Contract Documents for each and every calendar day of unexcused delay in achieving Substantial Completion and Final Completion beyond the date set for each.

Any sums due and payable hereunder by the Contractor shall be payable, not as a penalty, but as liquidated damages representing delay damages sustained by the Owner, estimated at the time of executing this Contract.

'19.5.2 When the Owner reasonably believes that Substantial Completion will be inexcusably delayed, the Owner shall be entitled, but not required, to withhold from any amounts otherwise due the Contractor an amount then believed by the Owner to be adequate to recover liquidated damages applicable to such delays. If and when the Contractor overcomes the delay in achieving Substantial Completion, or any part thereof, for which the Owner has withheld payment, the Owner shall promptly release to the Contractor those funds withheld, but no longer applicable, as liquidated damages.

'20. Correction of Work

'20.1 Correction of Work Prior to Final Payment. The Contractor shall promptly correct Work which is rejected by the Architect as failing to conform to the requirements of the Contract Documents. Such correction shall be required regardless of

whether or not the nonconformities are observed before or after Substantial Completion, or whether or not the work has been fully fabricated, installed or completed.

'20.2 Correction of Work After Final Payment. Neither the Final Certificate of payment nor any provisions in the Contract Documents shall relieve the Contractor of responsibility for failure to conform to the requirements of the Contract Documents. If within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties, or by terms of an applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct is promptly after receipt of written notice from the Owner to do so unless the Owner has previously given the Contractor a written acceptance of such condition. This period of one year shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual performance of the Work. This obligation under this paragraph shall survive acceptance of the Work under the Contract and termination of the Contract. The Owner shall give such notice promptly after discovery of the conditions.

'20.3 Responsibility for Related Costs. In addition to being responsible for correcting the Work and removing any nonconforming Work or materials which are not corrected from the jobsite, the Contractor shall bear all other costs of bringing the affected Work into compliance with the Contract Documents. These include costs of any required additional testing and inspection services, Architect's services, and any resulting damages to property or to construction Work of other contractors or of the Owner.

'20.4 Correction by Owner. If the Contractor fails to correct nonconforming Work within a reasonable time, the Owner may take steps to correct the Work itself. If, within a ten (10) day period after receipt of written notice to correct the nonconformity, the Contractor has not made serious efforts to correct the nonconformity, the Owner may without prejudice to any other remedies it may have, proceed to correct the non-conforming Work.

In such cases a Change Order shall be issued by the Owner with the approval of the Architect reflecting an equitable deduction from the Contract Sum to cover the cost of correcting the Work, including compensation for the Architect's additional services and other related expenses and damages. The amount of the Change Order shall be deducted from payments then or thereafter due the Contractor. If final payment has already been made, the Contractor shall pay the difference.

'20.5 Ongoing Liability of Contractor for Defective Work. The foregoing provisions establishing the specific obligation of the Contractor to perform corrective Work do not establish a period of limitations on other obligations of the Contractor under the Contract Documents. Even after the Contractor is no longer specifically obligated to perform corrective Work itself, it shall still be held liable for nonconforming Work and for other breaches of its obligations under the Contract Documents.

'20.6 Deduction for Uncorrected Work. If the Owner deems it not expedient to correct Work which is not in accordance with the requirements of the Contract Documents, an appropriate Change Order shall be issued by the Owner with the approval of the Architect reflecting an equitable deduction from the Contract Sum

on account of the uncorrected Work. The amount of the Change Order shall be deducted from payments then or thereafter due the Contractor. If final payment has already been made, the Contractor shall be responsible for paying the difference to the Owner.

'21. Suspension of Work

'21.1 Suspension by the Owner. The Owner shall have the right at any time to direct the contractor to suspend its performance, or any portion thereof for a period of not more than thirty (30) calendar days. The notice of suspension shall be in writing and shall set forth the reason for the suspension. The written notice shall fix the approximate date on which Work is contemplated to be resumed. The Owner shall pay the Contractor as full compensation for such suspension the Contractor's Direct Job Expenses.

'21.2 Other Suspension. In the event the Owner should be prevented or enjoined by court order from proceeding with the Work or from authorizing its prosecution, either before or after the award, for a period up to ninety (90) days, the delay shall not constitute cause for termination by the Contractor and the Contractor shall not be entitled to make or assert claim for damage by reason of said delay, but time for completion of Work shall be extended to such reasonable time as the Owner may determine will compensate for time lost by such delay. Such determination shall be set forth in a Change Order shall be final and binding upon both parties, and shall not require the signature of the Contractor to be in effect. The Owner shall pay the Contractor as full compensation for such suspension the Contractor's reasonable costs actually incurred and paid as follows:

'21.2.1 demobilization and remobilization, including such costs paid to subcontractors;

'21.2.2 preserving and protecting work in place;

'21.2.3 storage of materials or equipment purchased for the Project, including insurance thereon:

'21.2.4 performing in a later, or during a longer, time frame than contemplated by this Contract.

'21.3 Suspension by the Contractor. If, through no act or fault of the Contractor, the Work is suspended for a period of more than thirty (30) days by the Owner, or more than ninety (90) days under an Order of the Court or other public authority, then the Contractor may, after ten (10) days from delivery of a written notice to the Owner and the Architect, terminate the Contract and recover from the Owner payment for all Work executed and reasonable expenses sustained. If the Architect has failed to act on a request for payment, within thirty (30) working days of submission, or if the Owner has failed to make any payment, within forty-five (45) working days of receipt of an approval application for payment, the Contractor may, upon ten (10) days written notice to the Owner and the Architect stop the Work until he has been paid all amounts then due, in which event and upon resumption of the Work, a Change Order shall be issued adjusting the Contract Price or extending the Contract Completion Time, or both, to compensate for the costs and delays attributable to the stoppage of the work, any such compensation being subject to the provisions, conditions and limitations contained in Article 26.

'22. Termination

'22.1 Termination of Contract for Convenience of Owner. The Owner, for any reason whatsoever, may terminate the Contract for its own convenience when it determines that such termination will be in the best interest of the Commonwealth of Kentucky. The Owner shall give written notice of such termination to the Contractor specifying when termination becomes effective. The Contractor shall incur no further obligations in connection with the Work and the Contractor shall stop Work when such termination becomes effective. The Contractor shall also terminate outstanding orders and subcontracts. The Contractor shall settle the liabilities and claims arising out of the termination of Subcontracts and orders. The Owner may direct the Contractor to assign the Contractor's right, title and interest under termination orders or subcontracts to the Owner or its designee. The Contractor shall transfer title and deliver to the Owner such completed or partially completed Work and materials, equipment, parts, fixtures, information and Contract rights as the Contractor has. The Commonwealth shall negotiate a fair and just settlement with the Contractor in accordance with 200 KAR 5:312 Section 2. In such event, the following procedure shall be required:

'22.1.1 The Contractor shall submit a termination claim to the Owner and the Architect specifying the amounts due because of the termination for convenience together with costs, pricing or other data required by the Owner or the Architect. If the Contractor fails to file a termination claim within one (1) year from the effective date of termination, the Owner shall pay the Contractor, an amount derived in accordance with paragraph (3) below;

'22.1.2 The Owner and the Contractor may agree to the compensation, if any, due to the Contractor hereunder pursuant to 200 KAR 5:312 Section 2;

'22.1.3 Absent agreement to the amount due to the Contractor, the Owner shall pay the Contractor the following amounts:

'22.1.3.1 Contract prices for labor, materials, equipment and other services accepted under this Contract;

'22.1.3.2 Reasonable costs incurred in preparing to perform and in performing the terminated portion of the Work and in terminating the Contractor's performance, plus a fair and reasonable allowance for direct jobsite overhead and profit thereon (such profit shall not include anticipated profit or consequential damages); provided however, that if it appears that the Contractor would have not profited or would have sustained a loss if the entire Contract would have been completed, no profit shall be allowed or included and the amount of compensation shall be reduced to reflect the anticipated rate of loss, if any;

'22.1.3.3 Reasonable costs of settling and paying claims arising out of the termination of subcontracts or orders pursuant to the initial Paragraph of 22.1. These costs shall not include amounts paid in accordance with other provisions hereof.

The total sum to be paid the Contractor under 22.1 shall not exceed the total Contract Sum, as properly adjusted, reduced by the amount of payments otherwise made, and shall in no event include duplication of payment.

'22.2 Termination of Contract for Cause. If the Contractor should be adjudged as bankrupt, or if he should make a general assignment for the benefit of his creditors, or if a receiver should be appointed on account of his insolvency or, if the Contractor does not perform the Work, or any part thereof, in a timely manner, supply adequate labor, supervisory personnel or proper equipment or materials, or if it fails to timely discharge its obligations for labor, equipment and materials, or proceeds to disobey applicable law, or otherwise commits a violation of a material provision of the resulting Contract, then the Owner, in addition to any other rights it may have against the Contractor or others, may terminate the performance of the Contractor upon ten (10) days written notice by registered mail of declaration of default and assume possession of the Project site and of all materials and equipment at the site and may complete the Work. In such case, the Contractor shall not be paid further until the Work is complete. After final completion has been achieved, if any portion of the Contract Sum, as it may be modified hereunder, remains after the cost to the Owner of completing the Work, including all costs and expenses of every nature incurred, has been deducted by the Owner, such remainder shall belong to the Contractor. Otherwise, the Contractor shall pay and make whole the Owner for such cost. This obligation for payment shall survive the termination of the Contract. In the event the employment of the Contractor is terminated by the Owner for cause pursuant to this Paragraph 22.2 and it is subsequently determined by a Court of competent jurisdiction that such termination was without cause, such termination shall thereupon be deemed a Termination for Convenience under Paragraph 22.1 and the provisions of Paragraph 22.1 shall apply.

'23. Indemnification The Contractor shall indemnify and hold the Owner harmless from any and all claims, liability, damage, loss, cost and expense of every type whatsoever, regardless of whether such liability, claim, damage, loss, cost or expense is caused in part by the Owner, including, without limitation, attorneys' fees and expenses, in connection with the Contractor's performance of this Contract, provided that such claims, liability, damage, loss, cost or expense is due to sickness, personal injury, disease or death, or to loss or destruction of tangible property (other than the Work itself), including loss of use resulting therefrom, to the extent caused by the Contractor, or anyone for whose acts the Contractor may be liable.

'24. Insurance

'24.1 The Contractor shall furnish the Owner with certificates evidencing the required insurance coverage prior to commencing work. Contractor shall keep up-to-date copies of such certificates on file with Owner until work is completed. Owner may require Contractor to submit policy endorsements or complete policy copies of the required insurance.

'24.2 Contractor shall procure and maintain for the duration of the contract insurance 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, its agents, representatives, employees or subcontractors.

'24.3 Minimum Scope of Insurance

Coverage shall be at least as broad as:

24.3.1 Insurance Services Office commercial general liability coverage ("occurrence" Form CG 0001, Ed. 10/93).

24.3.2 Insurance Services Office Form CA 0001 (Ed. 12/93) covering automobile liability, Code 1 "any auto."

24.3.3 Workers' compensation insurance as required by the Workers' Compensation Act (as contained in KRS Chapter 342) and employers liability insurance.

'24.4 Minimum Limits of Insurance

Contractor shall maintain limits no less than:

24.4.1 Commercial General Liability:

\$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage with a \$3,000,000 annual aggregate. The deductible or Self-Insured Retention per occurrence shall not be more than \$10,000.

24.4.2 Automobile Liability: \$500,000 combined single limit per accident for bodily injury and property damage.

24.4.3 Workers' Compensation and Employers Liability: Workers' compensation with statutory benefits without limit, as required by the Kentucky Workers Compensation Act, and employers liability limits of \$1,000,000 per accident.

'24.5 Other Insurance Provisions

The policies are to contain, or be endorsed to contain, the following provisions:

'24.5.1 Commercial General Liability and Automobile Liability Coverages.

'24.5.1.1 Owner, its officers and employees are to be covered as insureds as respects: liability arising out of activities performed by or on behalf of the Contractor; general supervision of the work by Owner; products and completed operations of the Contractor; premises owned, occupied or used by the Contractor, or automobiles owned, leased, hired or borrowed by the Contractor. The coverage shall contain no special limitations on the scope of protection afforded to Owner, its officers or employees.

'24.5.1.2 The Contractor's insurance coverage shall be primary insurance as respects Owner, its officers and employees. Any insurance of self-insurance maintained by Owner shall be excess of the Contractor's insurance and shall not contribute to it.

'24.5.1.3 Any failure to comply with reporting provisions of the policies shall not affect coverage provided to Owner, its officers or employees.

'24.5.1.4 The Contractor's insurance shall apply separately to each insured against whom claim is made or suit is brought except with respect to the limits of the insurer's liability.

'24.5.2 All Coverages. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, canceled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to Owner.

'24.6 Acceptability of Insurers

Insurance is to be placed with insurers with an A.M. Best's rating of no less than A VII, authorized to write insurance in the Commonwealth of Kentucky.

'24.7 Verification of Coverage

The Contractor shall furnish the Owner with certificates evidencing the required insurance coverage prior to commencing work. Contractor shall keep up-to-date copies of such certificates on file with Owner until work is completed. Owner may require Contractor to submit policy endorsements or complete policy copies of the required insurance.

'24.8 Subcontractors

Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.

'24.9 The Contractor shall provide all Risks Insurance in an amount of not less than one hundred percent (100%) of the insurable value of all the work. The coverage, is to be written on CP 00 20 06 95 or equivalent acceptable to the Commonwealth. All coinsurance clauses in the Risks Insurance policy will be waived. All rights of subrogation against the Owner (i.e. the Commonwealth) will be waived by the insurer. Such insurance shall be for the benefit of the Contractor, Owner and any Subcontractor engaged on this project, as the Owner shall find their respective interest may appear. The Risks Insurance must be dated and in force on the date indicated in the Contract to begin work.

'24.10 The insurance coverage required by the contract documents shall be in compliance with the laws of the Commonwealth of Kentucky and shall be placed with a licensed resident or non-resident agent who represents insurance companies authorized to do business in Kentucky.

'24.11 The Certificate of Insurance or Certificates of Insurance will have the following endorsements as an attachment to the Certificate or Certificate's.

'24.11.2 The Commonwealth of Kentucky, Division of Engineering and Contract Administration will be named as an additional insured.

'24.11.3 The policy is primary coverage and any insurance or self-insurance maintained by the Commonwealth of Kentucky shall be excess.

'24.11.4 Any failure of the named insured to comply with the reporting provisions of the policy shall not affect coverage provided to the Commonwealth of Kentucky, it's officers or employees.

'24.11.5 All Coverages. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, cancelled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to Owner.

'25. Performance and Payment Bonds The Contractor shall furnish separate performance and payment bonds to the Owner. The Contractor shall furnish a performance bond satisfactory to the Owner in an amount equal to one hundred percent (100%) of the Contract Sum as security for the faithful performance of the Contract. The Contractor shall also furnish a payment bond satisfactory to the Owner in an amount equal to one hundred percent (100%) of the Contract Sum for the protection of all persons performing labor or furnishing materials, equipment or supplies for the Contractor or his Subcontractor for the performance of the Work provided for in the Contract, including

security for payment of all unemployment contributions which become due and payable under Kentucky Unemployment Insurance Law.

Each bond furnished by the Contractor shall incorporate by reference the terms of the Contract as fully as though they were set forth verbatim in such bonds. In the event the Contract Sum is adjusted by Change Order executed by the Contractor, the penal sum of both the performance bond and the payment bond shall be deemed increased by like amount.

The performance and payment bonds shall be executed by a surety company authorized to do business in this Commonwealth, and the contract instrument of bonds must be countersigned by a duly appointed and licensed resident agent.

Unless the Project is exempt from the prevailing wage requirements of KRS 337.505-337.550, the Contractor's bond(s) shall include a provision as will guarantee the faithful performance and payment of the prevailing hourly wage as set forth in the schedule incorporated in the Contract.

'26. Claims by the Contractor/Concealed Conditions/Disputes

'26.1 Claims by the Contractor against the Owner are subject to the following:

'26.1.1 All Contractor claims against the Owner shall be initiated by a written claim submitted to the Owner and the Architect. Such claim shall be filed with the Owner and the Architect no later than seven (7) calendar days after the event, or the first appearance of the circumstances, causing the claim, and same shall set forth in detail all known facts and circumstances supporting the claim;

'26.1.2 The Contractor and the Owner shall continue their performance regardless of the existence of any claims submitted by the Contractor.

'26.1.3 In the event the Contractor discovers previously concealed and unknown site conditions which differ materially from those indicated in the Contract Documents, or unknown site conditions which are materially at variance from those typically and ordinarily encountered in the general geographical location of the Project, the Contract Sum shall be modified, either upward or downward, upon the written claim made by either party within seven (7) calendar days after the first appearance to such party of the circumstances. As a condition precedent to the Owner having any liability to the Contractor due to concealed and unknown conditions, the Contractor must give the Owner and the Architect written notice of, and an opportunity to observe, such condition prior to disturbing it. The failure by the Contractor to give the written notice and make the claim as provided by this paragraph shall constitute a waiver by the Contractor of any rights arising out of or relating to such concealed and unknown condition;

'26.1.4 In the event the Contractor seeks to make a claim for an increase in the Contract Sum, as a condition precedent to any liability of the Owner therefor, the Contractor shall strictly comply with the requirements of the first paragraph of this Article and such claim shall be made by the Contractor before proceeding to execute any additional or changed Work. Failure of the condition precedent to occur shall constitute a waiver by the Contractor of any claim for additional compensation;

'26.1.5 In connection with any claim by the Contractor against the Owner for compensation in excess of the Contract Sum, any liability of the Owner for the Contractor's cost shall be strictly limited to direct cost incurred by the Contractor and shall in no event include indirect cost or consequential damages of the Contractor.

'26.1.6 The Owner shall not be liable to the Contractor for claims of third-parties including subcontractors, unless and until liability of the Contractor has been established therefor in a court of competent jurisdiction;

'26.2 In the event the Contractor should be delayed in performing any task which at the time of the delay is then critical, or which during the delay becomes critical, as the sole result of any act or omission by the Owner or someone acting in the Owner's behalf, or by Owner-authorized Change Orders, unusually bad weather not reasonably anticipatable, fire or other Acts of God, the date for achieving Substantial Completion, or, as applicable, final completion, shall be appropriately adjusted by the Owner upon the written claim of the Contractor to the Owner and the Architect. An extension of time shall not mean that the Contractor is entitled to additional compensation. A task is critical within the meaning of this paragraph if, and only if, said task is on the critical path of the Project schedule so that a delay in performing such task will delay the ultimate completion of the Project. Any claim for an extension of time by the Contractor shall strictly comply with the requirements of the first paragraph of this Article above. If the Contractor fails to make such claim as required in this paragraph, any claim for an extension of time shall be waived.

'26.3 All claims under this Contract shall be made in accordance with KRS 45A.225 to 45A.290. The provisions of these statutes do not toll the running of the Statute of Limitations set forth in KRS 45A.260. Any suit pursuant to KRS 45A.245 shall be commenced within one (1) year of the Substantial Completion Date specified in the Contract. If the Contractor does not commence suit within one (1) year of the date specified in the Contract, the Contractor shall be foreclosed from proceeding in court pursuant to KRS 45A.245.

The Owner and Contractor agree that any suit, action or proceeding with respect to this Contract may only be brought in or entered by the courts of the Commonwealth of Kentucky situated in Frankfort, Franklin County, Kentucky, or the United States District Court for the Eastern District of Kentucky, Frankfort Division, and the parties hereby submit to the non-exclusive jurisdiction of such courts for the purpose of any such suit, action, proceeding or judgment and waive any other preferential jurisdiction by reason of domicile or location. The parties hereby agree that any such legal action shall be tried by the court sitting without a jury. The parties hereby irrevocably waive any objection that they may now or hereafter have to the laying of venue of any suit, action or proceeding arising out of or related to this Contract brought in the courts of the Commonwealth of Kentucky situated in Frankfort, Franklin County, Kentucky, or the United States District Court for the Eastern District of Kentucky, Frankfort Division, and also hereby irrevocably waive any claim that any such suit, action or proceeding brought in any one of the above-described courts has been brought in an inconvenient forum.

'27 Liens The filing and perfection of liens for labor, materials, supplies and rental equipment supplied on the work are governed by KRS 376.195 to 376.260. The lien shall attach only to any unpaid balance or retainage due the Contractor for the improvement from the time a copy of statement of lien, attested by the County Clerk, is delivered to the Owner, pursuant to the provisions of KRS 376.240

Statements of lien shall be filed with the Franklin County Clerk and action to enforce the same must be instituted in the Franklin Circuit Court, Frankfort, Kentucky, pursuant to KRS 376.250(2).

'28 Assignments Neither party to the Contract shall assign the Contract, or any portion thereof without the written consent of the other, nor shall the Contractor assign any monies due or to become due to him hereunder without notification to the Owner. Notification of Assignments, shall be given on State forms and in accordance with the procedures and regulations of the Finance and Administration Cabinet.

'29 Separate Contracts

'29.1 Owner's Right to Perform Construction and to Award Separate Contracts. The Owner reserves the right to let other contracts in connection with the Project or to perform Work with its own forces. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their Work and shall properly connect and coordinate his Work with theirs.

If any part of the Contractor's Work depends for proper execution or results upon the Work of any other contractor, the Contractor shall promptly report to the Architect any observed defects in such Work that render it unsuitable for proper execution or connection. His failure to inspect and report shall constitute an acceptance of the other contractor's Work as fit and proper for the reception of his Work, except as to defects which may develop in the other contractor's Work after the execution of his Work.

Whenever Work being done by the Owner's forces or by other contractors is contiguous to Work covered by this Contract, the respective rights of the various interests involved shall be established by the Architect to secure the completion of the various portions of the Work in general harmony.

'29.2 Mutual Responsibility of Contractors. Should the Contractor cause damage to any separate contractor on the Work, the Contractor agrees, upon due notice, to settle with such contractor if he will so settle. If such separate contractor sues the Owner on account of any damage alleged to have been so sustained, the Owner shall notify the Contractor who shall defend such proceedings at the Contractor's expense and if any judgment against the Owner arises therefrom, the Contractor shall pay or satisfy it and pay all costs incurred by the Owner.

'30 Cash Allowances The Contractor shall have included in the Contract Sum all allowances stated in the Contract Documents and shall cause the Work so designated to be done as the Owner may direct. If the actual price for purchasing the "allowed material" is more or less than the "cash allowance," the Contract Sum shall be adjusted accordingly. The adjustment in Contract Sum shall be made on the basis of the purchase price without additional charges for overhead, profit, insurance or any other incidental expenses. The cost of installation of the "allowed materials" shall be included in the applicable sections of the Contract specifications covering this Work.

'31. Miscellaneous Provisions Regarding Contractor's Work

'31.1 Project Site Limits. The Contractor shall confine his apparatus, the storage of materials, and the operations of his workmen to Project site limits indicated by the Contract Documents.

'31.2 Points of Reference. The Contractor shall carefully preserve bench marks, reference points and stakes, and in case of willful or careless destruction, he shall be charged with the resulting expense of replacement and shall be

responsible for any mistake that may be caused by their unnecessary loss or disturbance.

'31.3 Cutting and Patching. The Contractor shall be responsible for cutting, fitting or patching required to complete the Project or make its parts fit together in a proper manner. The Contractor shall not endanger other parts of the Project, including work by the Owner or other contractors as provided in Article 29, by cutting, patching, or excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a separate contractor without written consent of the Owner or such separate contractor. Such consent shall not be unreasonably withheld.

'31.4 Cleanup. The Contractor shall at all times keep the Project premises and surrounding area free from the accumulation of waste materials or rubbish caused by his operations in connection with the Project. Upon completion of the Work, and prior to final inspection and acceptance, the Contractor shall remove all remaining waste materials, rubbish, Contractor's construction equipment, tools, machinery, and surplus materials and leave the Project (including but not limited to glass, hardware, fixtures, masonry, tile and marble) in a clean and usable condition satisfactory to the Architect. Floors shall be cleaned and waxed in accordance with the requirements of the Contract specifications. If the Contractor fails to clean up as provided in the Contract Documents, the Owner may perform the cleaning tasks and charge the cost to the Contractor.

'31.5 Guarantees, Warranties and "As-Built" Drawings. Prior to final payment for the Work, the Contractor shall assemble and present to the Architect all guarantees and warranties required by the Contract Documents. Additionally the Contractor shall provide "Record" Drawings prior to final payment.

'32 Other Miscellaneous Provisions

'32.1 Governing Law. The Contract shall be governed by the laws of the Commonwealth of Kentucky.

'32.2 Statutory Limitation Periods. Statutes of Limitations are governed by KRS 45A.260(2).

'32.3 Written Notice. Written notice shall be deemed to have been given if delivered in person to the individual or to a member of the organization or entity or to an officer of the corporation for which it was intended, or if delivered at or sent by registered or certified mail to the last known business address known to the notifying party.

'33 Prevailing Wage Law Requirements

Compliance Required on Covered Projects. In performing the Work, the Contractor and Subcontractors are required to comply with all provisions of the "Act Relating to Contracts for Public Work," KRS 337.505-337.550, except where the Contract meets the exemption requirements for certain public works construction projects as set forth under KRS 337.010 and detailed at the following site:

'33.1 Prevailing Wage The term "prevailing wage" for each classification of laborers, workmen, and mechanics engaged in the construction of public works within the Commonwealth of Kentucky, means the sum of:

- (1) Base rate The basic hourly rate paid or being paid subsequent to the labor commissioner's most recent wage determination to the majority of laborers, workmen, and mechanics employed in each classification of

construction upon reasonably comparable construction in the locality where the work is to be performed.

(2) Fringe rate An additional amount per hour equal to the hourly rate of contribution **irrevocably made or to be made by an employer on behalf of employees within each classification of construction to a trustee or to a third person** pursuant to an enforceable commitment to carry out a financially responsible plan or program, which was communicated in writing to the employees affected, for the following fringe benefits. (a) medical or hospital care (b) pensions on retirement (c) death compensation for injuries or illness resulting from occupational activity (d) life insurance (e) defraying costs of apprenticeship or other similar programs (f) cash; the employer may pay an additional amount per hour to the employee in cash or partly in cash and partly by contributions.

Fringe does not include costs associated with programs or taxes required by federal state or local law such as workers' compensation or unemployment insurance tax. Accidental, disability or sickness insurance may be considered a fringe if paid under the conditions as stated in bold letters above. Fringe does not include costs associated with vacation and holiday unless paid as stipulated above in bold lettering or if paid in the form of cash as indicated in stated in (f).

'33.2 Requirement To Pay Prevailing Wages 1. Where a prevailing rate of wages has been determined and prescribed, the contract executed between a public authority and the successful bidder or contractor shall contain a provision requiring the successful bidder and all of his subcontractors to pay not less than the rate of wages so established. The successful bidder or contractor and all subcontractors shall strictly comply with these provisions of the contract. 2. All contractors and subcontractors required by KRS 337.505 to 337.550 and by contracts with any public authority to pay not less than the prevailing rate of wages, shall pay such wages in legal tender without any deductions.

'33.3 Overtime Any laborer, workman, or mechanic worked in excess of eight (8) hours per day or forty (40) hours per week, except in cases of emergency shall be paid not less than one and one-half (1-1/2) times the basic hourly rate of pay as defined and fixed under this chapter for all overtime worked. This shall not prohibit any laborer, workman, or mechanic from working more than eight (8) hours in one (1) calendar day, but not more than ten (10) hours in one (1) calendar day where the employee and employer enter into an agreement in writing prior to the working of any one (1) day in excess of eight (8) hours, or where provided for in a collective bargaining agreement.

'33.4 Payroll Records All contractors and subcontractors affected by the terms of KRS 337.505 to 337.550 shall keep full and accurate payroll records covering all disbursements of wages to their employees to whom they are required to pay not less than the prevailing rate of wages. The recordkeeping requirement is: 1. Hours worked each day by each employee 2. Hours worked in each classification of work by each employee 3. Amount paid each employee for his work in each classification. They shall be open to the inspection and transcript of the commissioner or his authorized representative at any reasonable time, and shall be in compliance with all regulations issued by the commissioner. These payroll records shall not be destroyed or removed from this state for one (1) year following the completion of the improvement in connection with which they are made. This recordkeeping requirement is in addition to the requirement as provided by KRS 337.320 and 803 KAR 1:066.

'33.5 Posting Of Rates Each contractor and subcontractor subject to the provisions of KRS 337.505 to 337.550 shall post and keep posted in a conspicuous place at the site of the construction work, a copy of the applicable prevailing wage rates for each and every classification involved in the construction of the public works.

'33.6 Inspections Every employer shall permit the commissioner or his authorized agents to question any of his employees at the site of the public work and during work hours in respect to the wages paid, hours worked and duties of such employee or other employees.

'34. Apprentices Apprentices (for all classifications of work) shall be permitted to work only under an apprenticeship agreement approved by the Kentucky Supervisor of Apprenticeship and by the Kentucky Apprenticeship Council which is recognized by the Bureau of Apprenticeship and Training, U. S. Department of Labor.

'35. Nondiscrimination in Employment

During the performance of the Contract, the Contractor agrees as follows:

'35.1 The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, age, national origin, or disability in employment.

'35.2 The Contractor will take affirmative action in regard to employment, upgrading, demotion, transfer, recruitment, recruitment advertising, layoff, termination, rates of pay or other forms of compensation, and selection for training, so as to ensure that applicants are employed and that employees during employment are treated without regard to their race, color, religion, sex, age, or national origin; however, when layoffs occur, employees shall be laid off according to seniority with the youngest employees being laid off first. When employees are recalled, this shall be done in the reverse way the employees were laid off;

'35.3 The Contractor shall, 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, age, or national origin;

'35.4 The Contractor will post notices in conspicuous places, available to employees and applicants for employment, setting forth the provisions of the nondiscrimination clauses required by this section;

'35.4 The Contractor shall send to each labor union or representatives of workers with which he has a collective bargaining agreement or other contract or understanding, a notice advising the labor union or workers' representatives of the Contractor's commitments under this section.
Failure to comply with the above nondiscrimination clause constitutes material breach of Contract.

'36 Affirmative Action; Reporting Requirements

'36.1 The Contractor and Subcontractors are exempt from any affirmative action or reporting requirements, under the Kentucky Equal Employment Act of 1978, KRS 45.560 to 45.640 hereinafter referred to as The Act, if any of the following conditions are applicable:

- (1) the Contract or subcontract awarded is in the amount of five hundred thousand dollars (\$500,000) or less, and the amount of the contract is not a subterfuge to avoid compliance with the provisions of The Act; or

- (2) the Contractor or Subcontractor utilizes the services of fewer than eight (8) employees during the course of the Contract ; or
- (3) the Contractor or subcontractor employs only family members or relatives; or
- (4) the Contractor or Subcontractor employs only persons having a direct Ownership interest in the business and such interest in not a subterfuge to avoid compliance with the provisions of The Act.

'36.2 The Contractor or Subcontractor not otherwise exempted shall for the duration of the Contract, hire minorities from within the drawing area to satisfy the agreed upon goals and timetables set out in addenda to the Contract. Should the union with which the Contractor has collective bargaining agreements be unwilling to provide sufficient minorities to satisfy the goals and timetables, the Contractor shall hire minorities from other sources within the drawing area to satisfy the goals and timetables in the addenda to the Contract.

'36.3 The equal employment provisions of The Act may be met in part by the Contractor subcontracting to a minority contractor or subcontractor. A minority contractor or subcontractor shall be defined by the addenda to this Contract, or if none, by the Act.

'36.4 Each Contractor shall, for the length of the Contract, furnish such information as required by The Act 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 The Act and such rules, regulations and orders issued pursuant thereto.

'36.5 If the Contractor is found to have committed an unlawful practice against a provision of The Act during the course of performing under this Contract, (if covered by The Act), the Owner may cancel or terminate the Contract, conditioned upon a program for future compliance approved by the Owner. The Owner may also declare such Contractor ineligible to bid on further contracts until such time as the Contractor complies in full with the requirements of The Act.

'36.6 The Contractor shall not be required to terminate an existing employee, upon proof that employee was employed prior to the date of the Contract nor hire anyone who fails to demonstrate the minimum skills required to perform a particular job.

'37 **Access to Records** The contractor, as defined in KRS 45A.030(7), agrees that the contracting agency, the Finance and Administration Cabinet, the Auditor of Public Accounts, and the Legislative Research Commission, or their duly authorized representatives, shall have access to any books, documents, papers, records, or other evidence, which are directly pertinent to this contract for the purpose of financial audit or program review. Furthermore, any books, documents, papers, records, or other evidence provided to the contracting agency, the Finance and Administration Cabinet, the Auditor of Public Accounts, or the Legislative Research Commission which are directly pertinent to the contract shall be subject to public disclosure regardless of the proprietary nature of the information, unless specific information is identified and exempted and agreed to by the Secretary of the Finance and Administration Cabinet as meeting the provisions of KRS 61.878(1)(c) prior to the execution of the contract. The Secretary of the Finance and Administration Cabinet shall not restrict the public release of any information which would

otherwise be subject to public release if a state government agency was providing the service. (22 Ky.R. 1510; eff. 5-16-96.)

Payment Bond - Part IV

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):

Commonwealth of Kentucky
Finance and Administration Cabinet
Bush Building 1st Floor
403 Wapping Street
Frankfort, KY 40601-2638

CONSTRUCTION CONTRACT - _____

DATE: _____

AMOUNT: _____

DESCRIPTION (Name and Location)

Invitation No: _____

BOND

DATE: _____

AMOUNT: _____

CONTRACTOR AS PRINCIPAL

Company: _____ (Corporate Seal)

SURETY

Company: _____ (Corporate Seal)

Signature: _____

Name and Title:

Signature: _____

Name and Title:

Name, Address and Telephone of AGENT or BROKER:

Name, Address and Telephone of AGENT or BROKER:

Whereas, the Owner has required the Contractor to furnish this Payment Bond containing the terms and conditions set forth herein as a condition to executing the Construction Contract with the Contractor;

Now therefore, the Surety and the Contractor, both severally, and for themselves, their heirs, administrators, executors and successors agree:

1. The Construction Contract is hereby incorporated herein and by reference made a part hereof to the same extent and effect as though it were copied verbatim herein. The Surety and the Contractor are bound for the full performance of the Construction Contract including without exception all of its terms and conditions, both express and implied, and, without limitation, specifically including Contractor's obligation to pay for labor, materials, services and equipment provided in connection with the Construction Contract performance.

2. For purposes of this Payment Bond, Beneficiary is defined as person or entity who has actually provided labor, material, equipment, services or other items for use in furtherance of the Construction Contract, and having:

- (A) a direct contract with the Contractor; or
- (B) a direct contract with a subcontractor of the Contractor; or
- (C) rights, under the laws of the jurisdiction where the Project is located, to file a lien, a claim or notice of lien, or otherwise make a claim against the Project or against funds held by the Owner, if the Project is, or were, subject to such filing.

3. The Surety shall not be obligated hereunder to a Beneficiary other than a Beneficiary having a direct contract with the Contractor unless such Beneficiary has given written notice of its claim to the Contractor and the Surety as follows:

(A) the period of time provided by the jurisdiction wherein the Project is located for (1) filing a lien, claim of lien, notice of lien, if the Project is, or were, subject to such filing (KRS 376.230), or (2) otherwise making a claim against the Project or against funds held by the Owner;

(B) address, the person or entity to whom such labor, material, equipment, services or other items were provided.

4. In no event shall the Surety be obligated hereunder for sums in excess of the Penal Sum as it may be modified by addendum.

5. Upon receipt of claim from a Beneficiary hereunder, the Surety shall promptly, and in no event later than 30 days after receipt of such claim, respond to such claim in writing (furnishing a copy of such response to the owner) by:

- (A) making payment of all sums not in dispute; and
- (B) stating the basis for disputing any sums not paid.

6. No action shall be commenced by a Beneficiary hereunder after the passage of the longer of two (2) years following the date on which the final payment of the contract falls due or, if this bond is provided in compliance with applicable law, any limitation period provided therein. If the limitation period contained in this Paragraph is unenforceable, it shall be deemed amended to provide the minimum period for an action against the Surety on a payment bond by a third-party beneficiary thereof.

7. Any and all notices to the Surety or the Contractor shall be given by Certified Mail, Return Receipt Requested, to the address set forth for each party above.

**Commonwealth of Kentucky
Finance and Administration Cabinet
Department for Facilities and Support Services
Division of Engineering and Contract Administration**

Performance Bond - Part V

CONTRACTOR (Name and Address):

SURETY (Name and Principal Place of Business):

OWNER (Name and Address):
Commonwealth of Kentucky
Finance and Administration Cabinet
Bush Building 1st Floor
403 Wapping Street
Frankfort, KY 40601-2638

CONSTRUCTION CONTRACT - «ContractNumber»

DATE:
AMOUNT:

DESCRIPTION (Name and Location)

BOND

DATE:
AMOUNT:

CONTRACTOR AS PRINCIPAL

Company: _____ (Corporate Seal)

Signature: _____
Name and Title:

SURETY
Company: _____ (Corporate Seal)

Name, Address and Telephone of AGENT or BROKER:

Signature: _____
Name and Title:

Name, Address and Telephone of AGENT or BROKER:

Whereas, the Owner has required the Contractor to furnish this Performance Bond containing the terms and conditions set forth herein as a condition to executing the Construction Contract with the Contractor;

Now therefore, the Surety and the Contractor, both severally, and for themselves, their heirs, administrators, executors and successors agree:

1. The Construction Contract is hereby incorporated herein and by reference made a part hereof to the same extent and effect as though it were copied verbatim herein. The Surety and the Contractor are bound for the full performance of the Construction Contract including without exception all of its terms and conditions, both express and implied.

2. If the Contractor is in default of the Construction Contract and the Owner, by written notice to the Contractor and the

Surety, declares the Contractor to be in default and terminates the right of the Contractor to proceed, the Surety shall thereupon promptly notify the Owner in writing as to which of the actions permitted to the Surety in Paragraph 3 it will take.

3. Upon the default and termination of the Contractor and notice to the Contractor and Surety as provided in Paragraph 2 above, the Surety shall within 30 days proceed to take one or, at its option, more than one of the following courses of action:

(A) Proceed itself, or through others acting on its behalf, to complete full performance of the Construction Contract including, without limitation, correction of defective and nonconforming work performed by or on behalf of the Contractor. During such performance by the Surety the Owner shall pay the Surety from its own funds only such sums as would have been due and payable to

the Contractor in the absence of the default and termination.

(B) Applicable law permitting, and with the prior written consent of the Owner, obtain bids or proposals from contractors previously identified as being acceptable to the Owner, for full performance of the Construction Contract. The Surety shall furnish the Owner a copy of such bids or proposals upon receipt of same. The Surety shall promptly select, with the agreement of the Owner, the best responsive bid or proposal and shall promptly tender the contractor submitting it, together with a contract for fulfillment and completion of the Construction Contract executed by the completing contractor, to the Owner for the Owner's execution. Upon execution by the Owner of the contract for fulfillment and completion of the Construction Contract, the completing contractor shall furnish to the Owner a Performance Bond and a separate payment bond, each in the form of those bonds previously furnished to the Owner for the project by the Contractor. Each such bond shall be in the penal sum of the (1) fixed price for completion, (2) guaranteed maximum price for completions, or (3) estimated price for completion, whichever is applicable. The Owner shall pay the completing contractor from its own funds only such sums as would have been due and payable to the Contractor under the Construction Contract as and when they would have been due and payable to the Contractor in the absence of the default and termination. To the extent that the Owner is obligated to pay the completing contractor sums which would not have then been due and payable to the Contractor under the Construction Contract, the Surety shall provide the Owner with such sums in a sufficiently timely manner that the Owner can utilize such sums in making timely payment to the completing contractor; or.

(C) Take any and all other acts if any, mutually agreed upon in writing by the Owner and the Surety.

4. In addition to those duties set forth hereinabove, the Surety shall promptly pay the Owner all loss, costs and expenses resulting from the Contractor's default(s), including, without limitation, fees, expenses and costs for

architects, engineers, consultants, testing, surveying and attorneys, liquidated or actual damages, as applicable, for delay in completion of the Project, and fees, expenses and costs incurred at the direction, request, or as a result of the acts or omissions of the Surety.

5. In no event shall the Surety be obligated to the Owner hereunder for any sum in excess of the Penal Sum as it may be modified by addendum.

6. The Surety waives notice of any changes to the Construction Contract including, without limitation, changes in the contract time, the contract price, or the work to be performed.

7. This Performance Bond is provided by the Surety for the sole and exclusive benefit of the Owner, and, if applicable, any dual obligee designated by rider attached hereto, together with their heirs, administrators, executors, successors or assigns. No other party, person or entity shall have any rights against the Surety hereunder.

8. No action shall be commenced hereunder after the passage of the longer of two (2) years following the date on which the final payment of the contract falls due or, if this bond is provided in compliance with applicable law, any limitation period provided therein. If the limitation period contained in the Paragraph is unenforceable, it shall be deemed amended to provide the minimum period for an action against the Surety on a performance bond.

9. Any and all notices to the Surety, the Contractor or the Owner shall be given by Certified Mail, Return Receipt Requested, to the address set forth for each party above.

10. Any statutory limitation, which may be contractually superseded, to the contrary notwithstanding, any action hereon may be instituted so long as the applicable statute of limitations governing the Construction Contract has not run or expired.

PART VI

**FINANCE AND ADMINISTRATION CABINET
DEPARTMENT FOR FACILITIES AND SUPPORT SERVICES
DIVIION OF ENGINEERING AND CONTRACT ADMINISTRATION**

AGREEMENT BETWEEN OWNER AND CONTRACTOR

This **AGREEMENT**, between the Owner, the **COMMONWEALTH OF KENTUCKY**, and the Contractor _____

The Architect is: _____

This Agreement, properly by the parties, shall be final and binding only upon the issuance of the Finance and Administration Cabinet Construction Contract.

The Owner and Contractor agree as set forth below.

Article No. 1 THE CONTRACT DOCUMENTS:

The Contract Documents consist of the Agreement, the Official Bid Documentl, the Invitation to Bids, the Instructions to Bidders, the General Conditions, Supplement Conditions, Drawings, Specifications, and Addenda issued prior to the execution of this Agreement, and modifications made after the execution of this Agreement. The Contract Documents represent the entire and integrated agreement between the parties. All of these documents are as fully a part of this Agreement as if attached to this Agreement or repeated herein.

Article No. 2 SCOPE OF WORK:

The Contractor shall execute the entire work described in the Contract Documents entitled: **INVITATION TO BID NO.** _____
SOLICITATION NO. _____

A listing of the Specifications, Drawings and Addenda are contained in Article 11 of this Agreement

Article No. 3 TIME OF COMPLETION:

The date of commencement for the work shall be the date upon which the Owner issues the Contract Documents. The Contractor shall achieve substantial completion of the entire work (as defined by Article 19.2 of the General Conditions) not later than _____ calendar days/date after the date of commencement for the work, subject to adjustments of contract time as provided in the Contract Documents. Final completion of the work shall be achieved _____ calendar days/date after the scheduled date of substantial completion.

Article No. 4 LIQUIDATED DAMAGES:

It is understood by the parties that time is of the essence of this contract, and that the Owner will sustain substantial financial damages and other injuries in the event of a failure of the Contractor to complete the work in a timely manner. In light of these foreseeable losses, and the difficulty of proof of loss, the Contractor shall be assessed liquidated damages in the amount of _____ for each calendar day between the date set for substantial completion of this work and the actual date upon which substantial completion is achieved in accordance with Article 19.2 of the General Conditions. The Contractor shall be assessed liquidated damages in the amount of _____ for each calendar day between the date set for final completion of this work and the actual date upon which final completion is achieved in accordance with Article 19.3 of the General Conditions. In the event that the Contractor abandons the work prior to the substantial completion or is terminated for default under Article 22.2 of the General Conditions, the Owner may upon completion of the work recover either (1) liquidated damages for the entire period of delay to substantial completion or final completion under this Article, or (2) actual delay-related damages. This recovery will be in addition to any other rights and remedies the Owner may have against the Contractor.

Article No. 5 CONTRACT SUM:

The Owner shall pay the Contractor for the Contractor's performance of the contract the sum of _____, (_____), subject to additions and deductions as provided in the Contract Documents. The Contract Sum is based upon the alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner.

Article No. 6 PROGRESS PAYMENTS:

Based upon applications for payment submitted to the Architect by the Contractor, the Owner shall make progress payments on the account of the Contract Sum to the Contractor in accordance with Article 18 of the General Conditions.

Article No. 7 ACCEPTANCE AND FINAL PAYMENT:

Final payment shall be due in accordance with Article 18.7 of the General Conditions provided, that all work has been fully completed in accordance with the plans and specifications as evidenced by a certificate by the Architect for the project, and it has been accepted by the Owner. Further, final payment is contingent upon receipt of "As-Built" drawings from the Contractor. The Contractor shall submit with his final payment application evidence satisfactory to the Architect that all payrolls, material bills and other indebtedness connected with the work have been paid or that provisions for the satisfaction thereof have been made.

Article No. 8 CHANGES IN THE WORK:

The Owner, without invalidated the contract, may delete, add to or modify the work in accordance with Article 14 of the General Conditions.

Article No. 9 SPECIAL NOTICE REGARDING PAYROLL TAXES, ETC:

The Contractor hereby certifies that he has fully informed himself of the conditions relating to construction and labor under which the work under this contract is to be performed, and accepts liability for payment of all payroll taxes on deductions required by local, state, and federal law, including but not limited to old age pension, social security, or annuities, and agrees that he shall employ, so far as is predictable, methods and means in carrying out his work as will not interfere with or interrupt the work of any other contractor working on or adjacent to the site for this work.

Article 10 TERMINATION OR SUSPENSION:

The contract may be terminated by the Owner upon the default of the Contractor and terminated for convenience of the Owner as provided for in Article 22 of the General Conditions.

Article No. 11 ENUMERATION OF SPECIFICATIONS, DRAWINGS AND ADDENDA:

The Contract Documents, except for Modifications issued after the execution of this Agreement, include the following specifications, drawings and addenda:

SPECIFICATIONS:

DOCUMENT	TITLE	PAGES

DRAWINGS:

SHEET NUMBERS

ADDENDA:

NUMBERS

PROJECT MANAGER: _____
AGENCY CONTACT: _____
ARCHITECT: _____
CONSULTANT: _____

Date for Substantial Completion: _____
Date for Final Completion: _____



STEVEN L. BESHEAR
GOVERNOR

EXECUTIVE ORDER

Secretary of State
Frankfort
Kentucky

2015-370
June 8, 2015

**MINIMUM WAGE FOR STATE EMPLOYEES AND THE
COMMONWEALTH'S SERVICE PROVIDERS**

WHEREAS, it is indisputable that all citizens and residents of the Commonwealth of Kentucky have the inherent and inalienable rights to enjoy their lives and liberty and to seek and pursue their safety and happiness; and

WHEREAS, the current required minimum wage of \$7.25 per hour for hourly workers and \$2.13 for tipped employees as established by state and federal law for all the employers in the Commonwealth is no longer sufficient to provide workers the means to achieve those inherent and inalienable rights; and

WHEREAS, studies consistently and overwhelmingly show that an increase in the minimum wage does not negatively impact collective employment, but instead results in faster job growth; and

WHEREAS, minimum wage workers are not typically teenagers working part-time but are adults trying to make ends meet – statistics show that 87.5% of minimum wage workers are adults over the age of 20 and that nearly the same percentage work at least 20 hours a week; and

WHEREAS, the Commonwealth of Kentucky commits significant resources to its employees and to the acquisition of services to be performed under contract; and

WHEREAS, it is the policy of this administration to increase efficiency and cost savings in work performed for the Commonwealth of Kentucky; and



STEVEN L. BESHEAR
GOVERNOR

EXECUTIVE ORDER

Secretary of State

Frankfort
Kentucky

WHEREAS, requiring a higher wage to be paid to those working for and on behalf of the Commonwealth of Kentucky will lead to increased morale, productivity, and quality of the work performed and an accompanying decrease in turnover, training, and supervisory costs; and

WHEREAS, increasing the pay of the lowest-paid workers will enable them to be more self-sufficient and to move toward realizing the dream of a better life which is too often unachievable with their current wages; and

WHEREAS, economic forces necessitate a more competitive wage to attract and retain the best workers in the improved Kentucky job market; and

WHEREAS, Federal contracting rules now require that workers under certain federally funded state contracts be paid a minimum wage of \$10.10 per hour and \$4.90 per hour for tipped workers; and

WHEREAS, all individuals providing services to the Commonwealth should be paid the same minimum wage regardless of the identity of his or her employer:

NOW, THEREFORE, I, Steven L. Beshear, Governor of the Commonwealth of Kentucky, by virtue of the authority vested in me by Sections 69 and 81 of the Constitution of Kentucky and by Chapter 12 of the Kentucky Revised Statutes, do hereby **DECLARE, ORDER and DIRECT** that:

1. As of the effective date of this order, all Executive Branch employees shall be paid no less than \$10.10 per hour, or \$4.90 per hour for those workers who are “tipped employees” as defined by KRS 337.010(2)(d).
2. All contracts entered into or renewed by Executive Branch agencies with effective dates on or after the effective date of this order shall provide for a minimum wage of:
 - A. \$10.10 per hour for ordinary workers; and
 - B. \$4.90 per hour for workers who are “tipped employees” as defined by KRS 337.010(2)(d).



STEVEN L. BESHEAR
GOVERNOR

EXECUTIVE ORDER

Secretary of State

Frankfort
Kentucky

3. The increased minimum wage requirements of this order shall apply to any worker directly performing the service called for in a contract and shall also apply to any person who spends at least 20% of his or her working time in a given work week providing a service ancillary to the services called for in a contract.
4. Nothing in this order shall excuse noncompliance with any other Federal or State law, including prevailing wage laws, or any applicable law or municipal ordinance establishing a minimum wage higher than the minimum wage established under this order.
5. This order is not intended to, and does not, create any right or benefit, substantive or procedural, enforceable at law or in equity by any party against the Commonwealth of Kentucky, its agencies, officers, or employees, and is not applicable to public universities.
6. All employers in the Commonwealth, both public and private, are strongly encouraged to implement policies consistent with the terms of this order.
7. All Executive Branch agencies, in conjunction with the Governor's Executive Cabinet, shall take all steps necessary to implement this order.

This order is effective July 1, 2015.


STEVEN L. BESHEAR, GOVERNOR
Commonwealth of Kentucky


ALISON LUNDERGAN GRIMES
Secretary of State

KENTUCKY LABOR CABINET
PREVAILING WAGE DETERMINATION
CURRENT REVISION
LOCALITY NO. 010

HARDIN COUNTY

Determination No. CR 2-010 2015

Project No. : 047-B-00361-15-2

Date of Determination: December 4, 2015

Type: Bldg HH

This schedule of the prevailing rate of wages for Hardin County has been determined in accordance with the provisions of KRS 337.505 to 337.550. This determination shall be referred to as Prevailing Wage Determination No. CR 2-010 2015

Apprentices shall be permitted to work as such subject to Administrative Regulations 803 KAR 1:010. Copies of these regulations will be furnished upon request to any interested person.

Overtime is to be computed at not less than one and one-half (1 1/2) times the indicated BASE RATE for all hours worked in excess of eight (8) per day, and/or in excess of forty (40) per week. However, KRS 337.540 permits an employee and employer to agree, in writing, that the employee will be compensated at a straight time base rate for hours worked in excess of eight (8) hours in any one calendar day, but not more than ten (10) hours worked in any one calendar day, if such written agreement is prior to the over eight (8) hours in a calendar day actually being worked, or where provided for in a collective bargaining agreement. The fringe benefit rate is to be paid for each hour worked at a straight time rate for all hours worked. Fringe benefit amounts are applicable for all hours worked except when otherwise noted. Welders will receive rate for craft in which welding is incidental.

NOTE: The type of construction shall be determined by applying the following definitions:

BUILDING CONSTRUCTION

Building construction is the construction of sheltered enclosures with walk-in access for the purpose of housing persons, machinery, equipment, or supplies. It includes all construction of such structures, the installation of utilities and the installation of equipment, both above and below grade level, as well as incidental grading, utilities and paving.

HIGHWAY CONSTRUCTION

Highway construction includes the construction, alteration or repair of roads, streets, highways, runways, taxiways, alleys, trails, paths, parking areas, and other similar projects not incidental to building or heavy construction. It includes all incidental construction in conjunction with the highway construction project.

HEAVY CONSTRUCTION

Heavy projects are those projects that are not properly classified as either "building" or "highway". For example, dredging projects, water and sewer line projects, dams, flood control projects, sewage treatment plants and facilities, and water treatment plants and facilities are considered heavy.



Anthony Russell, Commissioner
Department of Workplace Standards
Kentucky Labor Cabinet

Determination No. CR 2-010 2015
December 4, 2015

ASBESTOS / INSULATION WORKERS:

(Including duct (hot/cold), pipe insulator & pipe wrapping):

BASE RATE	\$27.53
FRINGE BENEFITS	14.79

Hazardous Material Handlers: (Includes preparation, wetting, stripping, removal, scrapping, vacuuming, bagging & disposing of all insulation materials, whether they contain asbestos or not, from mechanical systems):

BASE RATE	\$19.35
FRINGE BENEFITS	10.35

BOILERMAKERS:

BASE RATE	\$35.80
FRINGE BENEFITS	24.26

BRICKLAYERS:

Bricklayers:

BASE RATE	\$24.24
FRINGE BENEFITS	8.25

Tile Setters: BUILDING

BASE RATE	\$22.64
FRINGE BENEFITS	6.10

Tile Finishers: BUILDING

BASE RATE	\$15.42
FRINGE BENEFITS	5.63

CARPENTERS:

Acoustical ceiling installation only:

BUILDING

BASE RATE	\$25.77
FRINGE BENEFITS	7.40

Drywall Hanging & metal stud installation: BUILDING

BASE RATE	\$21.72
FRINGE BENEFITS	13.52

Floor Laying, Carpet & Vinyl Only:

BUILDING

BASE RATE	\$29.99
FRINGE BENEFITS	1.32

Form Work Only: BUILDING

BASE RATE	\$22.19
FRINGE BENEFITS	12.25

All other work: BUILDING

BASE RATE	\$23.54
FRINGE BENEFITS	9.10

CARPENTERS/HEAVY:

Carpenters:

HEAVY

BASE RATE	\$27.50
FRINGE BENEFITS	16.06

Piledrivermen: HEAVY

BASE RATE	\$27.75
FRINGE BENEFITS	14.96

Divers: HEAVY

BASE RATE	\$41.63
FRINGE BENEFITS	14.96

Form Work Only: HEAVY

BASE RATE	\$27.50
FRINGE BENEFITS	16.06

CEMENT MASONS / CONCRETE FINISHERS:

BUILDING

BASE RATE	\$20.21
FRINGE BENEFITS	9.70

ELECTRICIANS:

Electricians: BUILDING & HEAVY

BASE RATE	\$30.01
FRINGE BENEFITS	15.65

ELECTRICIANS / LINE CONSTRUCTION:

Cable Splicer:

BASE RATE	\$32.19
FRINGE BENEFITS	11.88

Equipment Operator A: John Henry Rock Drill, D6 (or equivalent) and above, Trackhoe Digger, Cranes (greater than 25 tons and less than 45 tons)

BASE RATE	\$28.81
FRINGE BENEFITS	11.13

Equipment Operator B: Cranes (6-25 tons), Backhoes, Road Tractor, Dozer up to D5, Pressure Digger-Wheeled Or Tracked, all Tension Wire Stringing Equipment

BASE RATE	\$25.42
FRINGE BENEFITS	10.38

Equipment Operator C: Trencher, Vibratory Compactor, Ground Rod Driver, Boom Truck (6 tons or below), Skid Steer Loaders

BASE RATE	\$20.33
FRINGE BENEFITS	9.25

Groundmen:

BASE RATE	\$17.12
FRINGE BENEFITS	8.55

Linemen and Technician

BASE RATE	\$29.36
FRINGE BENEFITS	11.25

Cranes 45 tons or larger to be paid 100% of journeyman lineman's rate

ELEVATOR MECHANICS:

BASE RATE	\$36.94
FRINGE BENEFITS	20.035

GLAZIERS:

BASE RATE	\$25.18
FRINGE BENEFITS	10.30

IRONWORKERS:

Structural & Reinforcing: BUILDING

BASE RATE	\$27.56
FRINGE BENEFITS	20.30

Ornamental: BUILDING

BASE RATE	\$26.40
FRINGE BENEFITS	19.15

Structural: HEAVY

BASE RATE	\$25.46
FRINGE BENEFITS	17.49

LABORERS / BUILDING:

Mason Tender-cement/concrete, Power Tool Operator:			
	BUILDING	BASE RATE	\$19.62
		FRINGE BENEFITS	9.48
LABORER	COMMON OR GENERAL	BASE RATE	\$18.86
		FRINGE BENEFITS	5.22
LABORER	MASON TENDER-BRICK	BASE RATE	\$19.24
		FRINGE BENEFITS	3.79
LABORER	PIPELAYER	BASE RATE	\$20.36
		FRINGE BENEFITS	9.90

LABORERS / HEAVY

Concrete Saw (hand held/walk behind):	HEAVY	BASE RATE	\$28.89
		FRINGE BENEFITS	9.85
Flagger	HEAVY	BASE RATE	\$28.72
		FRINGE BENEFITS	9.85
Concrete Finishing	HEAVY	BASE RATE	\$24.21
		FRINGE BENEFITS	11.45
Concrete Worker	HEAVY	BASE RATE	\$23.31
		FRINGE BENEFITS	11.45
Common or General:	HEAVY	BASE RATE	\$16.18
		FRINGE BENEFITS	10.43
Pipelayer	HEAVY	BASE RATE	\$18.56
		FRINGE BENEFITS	4.50

MILLWRIGHTS:

	BASE RATE	\$24.18
	FRINGE BENEFITS	15.64

OPERATING ENGINEERS / BUILDING:

Drill, Loader, Crane, Forklift:			
	BUILDING	BASE RATE	\$28.85
		FRINGE BENEFITS	14.40
Oiler:	BUILDING	BASE RATE	\$25.13
		FRINGE BENEFITS	14.40
Bulldozer:	BUILDING	BASE RATE	\$21.49
		FRINGE BENEFITS	3.84

OPERATING ENGINEERS / BUILDING CONTINUED

Backhoe/Excavator/Trackhoe: BUILDING	BASE RATE	\$24.35
	FRINGE BENEFITS	13.00

**CRANE WITH BOOM 150 FEET AND OVER, INCLUDING JIB, SHALL RECEIVE \$.75 ABOVE GROUP 1
ALL CRANES WITH PILING LEADS WILL RECEIVE \$.50 ABOVE GROUP 1 REGARDLESS OF BOOM LENGTH**

Paver (asphalt, aggregate, concrete): BUILDING	BASE RATE	\$22.52
	FRINGE BENEFITS	4.00

Roller: BUILDING	BASE RATE	\$23.60
	FRINGE BENEFITS	12.65

OPERATING ENGINEERS / HEAVY:

GROUP 1: Crane, Drill, Pumpcrete: HEAVY	BASE RATE	\$29.95
	FRINGE BENEFITS	14.40

GROUP 2: Bobcat, skid steer/skid loader, concrete pump: HEAVY	BASE RATE	\$27.26
	FRINGE BENEFITS	14.40

GROUP 3: All Off Road Material Handling Equipment, including Articulating Dump Trucks HEAVY	BASE RATE	\$26.65
	FRINGE BENEFITS	14.15

GROUP 4: Oiler, Pump: HEAVY	BASE RATE	\$26.96
	FRINGE BENEFITS	14.40

Forklift: HEAVY	BASE RATE	\$27.38
	FRINGE BENEFITS	14.15

Backhoe/Excavator/Trackhoe: HEAVY	BASE RATE	\$20.85
	FRINGE BENEFITS	5.00

Bulldozer: HEAVY	BASE RATE	\$25.35
	FRINGE BENEFITS	16.74

Loader: HEAVY	BASE RATE	\$26.50
	FRINGE BENEFITS	13.00

Mechanic: HEAVY	BASE RATE	\$25.81
	FRINGE BENEFITS	13.00

Roller: HEAVY	BASE RATE	\$23.39
	FRINGE BENEFITS	13.00

OPERATING ENGINEERS / HEAVY CONTINUED:

Trencher:	HEAVY	BASE RATE	\$26.34
		FRINGE BENEFITS	12.58

*Cranes with booms 150 ft. & over (including jib) and where the length of the boom in combination with the length of the piling leads equals or exceeds 150 ft. - \$1.00 over Group 1.
Employees assigned to work below ground level are to be paid 10% above basic wage rate.
This does not apply to open cut work.

PAINTERS:

Brush, Roller:	BUILDING	BASE RATE	\$20.83
		FRINGE BENEFITS	11.84

Spray:	BUILDING	BASE RATE	\$22.81
		FRINGE BENEFITS	11.87

Sign Painter & Erector:	BUILDING	BASE RATE	\$20.23
		FRINGE BENEFITS	3.25

Brush & Roller Only:	HEAVY	BASE RATE	\$18.50
		FRINGE BENEFITS	12.02

Spray, Sandblast, Power Tools, Waterblast & Steam Cleaning:	HEAVY	BASE RATE	\$19.00
		FRINGE BENEFITS	12.02

PIPEFITTERS:

BASE RATE	\$31.54
FRINGE BENEFITS	14.78

PLUMBERS:

BASE RATE	\$22.73
FRINGE BENEFITS	7.67

ROOFERS

BASE RATE	\$20.61
FRINGE BENEFITS	5.12

SHEETMETAL WORKERS (including metal roofs):
(Includes installation of HVAC duct & system)

BASE RATE	\$29.45
FRINGE BENEFITS	18.70

SPRINKLER FITTERS: (Fire Sprinklers)

BASE RATE	\$31.35
FRINGE BENEFITS	17.52

TRUCK DRIVERS / BUILDING:

10 Yard Truck:	BUILDING	BASE RATE	\$16.27
		FRINGE BENEFITS	1.50
Dump Truck:	BUILDING	BASE RATE	\$23.60
		FRINGE BENEFITS	8.03

TRUCK DRIVERS / HEAVY

Mobile Batch Truck Tender:	HEAVY	BASE RATE	\$16.57
		FRINGE BENEFITS	7.34

Greaser, Tire Changer, & Mechanic Tender:	HEAVY	BASE RATE	\$16.68
		FRINGE BENEFITS	7.34

Single Axle Dump & Flatbed, Semi-Trailer or Pole Trailer when used to pull building materials & equipment; Tandem Axle Dump; Distributor; Mixer, & Truck Mechanic:	HEAVY	BASE RATE	\$16.86
		FRINGE BENEFITS	7.34

Euclid, Other Heavy Earthmoving Equipment & Lowboy; Articulator Cat Truck & 5 Axle Vehicle; Winch & A-Frame when used in transporting materials; Ross Carrier; Fork Lift Truck when used to transport building materials; & Drivers on Pavement Breaker:	HEAVY	BASE RATE	\$16.96
		FRINGE BENEFITS	7.34

Dump Truck:	HEAVY	BASE RATE	\$16.80
		FRINGE BENEFITS	4.06

BRICKLAYER:	HIGHWAY	BASE RATE	\$25.96
		FRINGE BENEFITS	10.64

CARPENTER:	HIGHWAY	BASE RATE	\$27.50
		FRINGE BENEFITS	16.06

DIVER:	HIGHWAY	BASE RATE	\$41.63
		FRINGE BENEFITS	16.06

PILEDRIIVER:	HIGHWAY	BASE RATE	\$27.75
		FRINGE BENEFITS	16.06

ELECTRICIAN:	HIGHWAY	BASE RATE	\$30.01
		FRINGE BENEFITS	15.65

IRONWORKERS	HIGHWAY	BASE RATE	\$27.56
		FRINGE BENEFITS	20.30

LABORERS / HIGHWAY:

Group 1: aging and curing of concrete, asbestos abatement worker, asphalt plant, asphalt, batch truck dump, carpenter tender, cement mason tender, cleaning of machines, concrete, demolition, dredging, environmental-nuclear, radiation, toxic & hazardous waste – level D, flagperson, grade checker, hand digging & hand back filling, highway marker placer, landscaping, mesh handler & placer, puddler, railroad, rip-rap & grouter, right of way, sign, guard rail & fence installer, signal person, sound barrier installer, storm & sanitary sewer, swamper, truck spotter & dumper, wrecking of concrete forms, general cleanup.

HIGHWAY	BASE RATE	\$22.71
	FRINGE BENEFITS	11.05

Group 2: batter board man (sanitary storm sewer), brickmason tender, mortar mixer operator, scaffold builder, Burner & welder, bushhammer, chainsaw operator, concrete saw operator, deckhand scow man, dry cement Handler, environmental – nuclear, radiation, toxic & hazardous waste – Level C, forklift operator for masonry, form setter, green concrete cutting, hand operated grouter & grinder machine operator, jackhammer, pavement breaker, paving joint machine, pipelayer, plastic pipe fusion, power driven Georgia Buggy & wheel barrow, power post hole digger, precast manhole setter, walk behind tamper, walk behind trencher, sand blaster, concrete chipper, surface grinder, vibrator operator, wagon driller.

HIGHWAY	BASE RATE	\$22.96
	FRINGE BENEFITS	11.05

Group 3: asphalt lutemen & raker, gunnite nozzleman, gunnite operator & mixer, group pump operator, side rail setter, rail paved ditches, screw operator, tunnel (free air) water blaster:

HIGHWAY	BASE RATE	\$23.01
	FRINGE BENEFITS	11.05

Group 4: Caisson worker (free air), cement finisher, environmental-nuclear, radiation, toxic & hazardous waste Levels A & B, miner & driller (free air), tunnel blaster & tunnel mucker (free air), directional & horizontal boring, air Track drillers (all types), powderman & blasters, troxler & concrete tester if Laborer is utilized.

HIGHWAY	BASE RATE	\$23.61
	FRINGE BENEFITS	11.05

OPERATING ENGINEERS/ HIGHWAY

GROUP 1 - A-Frame Winch Truck; Auto Patrol; Backfiller; Batch Plant; Bituminous Paver; Bituminous Transfer Machine; Boom Cat; Bulldozer; Mechanic; Cableway; Carry-All Scoop; Carry Deck Crane; Central Compressor Plant; Cherry Picker; Clamshell; Concrete Mixer (21 cu. ft. or Over); Concrete Paver; Truck-Mounted Concrete Pump; Core Drill; Crane; Crusher Plant; Derrick; Derrick Boat; Ditching & Trenching Machine; Dragline; Dredge Operator; Dredge Engineer; Elevating Grader & Loaders; Grade-All; Guries; Heavy Equipment Robotics Operator/Mechanic; High Lift; Hoe-Type Machine; Hoist (Two or More Drums); Hoisting Engine (Two or More Drums); Horizontal Directional Drill Operator; Hydrocrane; Hyster; KeCal Loader; LeTourneau; Locomotive; Mechanic; Mechanically Operated Laser Screed; Mechanic Welder; Mucking Machine; Motor Scraper; Orangepeel Bucket; Overhead Crane; Piledriver; Power Blade; Pumpcrete; Push Dozer; Rock Spreader, attached to equipment; Rotary Drill; Roller (Bituminous); Rough Terrain Crane; Scarifier; Scoopmobile; Shovel; Side Boom; Subgrader; Tailboom; Telescoping Type Forklift; Tow or Push Boat; Tower Crane (French, German & other types); Tractor Shovel; Truck Crane; Tunnel Mining Machines, including Moles, Shields or similar types of Tunnel Mining Equipment

HIGHWAY	BASE RATE	\$29.95
	FRINGE BENEFITS	14.40

OPERATING ENGINEERS / HIGHWAY CONTINUED:

Group 2: Air Compressor (Over 900 cu. ft. per min.); Bituminous Mixer; Boom Type Tamping Machine; Bull Float; Concrete Mixer (Under 21 cu. ft.); Dredge Engineer; Electric Vibrator; Compactor/Self-Propelled Compactor; Elevator (One Drum or Buck Hoist); Elevator (When used to Hoist Building Material); Finish Machine; Firemen & Hoist (One Drum); Flexplane; Forklift (Regardless of Lift Height); Form Grader; Joint Sealing Machine; Outboard Motor Boat; Power Sweeper (Riding Type); Roller (Rock); Ross Carrier; Skid Mounted or Trailer Mounted Concrete Pump; Skid Steer Machine with all Attachments; Switchman or Brakeman; Throttle Valve Person; Tractair & Road Widening Trencher; Tractor (50 H.P. or Over); Truck Crane Oiler; Tugger; Welding Machine; Well Points;& Whirley Oiler

HIGHWAY	BASE RATE	\$27.26
	FRINGE BENEFITS	14.40

Group 3: All off road material handling equipment, including articulating dump trucks, greaser on grease facilities servicing heavy equipment:

HIGHWAY	BASE RATE	\$27.68
	FRINGE BENEFITS	14.40

Group 4: bituminous distributor, burlap & curing machine, cement gun, concrete saw, conveyor, deckhand oiler, grout pump, hydraulic post driver, hydro seeder, mud jack, oiler, paving joint machine, power form handling equipment, pump, roller (earth), steerman, tamping machine, tractor (under 50 hp) & vibrator:

HIGHWAY	BASE RATE	\$26.96
	FRINGE BENEFITS	14.40

Cranes with booms 150 ft & over including JIB and where length of the boom in combination with the length of the piling leads equals or 150 ft - \$1.00 over Group 1 rate.

PAINTERS:

Brush & Roller	HIGHWAY	BASE RATE	\$18.50
		FRINGE BENEFITS	11.97

Spray, Sandblast, Power tools, Waterblast & Steam Cleaning:

HIGHWAY	BASE RATE	\$19.50
	FRINGE BENEFITS	11.97

PLUMBERS:

HIGHWAY	BASE RATE	\$32.00
	FRINGE BENEFITS	17.17

TRUCK DRIVERS

Group 1: Mobile batch truck tender:

HIGHWAY	BASE RATE	\$16.57
	FRINGE BENEFITS	7.34

Group 2: Greaser, tire changer, mechanic tender:

HIGHWAY	BASE RATE	\$16.68
	FRINGE BENEFITS	7.34

Group 3: Single axle dump, flatbed, semi trailer or pole trailer when used to pull building materials and equipment, tandem axle dump, distributor, mixer & truck mechanic

HIGHWAY	BASE RATE	\$16.86
	FRINGE BENEFITS	7.34

Group 4: Euclid & other heavy earth moving equipment & lowboy, articulator cat, 5-axle vehicle, winch & A frame when used in transporting materials, ross carrier, forklift when used to transport building materials & pavement breaker.

HIGHWAY

BASE RATE	\$16.96
FRINGE BENEFITS	7.34

End of Document
CR 2-010 2015
December 4, 2015

10-28-2015



Construction Specifications Manual

HVAC Renovations and Repairs
DJJ-ETOWN
Department of Juvenile Justice
Elizabethtown, Kentucky

SKA# 2015-21

Act. No. 523-C7RN-LV03-00

Studio Kremer Architects
3258 Ruckriegel Parkway
Louisville, Ky 40299

p. 502.499.1100
f. 502.499.1101

info@studiokremer.com
Studiokremer.com

AGENCY REQUIREMENTS FOR WORKING ON SITE
(as of 9/21/15)

- A. Work to be performed within the facility is to be coordinated with the Owner's Representative (Superintendent or Maintenance Supervisor) on a daily basis.
- B. Requirements that contractor must perform work by are:
1. Contractor's staff must not have physical or verbal contact with residents. If a resident initiates contact with a contractor's staff, the contractor's staff should report the contact immediately to the owners nearest representative.
 2. All roads must be kept in passable condition for fire protection purposes.
 3. Weapons, ammunition and other dangerous instruments are forbidden on facility grounds per statute **(NO EXCEPTIONS – VIOLATORS SUBJECT TO PROSECUTION PER STATUTE)**.
 4. All ladders and scaffolds, when in use, shall be under observation. When they are to be used for an extended period of time, they shall be in fenced-in or controlled area to prevent resident access.
 5. Matches and/or lighters may not be sold, given or left available to residents. Use of tobacco products is forbidden per Executive Order 2014-747.
 6. CAMERAS ARE FORBIDDEN on facility grounds unless prior approval is received from facility administration. Only documentation of the areas or scope of work is permitted. All photos are subject to review by Owner. **Under no circumstances may photographs of residents be taken.**
 7. Parking permitted only in areas designated for contractor's use by the Owner.
 8. When not in use, vehicles must have ignition keys removed and doors locked. Under no circumstances may keys be given to residents or owners staff.
 9. DO NOT leave any dangerous items or chemicals in back of trucks unguarded or in any location unsecured.
 10. When passing through building, relock any door found locked.
 11. Pedestrians on roadways have right-of-way at all times.
 12. All tools, materials, etc. should be secured in work areas not accessible to residents. The contractor shall ensure all tools, equipment, and materials are accounted for at the end of each shift.
 13. The Owner will not receive, store or be responsible for contractor's materials.
 14. Permission must be obtained from Owner for work to be scheduled outside the hours 7:00 a.m. to 5:00 p.m. weekdays and on weekends, or holidays.
 15. OSHA, KOSH, and NFPA Safety Codes are to be adhered to for the duration of the contract.
 16. If any chemicals are to be used by the contractor, copies of MSDS for the chemicals must be kept on hand and a copy provided to the Owner.
 17. Any injury, or situation, including an injury to contractor personnel involving emergency services (fire department, police, ambulance, etc.,) is to be reported to the Owner.

18. The Owner will furnish access to electricity, and domestic water. On-site sanitary toilet for short duration projects will be provided by the Owner. The Owner will instruct Contractors of proper, acceptable locations for portable units for long duration projects.
19. All workers shall dress appropriately and conduct themselves in a manner acceptable to the Owner.
20. All work must be completed in accordance with all applicable codes and regulations. **Coordination and application for all permits, applications, and/or fees are the responsibility of the contractor and the cost should be factored into the quoted price.** Payment cannot be processed until all permits, fees and inspection requirements are satisfied with the applicable authority and documented.

Company Name

Contractor's Signature

Date

Project

DJJ Staff Signature

Date

List of Drawings

CS-1 Cover Sheet
S1.1 Structural – Structural Plan & Detail
A1.0 Architectural – Demolition Plan
A1.1 Architectural – Floor Plan
A1.2 Architectural Roof Plan
A2.1 Architectural – Exterior Elevations
F-1 Sprinkler – Floor Plan
P-1 Plumbing – Floor Plan
M-1 HVAC – Floor Plan
M-2 HVAC – Schedules & Notes
E-1 Electrical – Lighting
E-2 Electrical – Power & Systems

END OF LIST OF DRAWINGS

Section 00 00 00 – Index

DIVISION 00 – CONTRACT REQUIREMENTS

DIVISION 01 – GENERAL REQUIREMENTS

General Requirements
Agency Requirements for Working on Site (As of 9/21/15)
Index of Specifications
List of Drawings

DIVISION 02 – EXISTING CONDITIONS

Section 02 41 21 – Selective Building Demolition

DIVISION 03 – CONCRETE

Section 03 30 00-Cast In Place Concrete

DIVISION 04 – MASONRY

Section 04 20 00 – Unit Masonry Assemblies

DIVISION 05 – METALS

Section 05 12 00 – Structural Steel
05 50 00 – Metal Fabrications

DIVISION 06 – WOOD & PLASTICS

Section 06 10 00 – Rough Carpentry
06 20 00 – Finish Carpentry

DIVISION 07 – THERMAL & MOISTURE PROTECTION

Section 07 20 00 – Building Insulation
07 92 00 – Joint Sealants

DIVISION 08 – OPENINGS

Section 08 11 00 – Steel Doors and Frames
08 14 16 – Wood Doors
08 71 00 – Door Hardware

DIVISION 09 – FINISHES

Section 09 29 00 – Gypsum Board Assemblies
09 30 00 – Tile
09 51 13 – Acoustical Panel Ceilings
09 65 00 – Resilient Flooring and Accessories
09 90 00 – Painting

DIVISION 10 – SPECIALTIES

Section 10 14 00 – Building Signage
10 21 15 – Solid Phenolic Toilet Compartments

10 22 39 – Movable Partitions
10 28 00 – Restroom Accessories

DIVISION 21 – FIRE SUPPRESSION

Section 21 12 13 – Wet-Pipe Sprinkler Systems

DIVISION 22 – PLUMBING

Section 22 05 00 – Common Requirements for Plumbing
22 07 00 – Plumbing Insulation
22 10 00 – Plumbing Piping
22 40 00 – Plumbing Fixtures

DIVISION 23 – HEATING VENTILATING AND AIR CONDITIONING

Section 23 05 00 – Common Requirements for HVAC
23 05 93 – Testing, Adjusting, and Balancing for HVAC
23 07 00 – HVAC Insulation
23 08 00 – Commissioning of HVAC
23 30 00 – HVAC Air Distribution
23 73 12 – Energy Recovery Ventilation Units

DIVISION 26 – ELECTRICAL

Section 26 05 00 – Common Requirements for Electrical
26 05 10 – Raceways and Boxes
26 05 26 – Grounding and Bonding
26 05 30 – Wiring Devices
26 50 00 – Lighting

DIVISION 28 – ELECTRONIC SAFETY AND SECURITY

Section 28 31 00 – Fire Detection and Alarm

DIVISION 31 – NO WORK

DIVISION 32 – NO WORK

END OF INDEX

SECTION 01 00 00

GENERAL REQUIREMENTS

(SUPPLEMENTAL TO OWNER'S GENERAL CONDITIONS)

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Summary:
 - 1. Project description.
 - 2. Contractor's use of premises.
 - 3. Future work.
 - 4. Specification conventions.
 - 5. Time of Completion
 - 6. Liquidated Damages.
 - 7. Code Compliance.
 - 8. Cash Allowances.

- B. Administrative Requirements:
 - 1. Coordination.
 - 2. Permits and Inspections.
 - 3. Field engineering.
 - 4. Meetings.
 - 5. Progress meetings.
 - 6. Cutting and patching.

- C. Submittals:
 - 1. Submittal procedures.
 - 2. Product data.
 - 3. Shop drawings.
 - 4. Samples.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's certificates.

- D. Quality Requirements:
 - 1. Quality control.
 - 2. Tolerances.
 - 3. References.
 - 4. Labeling.
 - 5. Mock-ups.
 - 6. Testing and inspection laboratory services.
 - 7. Manufacturer's field services and reports.
 - 8. Examination.

9. Preparation.
- E. Temporary Facilities and Controls:
 1. Temporary electricity.
 2. Temporary lighting for construction purposes.
 3. Temporary heating and cooling.
 4. Temporary ventilation.
 5. Temporary water service.
 6. Temporary sanitary facilities.
 7. Field offices and sheds.
 8. Parking.
 9. Progress cleaning and waste removal.
 10. Fire prevention facilities.
 11. Barriers and fencing.
 12. Enclosures.
 13. Protection of installed work.
 14. Security.
 15. Pollution and environmental control.
 - F. Product Requirements:
 1. Products.
 2. Delivery, handling, storage, and protection.
 3. Product options.
 - G. Execution Requirements:
 1. Final cleaning.
 2. Starting of systems.
 3. Demonstration and instructions.
 4. Testing, adjusting and balancing.
 5. Protecting installed construction.
 6. Project record documents.
 7. Operation and maintenance data.
 8. Spare parts and maintenance materials.
 9. Warranties.

1.2 PROJECT DESCRIPTION

- A. Work of the project is a Renovation of the Adult Training Center of Lincoln Village for Department of Juvenile Justice in Elizabethtown, Kentucky. * The project will be administered thru DECA/Lynn Imaging systems.
 1. Selective demolition of walls.
 2. New Restrooms, Enlarged Classroom & New Office work.
 3. Installation of movable partition.
 4. Renovation of sprinkler system to work with changes in the building renovations.

5. Plumbing work for new restrooms.
6. HVAC work to work with changes in building renovation & new energy recovery ventilation system.
7. Electrical work to work with changes in building renovation.

B. Perform Work of Contract under a fixed cost with Owner in accordance with Conditions of Contract.

1.3 CONTRACTOR'S USE OF PREMISES

- A. Limit use of premises to allow:
1. Owner occupancy.
 2. Regular maintenance by others and work by Owner.
 3. Work performed under separate contracts.

1.4 SPECIFICATION CONVENTIONS

A. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the Contractor, unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

1.5 TIME OF COMPLETION

A. The Contractor shall be required to commence work under this contract within ten (10) calendar days after the date of written Notice to Proceed from the Owner and Substantial Completion shall occur within 120 calendar days. Final Completion of all work shall be 30 calendar days after the date of Substantial Completion.

1.6 LIQUIDATED DAMAGES

A. As actual damages for any delay in completion are impossible to determine, the Contractor and his surety shall be liable for and shall pay to the Owner the sum of **Three Hundred Dollars (\$300.00)** as fixed, agreed, and liquidated damages for each calendar day of delay until the Contract work is certified by the Architect as reaching Substantial Completion and the sum of **One Hundred Dollars (\$100.00)** as fixed, agreed and liquidated damages for each calendar day of delay until the work reaches Final Completion.

1.7 CODE COMPLIANCE

A. The contractor shall perform all work in a manner which complies with all applicable Federal, State and Local Codes. These include, but not limited to;

1. OSHA Standard 1926.
2. 2013 Kentucky Building Code (Based on 2012 IBC).

3. Kentucky Plumbing Laws, Regulations & Code (815 KAR Chapter 20).
4. Kentucky State Boiler Regulations (KRS 236, 815 KAR 15)
5. 2012 International Mechanical Code.
6. 2012 International Fire Code.
7. 2009 NFPA 54 National Fuel Gas Code.
8. 2009 International Energy Conservation Code.
9. 2009 ICC/ANSI A 117.1 Accessible and Usable Buildings and Facilities.
10. 2014 NFPA 70 National Electrical Code.

- B. In the event that a conflict occurs between the bid documents and any applicable code, the code shall dictate the work. The contractor must bring any such conflict to the attention of the Architect/Engineer immediately.

1.8 CASH ALLOWANCES

1. No Cash Allowances in Project.

1.9 COORDINATION

- A. Bidder will be responsible for coordination and supervision of all work performed under the contract whether self performed or subcontracted.
- B. The facility will be occupied, conducting normal business throughout the project. The bidder must plan and coordinate the installation of all work with the occupants operations in mind. A plan for temporary relocation of occupants within the work area will be developed by the Owner.
- C. Coordinate scheduling and Work of various sections of specifications to ensure efficient and orderly sequence of installation of interdependent construction elements.
- D. Where work is to be performed in the building that remain occupied by Owner's employees, schedule in advance with the Owner's Representative and perform work during normal business hours.
- E. Verify utility requirement characteristics of operating equipment are compatible with building utilities.
- F. Coordinate space requirements and installation of mechanical and electrical work indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable.
- G. In finished areas, conceal pipes, ducts, and wiring within construction.

1.10 PERMITS AND INSPECTIONS.

- A. Obtain and pay for all permits and inspections as required, including utility connection fees unless otherwise noted.

- B. Schedule all required inspections and provide any assistance required by the inspecting authority.
- C. Electrical Inspections: The contractor shall not use private inspectors. All electrical inspections will be performed by the inspectors from the Kentucky Department of Fire Prevention, Office of Electrical Inspections (502-564-3626). The contractor shall be responsible for requesting, scheduling and coordinating all electrical inspections through the Office of Electrical Inspections. The Project Manager from the Division of Engineering will arrange to pay the associated inspection fees directly to the Office of Electrical Inspections.

1.11 FIELD ENGINEERING

- A. Establish elevations, lines, and levels and certify elevations and locations of the Work conform with Contract Documents.
- B. Verify field measurements are as indicated on shop drawings or as instructed by manufacturer.

1.12 PRECONSTRUCTION MEETING

- A. Architect will schedule preconstruction meeting after Notice of Award for affected parties.
- B. When required in individual specification section, convene pre-installation meeting at Project site prior to commencing work of section.

1.13 PROGRESS MEETINGS

- A. Schedule and administer meetings throughout progress of the Work at twice per month intervals. The Architect may require meetings at more frequent intervals if deemed necessary to monitor progress.
- B. Preside at meetings, record minutes, and distribute copies within five days to those affected by decisions made.

1.14 CUTTING AND PATCHING

- A. Provide cutting and patching of new and existing building elements (such as floors, walls, roofs, etc.) as necessary to install new work whether or not the cutting and patching is specifically indicated on plans.
- B. Employ skilled and experienced installer to perform cutting and patching new Work; restore Work with new Products.

- C. Submit written request in advance of cutting or altering structural or building enclosure elements.
- D. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:
 - 1. Fit 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.
- E. Cut masonry and concrete materials using masonry saw or core drill. Restore Work with new Products in accordance with requirements of Contract Documents.
- F. Fit Work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.
- G. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- H. Refinish surfaces to match adjacent finishes.

1.15 SUBMITTAL PROCEDURES

- A. Submittal form to identify Project, Contractor, subcontractor or supplier; and pertinent Contract Document references.
- B. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with requirements of the Work and Contract Documents.
- C. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of completed Work.
- D. Revise and resubmit submittals as required; identify changes made since previous submittal.

1.16 PRODUCT DATA

- A. Product Data:
 - 1. Submitted to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
 - 2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.

- B. Submit number of copies which Contractor requires, plus five copies which will be retained by Engineer.
- C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this project.

1.17 SHOP DRAWINGS

- A. Shop Drawings:
 - 1. Submitted to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
 - 2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.
- B. When required by individual specification sections, provide shop drawings signed and sealed by professional engineer responsible for designing components shown on shop drawings.
 - 1. Include signed and sealed calculations to support design.
 - 2. Submit drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
 - 3. Make revisions and provide additional information when required by authorities having jurisdiction.
- C. Submit number of opaque reproductions Contractor requires and four copies which will be retained by Engineer.

1.18 SAMPLES

- A. Samples for Review:
 - 1. Submitted to Architect for review for limited purpose of checking for conformance with information given and design concept expressed in Contract Documents.
 - 2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.
- B. Samples For Selection:
 - 1. Submitted to Architect for aesthetic, color, or finish selection.
 - 2. Submit samples of finishes, textures, and patterns for Engineer selection.
 - 3. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article and for record documents purposes as specified.
- C. Submit samples to illustrate functional and aesthetic characteristics of Product.

1.19 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit manufacturer printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

1.20 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification sections, submit certifications by manufacturer to 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.

1.21 QUALITY CONTROL

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply with manufacturer's instructions.
- C. Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

1.22 TOLERANCES

- A. Monitor fabrication and installation tolerance control of installed Products over suppliers, manufacturers, Products, site conditions, and workmanship, to produce acceptable Work. Do not permit tolerances to accumulate.
- B. Comply fully with manufacturer's tolerances.

1.23 REFERENCES

- A. Conform to reference standards by date of issue current as of date for receiving bids.
- B. When specified reference standard conflict with Contract Documents, request clarification from Engineer before proceeding.

1.24 LABELING

- A. Attach label from agency approved by authority having jurisdiction for products, assemblies, and systems required to be labeled by code.
- B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label.

1. Model number.
2. Serial number.
3. Performance characteristics.

1.25 MOCK-UPS

- A. Tests will be performed under provisions identified in this section and identified in respective product specification sections.
- B. Accepted mock-ups are representative of quality required for the Work.
- C. Where mock-up has been accepted by Architect and is specified in product specification sections to be removed; remove mock-up and clear area when directed to do so.

1.26 TESTING AND INSPECTION LABORATORY SERVICES

- A. Owner may appoint, employ, and pay for specified services of independent firm to perform testing and inspection.
- B. Independent firm will perform tests, inspections, and other services as required.
- C. Cooperate with independent firm; furnish samples as requested.
- D. Re-testing required because of non-conformance to specified requirements will be charged to Contractor.

1.27 MANUFACTURER'S FIELD SERVICES AND REPORTS

- A. When specified in individual specification sections, require material or Product suppliers or manufacturers to furnish qualified staff personnel to observe site conditions and to initiate instructions when necessary.
- B. Report observations and site decisions or instructions that are supplemental or contrary to manufacturer's written instructions.

1.28 EXAMINATION

- A. Verify existing site conditions and substrate surfaces are acceptable for subsequent Work. Beginning new Work means acceptance of existing conditions.
- B. Verify utility services are available, of correct characteristics, and in correct location.

1.29 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.

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

1.30 TEMPORARY ELECTRICITY

- A. Permanent Building Electrical power may be utilized during construction.
- B. Provide temporary electricity and power outlets for construction operations, connections, branch wiring, distribution boxes, and flexible power cords as required. Do not disrupt Owner's need for continuous service.

1.31 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Permanent building lighting may be utilized during construction

1.32 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
- B. Provide Temporary ventilation equipment to maintain clean air for construction operations.

1.33 TEMPORARY WATER SERVICE

- A. Connect to existing water source for construction operations.

1.34 TEMPORARY SANITARY FACILITIES

- A. Existing facilities may **NOT** be used.
- B. Provide temporary sanitary facilities & maintain in clean and sanitary condition. Location of temporary sanitary facilities shall be approved by Owner.

1.35 FIELD OFFICES AND SHEDS

- A. Office: The Owner will provide a limited space on site for Contractor to set up a plan table and job box. Security of this area will be the Contractors responsibility. If additional office space is required by the Contractor, it will be the Contractor's responsibility to provide a job trailer and coordinate placement and utilities on-site.
- B. The Owner will provide space on site for Project meetings, with table and chairs to accommodate ten persons.
- C. Tools and Material Storage Sheds: There is limited indoor space on site for storage of tools and materials. The Contractor will be responsible to provide secure storage of tools and materials on-site.

1.36 PARKING

- A. Space will be designated for parking a maximum of Ten (10) construction related vehicles in the Owner's paved parking lot. Other vehicles must be parked off site.

1.37 PROGRESS CLEANING AND WASTE REMOVAL

- A. Collect and maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
- B. Remove all construction debris and sweep/vacuum/mop floors at the end of each work shift. Owner may back charge contractor for cleaning services if site cleanliness is not maintained.
- C. Contractor must provide construction dumpster and regular pick-up service for all construction waste. Do not use Owner's waste receptacles.
- D. Recycle waste materials whenever possible.

1.38 FIRE PREVENTION FACILITIES

- A. Prohibit smoking and any tobacco use within buildings. Designate outdoor area on site where smoking is permitted. Provide approved ashtrays in designated smoking areas.
- B. Establish fire watch for cutting and 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 end of buildings under construction and demolition.
 - 2. Provide minimum one fire extinguisher in every construction trailer and storage shed.
 - 3. Provide minimum one fire extinguisher on roof during roofing operations using heat producing equipment.

1.39 BARRIERS AND FENCING

- A. Provide barriers to prevent unauthorized entry to construction storage areas.

1.40 ENCLOSURES

- A. Provide temporary insulated weather tight closures to exterior openings to permit acceptable working conditions and protection of the Work.

1.41 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification sections.
- B. Prohibit traffic or storage upon waterproofed or roofed surfaces.

1.42 SECURITY

- A. Provide security and facilities to protect Work and existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.

1.43 POLLUTION AND ENVIRONMENTAL 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. Provide dust control, erosion and sediment control, noise control, pest control and rodent control to allow for proper execution of the Work.
- C. Comply with pollution and environmental control requirements

1.44 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work..
- B. Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by the Contract Documents.
- C. Provide interchangeable components of same manufacture for components being replaced.

1.45 DELIVERY, HANDLING, STORAGE, AND PROTECTION

- A. Deliver, handle, store, and protect Products in accordance with manufacturer's instructions.
- B. Owner will not be responsible for receiving any construction related deliveries at the job site.

1.46 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.

- B. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit request for substitution for manufacturers not named.

1.47 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Clean interior and exterior surfaces exposed to view.
- C. Clean debris from site, roofs, gutters, downspouts, and drainage systems.
- D. Replace filters of operating equipment.
- E. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.48 STARTING OF SYSTEMS

- A. Provide seven days notification prior to start-up of each item.
- B. Ensure each piece of equipment or system is ready for operation.
- C. Execute start-up under supervision of responsible persons in accordance with manufacturer's instructions.
- D. Submit written report stating equipment or system has been properly installed and is functioning correctly.

1.49 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of Products to Owner's personnel two weeks prior to date of final review.
- B. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.
- C. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.

1.50 TESTING, ADJUSTING, AND BALANCING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.
- B. Owner will appoint, employ, and pay for services of independent firm to perform testing, adjusting, and balancing.

- C. Reports will be submitted by independent firm to Architect indicating observations and results of tests and indicating compliance or non-compliance with specified requirements and with requirements of Contract Documents.
- D. Cooperate with independent firm; furnish assistance as requested.
- E. Re-testing required because of non-conformance to specified requirements will be charged to Contractor.

1.51 PROTECTING INSTALLED CONSTRUCTION

- A. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- B. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- C. 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.
- D. Prohibit traffic from landscaped areas.

1.52 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of Contract Documents to be utilized for record documents.
- B. Record actual revisions to the Work. Record information concurrent with construction progress.
- C. Record Documents and Shop Drawings: Legibly mark each item to record actual construction.
- D. Submit documents to Architect two weeks prior to date of final review.

1.53 OPERATION AND MAINTENANCE DATA

- A. Submit four sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, three D side ring binders with durable plastic covers.
- B. Prepare binder cover with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.
- C. Internally subdivide binder contents with permanent page dividers, logically organized, with tab titles legibly printed under reinforced laminated plastic tabs.
- D. Contents:

1. Part 1: Directory, listing names, addresses, and telephone numbers of Engineer, Contractor, subcontractors, and major equipment suppliers.
2. Part 2: Operation and maintenance instructions, arranged by system.
3. Part 3: Project documents and certificates.

1.54 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.
- B. Deliver to Project site and place in location as directed by Owner; obtain receipt signed by Owner's Representative prior to final payment.

1.55 WARRANTIES

- A. Provide duplicate notarized copies.
- B. Execute and assemble transferable warranty documents from subcontractors, suppliers, and manufacturers.
- C. Submit prior to final Application for Payment.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

02 41 21 – SELECTIVE BUILDING DEMOLITION

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. The work of this Section consists of the demolition and removal of selected portions of a building as indicated on the Drawings or specified herein. The work includes removal, salvage of specific items for reuse in the building or for delivery to the Owner, and disposal of all other items.
- B. Some removals may require assistance from specialized trades such as mechanical or electrical craftsman. Should the Contractor desire to sublet some of this work to other trades it may be done at the discretion of the Contractor.
- C. It is the intent of this Section to include all removals of every kind except for the following work which is specified elsewhere:
 - 1. Cutting openings in concrete and masonry walls, concrete floor slabs, roofing, etc., for the installation of structural, mechanical, plumbing, fire protection, and electrical lines and equipment.

1.03 DEFINITIONS

- A. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the Owner's property.
- B. Remove and Salvage: Items indicated to be removed and salvaged remain the Owner's property. Remove, clean and pack or crate items to protect against damage. Identify contents of containers and deliver to Owner's designated storage area.
- C. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.
- D. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Architect, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

1.04 MATERIALS OWNERSHIP

- A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site, in a lawful manner, with further disposition at the Contractor's option.
- B. Historical items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to the Owner, which may be encountered during selective demolition, remain the Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to the Owner.

1.05 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: Engage an experienced firm that has successfully completed selective demolition work similar to that indicated for this project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before starting selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.07 PROJECT CONDITIONS

- A. Owner assumes no responsibility for actual condition of buildings to be selectively demolished.
 - 1. Condition existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
- B. Lead-based Paint: Lead-based Paint should not be encountered in the Work. If any materials suspected of containing lead-based paint are encountered, do not disturb the materials. Immediately notify the Owner.

Part 2 Products (not applicable)**Part 3 Execution****3.01 EXAMINATION**

- A. Verify that utilities have been disconnected and capped.
- B. Selective demolition is shown on the Drawings to the extent that the scale of the drawings will allow. Due to the small scale and the complexities of building construction, it is not always possible to show every detail of demolition. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Architect.
- E. Survey the condition of the building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition.
- F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.02 UTILITY SERVICES

- A. Utility Requirements: Refer to Divisions 20, 21, 22, 23, 26, 27, and 28 Sections for shutting off, disconnecting, removing, and sealing or capping utility services.

3.03 PREPARATION

- A. Conduct demolition operations to prevent injury to people and damage to facilities to remain. Ensure safe passage of people around selective demolition area.
 - 1. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.
- B. Seal off openings in exterior walls during demolition operations in order to limit dust and dirt migration.
- C. Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of building to be selectively demolished. Design of structural support, bracing and shoring shall be the responsibility of the Contractor.
 - 1. Strengthen or add new supports when required during progress of selective demolition.

3.04 POLLUTION CONTROLS

- A. Use temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.
 - 1. Erect plastic dust partitions as required to limit dust in existing building.
- B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
 - 1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.
- C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

3.05 SELECTIVE DEMOLITION

- A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete work within limitations of governing regulations and as follows:
 - 1. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain sufficiently to resist damage from weather.
 - 2. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
 - 3. Remove decayed or otherwise dangerous or unsuitable materials and promptly dispose of off-site in a legal manner.
 - 4. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
 - 5. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
 - 6. Dispose of demolished items and materials promptly. On-site storage or sale of removed items is prohibited.
 - 7. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.
- B. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools. Exercise caution in removing elements so as not to damage surrounding masonry or other materials.

1. Where openings are required in existing masonry walls, or where existing openings are shown to be enlarged, tooth the joints in the bond. Remove broken brick or CMU.

3.06 PATCHING AND REPAIRS

- A. Promptly patch and repair holes and damaged surfaces caused to adjacent construction by selective demolition operations.

3.07 SALVAGE ITEMS: NONE

3.07 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.
- B. Burning: Burning of demolished materials is prohibited.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.08 CLEANING

- A. Sweep the building broom clean on completion of selective demolition operation.

END OF SECTION 02 41 21

SECTION 03 30 00 – CAST IN PLACE CONCRETE

PART 1 GENERAL

1.0 CONCRETE

1. All concrete for general use shall have a minimum 28 day compressive strength of 4000 PSI.
2. Reinforcing Steel shall be as follows:
 - Stirrups and ties.....ASTM A615 Grade 60
 - All Other Reinforcing.....ASTM A615 Grade 60
 - Welded Wire Fabric.....ASTM A185
3. Provide Bar Supports and Spacers in accordance with ACI detailing manual. All Bar Supports In areas where concrete will be exposed shall have plastic feet. Precast Concrete ($f_c' = 4000\text{psi}$) Blocks 3"x3"x3" shall be used to support reinforcing off of the ground. At all other locations, chairs or standees shall be used.
4. Materials shall comply with requirements of designated specifications of American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania
5. Construction Procedures shall comply with recommendations set forth in designated standards of American Concrete Institute, P.O. Box 19150, Redford Station, Detroit, Michigan 48219.
6. All Reinforcing Splices shall be spliced according to the lap splice table.

1.1 WORK INCLUDED

- A. This section includes furnishing all labor, tools, materials, equipment and services necessary to properly place and complete all cast-in-place concrete work, both plain and reinforced, including reinforcing steel, forms and other necessary items indicated and/or specified herein and removal of forms.

1.2 RELATED DOCUMENTS

- A. The General Provisions of the contract, including General Conditions, Supplemental Conditions and Special Conditions apply to work specified herein.
- B. Upon award of contract, the contractor will be furnished a form (See Exhibit "A") similar to that shown at the end of this Section for submittal to the Architect as a part of the mix design submittal.
- C. Materials shall comply with requirements of designated specifications of American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania.

- D. Construction procedures shall comply with recommendations set forth in designated standards of American Concrete Institute, P.O. Box 9094, Farmington Hills, Michigan 48333.
- E. Current edition of referenced Specifications and Standards shall prevail.
- F. "Specifications for Structural Concrete" – ACI301-05 shall apply to work specified herein.

PART 2 MATERIALS

2.1 CONCRETE MATERIALS

- A. All materials shall be manufactured in the United States of America. Material certificates signed by supplier and contractor certifying that each material item complies with, or exceeds, the specified requirements shall be furnished by the material manufacturer through the general contractor.
- B. Portland Cement, Type 1, meeting requirements of A.S.T.M. C150. One brand of cement shall be used throughout the work.
- C. Aggregates A.S.T.M. C33.
- D. Local aggregates of proven durability may be used when acceptable to the Architect.
- E. Coarse aggregate for regular weight concrete may be dredged Ohio River gravel or crushed stone.
- F. Water, clean, fresh & potable.

2.2 ADMIXTURES

- A. Air-entraining A.S.T.M. C260
- B. Chemical (Type subject to approval) A.S.T.M. C494
- C. Fly ash shall conform with ASTM C618, Class F or C. Fly ash content shall not exceed 20% by weight of the total cementitious content of the mix.
- D. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions are not permitted.
- E. Certification: Written conformance to the above-mentioned requirements and the chloride ion

content of the admixture will be required from the admixture manufacturer prior to mix design review by the Engineer.

2.3 METAL REINFORCEMENT

- A. Stirrups and column ties A.S.T.M. A615 Grade 60
- B. All other reinforcement A.S.T.M. A615 Grade 60 w/supplementary requirements (S1)
- C. Welded Wire Fabric A.S.T.M. A185
- D. Metal accessories including spacers, chairs, ties and other devices necessary for properly assembling, placing, spacing and supporting all reinforcement in place shall be provided. Ties shall be of such type as to leave no metal closer than 3/4" from the concrete surface.

2.4 JOINT FILLER

- A. Premoulded joint filler strips shall be resilient, compressible, re-expanding, non-extruding, of the thickness indicated.

2.5 FORMS

- A. All vertical concrete surfaces except footings shall be formed with plywood or metal forms.
- B. Form oil shall be an approved commercial formulation of proven performance that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatment and curing of concrete surfaces.

2.6 CURING COMPOUND

- A. Curing compound shall be acrylic base type conforming to AASHTO M-148 and A.S.T.M. C309. The material shall be equal to Sonneborn Kur-N-Seal, Masterseal (by Master Builders), or Clear Seal (by W.R. Grace).

2.7 NON-SHRINK GROUT

- A. Non-shrink, non-metallic grout for use beneath column base plates shall be premixed, factory packaged, non-staining, non-metallic, non-gassing mortar grouting compound, conforming to ASTM C1107, "Standard Specification for packaged Dry, Hydraulic-Cement Grout (Non-shrink)." In addition, the grout manufacturer shall furnish test data from an independent laboratory indicating that the grout when placed at a fluid consistency shall achieve 95%

bearing under a 4' X 4' base plate. The non-shrink grout shall be "Euco NS" by the Euclid Chemical Co., "Masterflow 713" by BASF, or approved equal. Grout shall have a minimum compressive strength of 5,000 psi.

2.8 BONDING AND REPAIR MATERIALS

- A. Bonding Compounds: The compound shall be a polyvinyl acetate type, Rewettable: "Euco Weld" by the Euclid Chemical Co. or "Weldcrete" by the Larsen Co. Use only in areas not subject to moisture. Non-Rewettable, Polymer modified bonding compound: "Euco-Bond" by the Euclid Chemical Company or approved equal.
- B. Epoxy Adhesive: The compound shall be a two (2) component, 100% solids, 100% reactive compound suitable for use on dry or damp surfaces, "Euco Epoxy No. 452MV or No. 620" by the Euclid Chemical Co. or "Sikadure Hi-Mod" by the Sika Chemical Corp.

PART 3 APPLICATION

3.1 PROPORTIONING CONCRETE

- A. Admixture other than air-entraining shall not be used without written approval of Architect. See Paragraph 2.2 of this section.
- B. Ready mixed concrete shall be used. It shall comply with applicable provision of A.S.T.M. C94 and as specified herein.
- C. Batching system shall be automatic and shall record each material as batched prior to discharge into mixer and zero referenced following discharge. This record shall be marked to permanently identify each batch.
- D. Equipment shall be provided to continuously determine surface moisture in the fine aggregate. Moisture corrections shall be made without use of calculations by the batcher.
- E. The determination of the proportions of cement, aggregate, water and approved admixtures to attain the required strength shall be made by one of the following methods approved by the Architect. Under no circumstances shall Method II be used, when the established coefficient of variation is greater than 15.
- F. Method I: Trial Mixtures

- 1. Requirements for General Use

Min. 28 day compressive strength (psi) 4000

Max. size coarse aggregate (inches)	1.0
Min. cement content (lb. per cu. yd.)	564
Max. water-cement ratio	0.50
Max. slump (inches)	5.0
Min. slump (inches)	3.0
Max. slump (inches) when water reducing admixtures are used	7.0
Air content for (interior) floor. slabs	3.0 ± 1
Air content (% by volume) +/- 1.0%	4.5

2. Prior to delivery of concrete to job, Architect shall be furnished mix designs and at least ten consecutive test reports, made within the last six months, to substantiate strength-producing properties of the proposed mix design. If such data is not available, the mix design shall be certified by a recognized testing laboratory to produce specified results.

G. Method II: Field Experience

1. Requirements for General Use

Min. 28 day compressive strength (psi)	4000
Max. size coarse aggregate (inches)	1.0
Max. slump (inches)	5.0
Min. slump (inches)	3.0
Max. slump (inches) when water reducing admixtures are used	7.0
Air content for (interior) floor slabs	3.0 ± 1

2. Prior to delivery of concrete to job, the Architect shall be furnished a certified statement establishing the standard deviation of the plant. At least fifteen consecutive test reports based on the proposed mix design and made within the last six months shall be furnished the Architect to substantiate the strength-producing properties of the proposed mix design.

- H. No water may be added to any concrete if it falls within the guideline specified. A minimal amount of water may only be added if slump is extremely low and the contractor decides that the concrete strength will not be impaired.

3.2 CONVEYING AND DEPOSITING

- A. Concrete shall be conveyed and placed in accordance with ACI 304. It shall be deposited as early as practicable, in its final position. Methods used shall not cause separation of

materials.

- B. Forms shall be free of ice, water and debris before concrete is placed.
- C. Only clean equipment, free of hardened concrete and foreign material, shall be used for conveyance.
- D. Placing shall proceed as continuous operation until unit of construction is complete.
- E. Concrete placed in forms shall be consolidated by mechanical vibration. Vibrator shall deliver 10,000 vibrations per minute and shall be inserted into each 18" lift at intervals not to exceed 12". Vibrator shall run for minimum of 8 seconds after complete submersion.

3.3 CURING AND PROTECTION

- A. Immediately after completion of final placing and/or finishing operation all concrete surfaces shall be protected from defacing of any nature and shall be maintained in moist condition for a period of five (5) days. Refer also to Paragraph 3.4 and 3.5 for additional protection requirements.
- B. Curing methods must be approved by the Architect before concreting is begun.
- C. Curing Methods: Perform curing of concrete by moist curing, by moisture-retaining cover curing, by curing compound, and by combinations thereof, as herein specified. Note: Do not use membrane curing compounds on surfaces which are to be covered with coating material applied directly to concrete (liquid floor hardener, waterproofing, damp-proofing, membrane roofing, flooring, painting, and other coatings and finish materials), unless otherwise acceptable to Architect, and written documentation is provided by coating manufacturer.
- D. Provide moisture curing by following methods:
 - 1. Keep concrete surface continuously wet by covering with water or continuous water-fog spray.
 - 2. Covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4" lap over adjacent absorptive covers.
- E. Provide moisture-cover curing as follows: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.

- F. Provide curing compound to slabs where indicated, or where permissible as described herein, as follows: Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during period.
 - 1. Curing Formed Surfaces: Cure formed concrete surfaces, similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable.
 - 2. Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by application of appropriate curing compound.
- G. Final cure concrete surfaces to receive liquid floor hardener or finish flooring by use of moisture-retaining cover, unless otherwise directed.

3.4 COLD WEATHER REQUIREMENTS

- A. Temperature of concrete when placed shall be not less than 50 deg. F.
- B. Temperature of concrete shall be maintained above 50 deg. F. and below 90 deg. F. for duration of curing period.
- C. Procedures shall be in accordance with ACI 306. Concrete shall be placed within 90 minutes of batch time.

3.5 HOT WEATHER REQUIREMENTS

- A. Temperature of concrete when placed shall be less than 90 degrees F.
- B. All concrete shall be placed within 90 minutes of batch time. Shorter time limits may apply when air temperature is in excess of 90 degrees F.
- C. Procedures shall be in accordance with ACI 305.

3.6 GENERAL FORMWORK

- A. Forms shall conform to shape, lines and dimensions of members as indicated, and shall be substantial and sufficiently tight to prevent leakage of mortar. They shall be properly braced or tied together so as to maintain position and shapes and insure safety to workmen or

passersby. Forms for smooth exposed surfaces shall be constructed of Plywood or other approved smooth material. All plywood forms shall be new at the beginning of the job. Exposed concrete corners shall be beveled 3/4 inch unless otherwise noted. The exposed concrete surfaces shall be of smooth quality acceptable to the Architect, not requiring purging, coating or painting.

- B. Form coatings, when required, shall be non-staining and shall be applied before reinforcing steel is placed. Temporary openings for cleaning and inspection shall be provided at base of vertical forms and other places when necessary.
- C. It is the intent of this specification that all form removal be done in such manner and at such time as to not damage the concrete surfaces and to insure complete safety to the structure. The contractor shall be responsible for safe practice in this regard.
- D. Design, installation, and removal of formwork shall conform to the requirements of ACI 347.

3.7 INSTALLATION OF ANCHORAGE ITEMS AND JOINTS

- A. Joints not shown in the contract documents shall be so made and located as to least impair the strength of the structure and shall be approved by the Architect/Engineer.
- B. All reinforcement shall be continued across joints. Keys shall be provided as directed by the Architect/Engineer.
- C. Anchor bolts furnished under Section 05120 shall be set in accordance with the setting plan furnished under Paragraph 1.03-B-4 of Section 05 12 00.
- D. It shall be the responsibility of the contractor under this section to coordinate and place all cast-in-place anchorage items related to anchoring wall system. Anchorage items shall be located as shown on plans.
- E. Dovetail slots and other embedded items shall be provided as required for support of other work that is attached to or supported by cast-in-place concrete. Spacing of dovetail slots shall not exceed 24" on center.

3.8 REINFORCING

- A. Detailing, fabrication and placing shall conform to ACI 315 and/or ACI 318.
- B. Shop drawings shall be checked by the contractor and submitted to the Architect for review in conformance with "Special Provisions" before fabrication is begun.

3.9 CONCRETE TESTING

- A. Test to determine quality of concrete will be paid for by the Owner.
- B. Each class of concrete shall be represented by at least five tests. Not less than one test shall be made each 50 cu. yds. but there shall be at least one test for each day's concreting unless otherwise directed by Architect. Laboratory shall record and report location within project of concrete tested.
- C. A test shall consist of the following:
- Selection and securing of samples A.S.T.M. C172
 Air content* A.S.T.M. C231 or A.S.T.M. C173
 Slump Test* A.S.T.M. C143
 Cylinders - Five - 6" x 12" A.S.T.M. C31
 Cylinder Test* A.S.T.M. C39
 *Results to be reported by laboratory on test reports.
- D. Two cylinders shall be tested at 7 days for information and two cylinders shall be tested at 28 days for acceptance. One cylinder shall be kept in reserve for 56-day test if needed. Reports of 7, 28, and 56 day strength tests shall be made directly by laboratory as follows:
- One copy to Owner
 Two copies to Architect
 One copy to Structural Engineer
 One copy to Contractor
 One copy to R/M Producer
- E. The strength level shall be considered satisfactory so long as the average of all sets of three (3) consecutive strength test results equal or exceed the specified f'_c and no individual strength test result falls below the specified strength f'_c by more than 500 psi.
- F. In event test results do not meet specification requirements, one or more of the following will be required at no cost to owner:
1. Windsor Probe test conforming to A.S.T.M. C803
 2. Core-boring test conforming to A.S.T.M. C42
 3. Load test in accordance with Chapter 20, ACI 318-05
- G. In event Windsor Probe, core-boring, or load test indicate that concrete does not conform to specifications, contractor shall take such measures as Architect shall prescribe or shall remove defective work as directed by Architect.

- H. Test made for contractor's convenience, to determine when concrete can be placed in service or stripped, shall be paid for by contractor. Such tests shall be made in accordance with A.S.T.M. C31 and cured in the field as directed by the Architect.

3.10 FINISHING HORIZONTAL SURFACES

- A. Under no circumstances shall dry cement or mixture of cement and sand be used to absorb surface moisture or to stiffen surface to be finished.
- B. The surface plane tolerance for cast slabs shall be such that depressions between high spots are not greater than 1/8" under a 10 foot straight-edge. For slabs on grade and shored elevated slabs, the overall floor flatness and levelness shall be not less than $F_f = 35$ and $F_L = 25$. Minimum local values shall be $F_f = 25$ and $F_L = 15$. For unshored elevated slabs, the overall floor flatness shall be not less than $F_f = 35$, with a minimum local value of $F_f = 25$.
- C. Concrete floor tolerances specified in paragraph B (above) shall be tested within 72 hours after floor installation. Testing procedures shall comply with ASTM E 1155 "Standard Test Method for Determining F_f Floor Flatness and F_L Floor Levelness Numbers". An independent testing laboratory will be retained by the Owner to provide floor tolerance testing.
- D. Finish of concrete surfaces shall be as indicated on the drawings and room finish schedule.
- E. Broom Finish: After concrete has been placed, surface shall be brought to established grade with straightedge and bull floated to "Smooth Out" surface. When water sheen has disappeared, surface shall be floated with power and/or wood floats. After floating, surface shall be broomed to achieve surface texture approved by Architect.
- F. Hard Trowel Finish: After concrete has been placed, surface shall be brought to established grade, with straightedge and bull floated to "Smooth Out" surface. When water sheen has disappeared, surface shall be finished with power-operated trowel and/or hand trowel until smooth hard surface is obtained free of pin holes and other imperfections.
- G. Curing Compound: Surfaces to be treated as indicated on plans or called for in room schedule shall be prepared and the curing compound applied in strict accordance with the manufacturer's recommendations and as specified herein.

Application of curing compound shall be deferred until all other work that might cause damage to the surface has been completed. The curing compound shall be applied in 2 coats so that minimum coverage is not more than 450 square feet per gallon of material per coat.

3.11 REPAIRING AND PATCHING

- A. Tie holes and repairable defective areas shall be patched immediately after form removal.
- B. Patching mixture shall be made of same material and of approximately same proportions as used for concrete, except that coarse aggregate shall be omitted and mortar shall consist of not more than one part cement to 2 1/2 parts sand by damp loose volume. White Portland cement shall be substituted for part of Gray Portland cement on exposed concrete in order to produce color matching color of surrounding concrete, as determined by trial patch. Remove all fins, form offset marks and other imperfections that would present an unsightly appearance.

3.12 FINISHING EXPOSED CONCRETE SURFACES

- A. Surfaces that will be exposed in the finished structure other than those under 3.10 shall have fins removed and repairable defective areas patched. Rubbing of the surfaces will be required. See Paragraph 3.6 for formwork requirements. Patching procedures shall be as specified in paragraph 3.11 of this Section.
- B. All exterior wall surfaces exposed to view shall be finished to match the existing exposed exterior wall surfaces.

(SEE EXHIBIT "A" NEXT PAGE)

EXHIBIT "A"

PROJECT NAME: _____

PROJECT LOCATION: _____

GENERAL CONTRACTOR: _____

CONCRETE SUPPLIER: _____

ADDRESS: _____

TYPE PLANT: CENTRAL MIX () TRANSIT MIX ()
 AUTOMATIC () SEMIAUTOMATIC () MANUAL ()

ESTIMATED HAUL DISTANCE: _____ MILES

ESTIMATED HAUL TIME: _____ MINUTES

CEMENT SOURCE: _____

F. A. SOURCE: _____

C. A. SOURCE: _____

DATE SCALES LAST TESTED: _____

METHOD OF PROPORTIONING MIX: PRESCRIPTION () PERFORMANCE ()

CONCRETE TESTING:

NAME OF LAB: _____

ADDRESS OF LAB: _____

HAS LAB PERSONNEL READ CONCRETE SPECIFICATION? YES () NO ()

WHO WILL MOLD CYLINDERS AND PERFORM OTHER SPECIFIED TESTS?
 CONTRACTOR PERSONNEL () TESTING LAB PERSONNEL ()

IF BY CONTRACTOR PERSONNEL, IS PERSON FAMILIAR WITH SPECIFIED
 A.S.T.M. REQUIREMENTS FOR TEST? YES () NO ()

TEST CYLINDERS WILL BE TRANSPORTED FROM FIELD TO LABORATORY BY:
 CONTRACTOR () TESTING LABORATORY () OTHER ()

IF BY OTHER ... NAME _____

(GENERAL CONTRACTOR)

END OF SECTION

04 20 00- UNIT MASONRY ASSEMBLIES**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.
- B. Refer to the Drawings for locations of work to be performed.

1.02 SUMMARY

- A. This Section includes unit masonry assemblies consisting of the following:
 - 1. Face brick.
 - 2. Mortar and grout.
 - 3. Masonry joint reinforcement.
 - 4. Ties and anchors.
 - 5. Embedded flashing.
 - 6. Miscellaneous masonry accessories.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For the following:
 - 1. Masonry Units: Show sizes, profiles, coursing, and locations of special shapes.
- C. Samples: For each type and color of the following:
 - 1. Face brick , straps of five or more standard (modular) bricks.
 - 2. Samples for colored mortar selection.
- D. Material Certificates: Include statements of material properties indicating compliance with requirements including compliance with standards and type designations within standards. Provide for each type and size of the following:
 - 1. Masonry units: Include material test reports substantiating compliance with requirements.
 - 2. Cementitious materials. Include brand, type, and name of manufacturer.

3. Preblended, dry mortar mixes. Include description of type and proportions of ingredients.

1.04 QUALITY ASSURANCE

- A. Source Limitations for Masonry Units: Obtain exposed masonry units of a uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, through one source from a single manufacturer for each product required.

- B. Mockups: Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 1. Build mockups for typical exterior wall in sizes approximately 24-inches long by 24-inches high by full thickness.

 2. Clean exposed faces of mockups with masonry cleaner.
 3. Protect accepted mockups from the elements with weather-resistant membrane.
 4. Approval of mockups is for color, texture, and blending of masonry units; relationship of mortar and sealant colors to masonry unit colors; tooling of joints; and aesthetic qualities of workmanship.
 - a. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless such deviations are specifically approved by the Architect in writing.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store masonry units on elevated platforms in a dry location. If units are not stored in an enclosed location, cover tops and sides of stacks with waterproof sheeting, securely tied. If units become wet, do not install until they are dry.
- B. Store cementitious materials on elevated platforms, under cover, and in a dry location. Do not use cementitious materials that have become damp.
- C. Store aggregates where grading and other required characteristics can be maintained and contamination avoided.
- D. Deliver preblended, dry mortar mix in moisture-resistant containers designed for lifting and emptying into dispensing silo. Store preblended, dry mortar mix in delivery containers on elevated platforms, under cover, and in a dry location or in a metal dispensing silo with weatherproof cover.

- E. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

1.06 PROJECT CONDITIONS

- A. Protection of Masonry exposed to weather: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress.

- 1. Extend cover a minimum of 24-inches down both sides and hold cover securely in place.

- D. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.

- 1. Protect base of walls from rain-splashed mud and from mortar splatter by spreading coverings on ground and over wall surface.

- D. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

- 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40-degrees F and above and will remain so until masonry has dried, but not less than 7-days after completing cleaning.

- E. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602.

Part 2 Products

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:

- 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include products specified.
 - 2. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include manufacturers specified.

2.02 MASONRY UNITS, GENERAL

- A. Defective Units: Referenced masonry unit standards may allow a certain percentage of units to exceed tolerances and to contain chips, cracks, or other defects exceeding limits stated in the standard. Do not use units where such defects, including dimensions that vary from specified dimensions by more than stated tolerances, will be exposed in the completed Work or will impair the quality of completed masonry.

2.03 BRICK

- A. General: Provide shapes indicated and as follows:

1. For ends of sills and caps and for similar applications that would otherwise expose unfinished brick surfaces, provide units without cores or frogs and with exposed surfaces finished.

- B. Face Brick: ASTM C 216, Grade SW, Type FBX.

1. Modular

- a. Actual Dimensions: 3-5/8-inches wide by 2-1/4-inches high by 7-5/8-inches long.
- b. Products: To be selected based on an allowance of \$580.00 / thousand.

2. Application: Use where brick is exposed, unless otherwise indicated. Refer to the Drawings for location of brick type.

- C. Available Manufacturers:

1. Belden
2. The Bowerston Shale Company
3. Endicott
4. Glen-Gery
5. Watsontown

2.04 MORTAR .

- B. Masonry Cement For Brick: ASTM C 91, Type N.

1. Basis-Of-Design Product: Brixment

2. Available Products:

- a. Essroc, Italcementi Group; Brixment
- b. Lafarge North America Inc.; U.S. Cement Masonry Cement.
- c. Lehigh Cement Company; Lehigh Custom Masonry Cement.

3. Mortar Color:

- a. colored Masonry cement for brick: ASTM C91, Type N
- C. Aggregate for Mortar: ASTM C 144.
 - 1. For mortar that is exposed to view, use washed aggregate consisting of natural sand.
- D. Aggregate for Grout: ASTM C 404.
- E. Water: Potable.
- F. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
 - 1. Do not use calcium chloride in mortar or grout.
- G. Preblended, Dry Mortar Mix: Furnish dry mortar ingredients in form of a preblended mix. Measure quantities by weight to ensure accurate proportions, and thoroughly blend ingredients before delivering to Project site.
- H. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification. Provide the following types of mortar for applications stated unless another type is indicated.
 - 1. For above-grade, non-load-bearing walls and parapet walls; and for other applications where another type is not indicated, use Type N, (BRICK).

2.05 REINFORCEMENT

- A. Masonry Joint Reinforcement, General: ASTM A 951.
- B. Masonry Joint Reinforcement for Single-Wythe Masonry: Truss type with single pair of side rods.
- C. Adjustable Anchors for connecting to substrate Wall: provide anchors that allow vertical or horizontal adjustment but resist tension & compression forces perpendicular to plane of the wall.

Basis of design product : Dur-O-Wal :D /A 700 Series tie with D/A 207 MSA Veneer Anchor Screw –On Straps or Wirebond RJ-711 Adjustable Veneer Anchor.

- 1) Spaced 16"o.c. vertically and 32"o.c. horizontally.

2.06 TIES AND ANCHORS

- A. Materials: Provide ties and anchors specified in subsequent paragraphs that are made from materials that comply with eight subparagraphs below, unless otherwise indicated.
1. Hot-Dip Galvanized, Carbon-Steel Wire: ASTM A 82; with ASTM A 153/A 153M, Class B-2 coating.
 2. Stainless Steel bars: ASTM A 276 or ASTM a 666, Type 304.

2.07 EMBEDDED FLASHING MATERIALS

- A. Flexible Flashing: For flashing not exposed to the exterior, use one of the following, unless otherwise indicated:
1. Copper-Laminated Flashing: 5-oz. / sq. ft. copper sheet bonded with asphalt between 2 layers of glass-fiber cloth. Use only where flashing is fully concealed in masonry.
 - a. Available Products:
 - 1) Advanced Building Products Inc.; Copper Fabric Flashing.
 - 2) AFCO Products Inc.; Copper Fabric.
 - 3) Hohmann & Barnard, Inc.; H & B C-Fab Flashing.
 - 4) Phoenix Building Products; Type FCC-Fabric Covered Copper.
 - 5) Polytite Manufacturing Corp.; Copper Fabric Flashing.
 - 6) Sandell Manufacturing Co., Inc.; Copper Fabric Flashing.
 - 7) York Manufacturing, Inc.; York Copper Fabric Flashing.

2.08 MISCELLANEOUS MASONRY ACCESSORIES

A. Weep/Vent Products: Use the following, unless otherwise indicated:

1. Vinyl Vent: One-piece, offset, T-shaped units made from flexible, injection-molded PVC, designed to fit into a head joint and consisting of a louvered vertical leg, flexible wings to seal against ends of masonry units, and a top flap to keep mortar out of the head joint; in color approved by Architect to match that of mortar.

a. Available Products:

- 1) Hohmann & Barnard, Inc.; #343 Louvered Weep Hole.
- 2) Williams Products, Inc.; Williams-Goodco Brick Vent.
- 3) Wire-Bond; Louvered Weepholes.

B. Cavity Drainage Material: Free-draining mesh, made from polymer strands that will not degrade within the wall cavity.

1. Provide one of the following configurations:

- a. Strips, full-depth of cavity and 10-inches wide, with dovetail shaped notches 7-inches deep that prevent mesh from being clogged with mortar droppings.
- b. Strips, not less than 1-1/2-inches thick and 10-inches wide, with dimpled surface designed to catch mortar droppings and prevent weep holes from being clogged with mortar.

2. Available Products:

- a. Advanced Building Products Inc.; Mortar Break or Mortar Break II.
- b. Dayton Superior Corporation, Dur-O-Wal Division; Polytite MortarStop.
- c. Mortar Net USA, Ltd.; Mortar Net.

Part 3 Execution

3.01 EXAMINATION

A. Examine conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of work.

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

3.02 INSTALLATION, GENERAL

- A. Thickness: Build single-wythe walls to actual widths of masonry units, using units of widths indicated.

- B. Use full-size units without cutting if possible. If cutting is required to provide a continuous pattern or to fit adjoining construction, cut units with motor-driven saws; provide clean, sharp, unchipped edges. Allow units to dry before laying unless wetting of units is specified. Install cut units with cut surfaces and, where possible, cut edges concealed.

- C. Select and arrange units for exposed unit masonry to produce a uniform blend of colors and textures.
 - 1. Mix units from several pallets or cubes as they are placed.

- D. Wetting of Brick: Wet brick before laying if initial rate of absorption exceeds 30 g/30 sq. in. per minute when tested per ASTM C 67. Allow units to absorb water so they are damp but not wet at time of laying.

- E. Comply with construction tolerances in ACI 530.1/ASCE 6/TMS 602 and with the following:
 - 1. For conspicuous vertical lines, such as external corners, door jambs, reveals, and expansion and control joints, do not vary from plumb by more than 1/8 inch in 10-feet, 1/4-inch in 20-feet, or 1/2-inch maximum.
 - 2. For vertical alignment of exposed head joints, do not vary from plumb by more than 1/4-inch in 10-feet, or 1/2-inch maximum.
 - 3. For conspicuous horizontal lines, such as lintels, sills, parapets, and reveals, do not vary from level by more than 1/8-inch in 10-feet, 1/4-inch in 20 feet, or 1/2-inch maximum.
 - 4. For exposed bed joints, do not vary from thickness indicated by more than plus or minus 1/8-inch, with a maximum thickness limited to 1/2-inch. Do not vary from bed-joint thickness of adjacent courses by more than 1/8-inch.
 - 5. For exposed head joints, do not vary from thickness indicated by more than plus or minus 1/8-inch. Do not vary from adjacent bed-joint and head-joint thicknesses by more than 1/8-inch.
 - 6. For faces of adjacent exposed masonry units, do not vary from flush alignment by more than 1/16-inch except due to warpage of masonry units within tolerances specified for warpage of units.
 - 7. For exposed bed joints and head joints of stacked bond, do not vary from a straight line by more than 1/16-inch from one masonry unit to the next.

3.03 LAYING BRICK WALLS

- A. Coursing: Lay brick plumb, level and true to line in **full** beds of mortar. Head joints shall be **filled solid** with mortar. Joints in brick work and between brick and other masonry or concrete shall be filled solid (head and bed joints) with mortar as work progresses, Exposed brick shall be laid in running bond pattern unless shown otherwise indicated, Do not install any broken, chipped or cracked bricks.
- B. Once laid, do not disturb face brick in any manner which would impair its mortar bed.
- C. Cleaning: Clean face brick surfaces as work progresses, Final cleaning is specified hereinafter.

3.04 LAYING MASONRY WALLS

- A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint thicknesses and for accurate location of openings, movement-type joints, returns, and offsets. Avoid using less-than-half-size units, particularly at corners, jambs, and, where possible, at other locations.
- B. Bond Pattern for Exposed Masonry: Unless otherwise indicated, lay exposed masonry in running bond; do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- C. Lay concealed masonry with all units in a wythe in running bond. Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
- D. Stopping and Resuming Work: Stop work by racking back units in each course from those in course below; do not tooth. When resuming work, clean masonry surfaces that are to receive mortar, remove loose masonry units and mortar, and wet brick if required before laying fresh masonry.

3.05 MORTAR BEDDING AND JOINTING

- A. Lay hollow concrete masonry units as follows:
 - 1. With face shells fully bedded in mortar and with **full** head joints of depth equal to bed joints.
 - 2. With webs fully bedded in mortar in all courses of piers, columns, and pilasters.
 - 3. With webs fully bedded in mortar in grouted masonry, including starting course on footings.
 - 4. With entire units, including areas under cells, fully bedded in mortar at starting course on footings.

- B. Make uniform, nominal 3/8" wide joints, unless otherwise shown. Tool joints smooth and dense with round, non-staining type jointed to provide slightly concave joints. Tool joints behind lockers, casework, markerboards, tackboards and other equipment.
- C. Lay solid masonry units with **completely filled bed and head joints**; butter ends with sufficient mortar to fill head joints and shove into place. Do not deeply furrow bed joints or slush head joints.
- D. Make joints in brickwork uniform and not more than 3/8" wide and as follows:
 - 1. After becoming "thumb-print" hard, tool joints of exterior facing brick with jointed that is slightly larger than the width of the mortar joint. Close cracks and crevasses.
 - 2. All joints above and below grade - tool concave.

3.06 CAVITY WALLS

- A. Bond wythes of cavity walls together using the following method:
 - 1. Individual Metal Ties: Provide masonry veneer ties as specified, hooked to fastener in backup wythe; spaced typically at 32-inches o.c. horizontally and 16-inches o.c. vertically. Stagger ties in alternate courses. Provide additional ties within 12-inches of openings and space not more than 16-inches apart around perimeter of openings. At intersecting and abutting walls, provide ties at no more than 24-inches o.c. vertically.
 - 2. Masonry Veneer Anchors: Comply with requirements for anchoring masonry veneers.
- B. Keep cavities clean of mortar droppings and other materials during construction. Bevel beds away from cavity, to minimize mortar protrusions into cavity. Do not attempt to trowel or remove mortar fins protruding into cavity.

3.07 MASONRY JOINT REINFORCEMENT

- A. General: Install entire length of longitudinal side rods in mortar with a minimum cover of 5/8-inch on exterior side of walls, 1/2-inch elsewhere. Lap reinforcement a minimum of 6-inches.
 - 1. Space reinforcement not more than 16-inches o.c. vertically.
 - 2. Provide reinforcement not more than 8-inches above and below wall openings and extending 12-inches beyond openings.

3.08 FLASHING, WEEP HOLES, CAVITY DRAINAGE, AND VENTS

- A. General: Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated. Install vents at shelf angles, ledges, and other obstructions to upward flow of air in cavities, and where indicated.
- B. Install flashing as follows, unless otherwise indicated:
 - 1. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Where flashing is within mortar joint, place through-wall flashing on sloping bed of mortar and cover with mortar. Lap joints at least 6" and seal both horizontal and vertical surfaces of flashing. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.
 - 2. Provide end dams at each end of stepped through wall flashings or at ends of a run of flashing.
 - 3. Seal all laps and end dams with mastic for a waterproof installation.
- C. Install reglets and nailers for flashing and other related construction where they are shown to be built into masonry.
- D. Install weep holes in head joints in exterior wythes of first course of masonry immediately above embedded flashing and as follows:
- E. Place cavity drainage material in cavities to comply with configuration requirements for cavity drainage material in Part 2 "Miscellaneous Masonry Accessories" Article.
- F. Install vents in head joints in exterior wythes at 32-inches o.c. Use specified weep/vent products to form vents.
 - 1. Close cavities off vertically and horizontally with blocking in manner indicated. Install through-wall flashing and weep holes above horizontal blocking.

3.09 REPAIRING, POINTING, AND CLEANING

- A. Remove and replace masonry units that are loose, chipped, broken, stained, or otherwise damaged or that do not match adjoining units. Install new units to match adjoining units; install in fresh mortar, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge voids and holes, except weep holes, and completely fill with mortar. Point up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for sealant application, where indicated.

- C. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears before tooling joints.
- D. Final Cleaning: After mortar is thoroughly set and cured, clean exposed masonry as follows:
 - 1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
 - 2. Test cleaning methods on sample wall panel; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
 - 3. Clean brick by bucket-and-brush hand-cleaning method described in BIA Technical Notes 20.
 - 4. Clean concrete masonry by cleaning method indicated in NCMA TEK 8-2A applicable to type of stain on exposed surfaces. Do not use acid.
- E. Masonry Cleaning Materials see individual section for related cleaning instructions.
 - 1. Commercial product manufactured for masonry cleaning.
 - 2. "Sure Klean 600" by Prosoco, Inc. or "Thoro-Clean" by Standard Dry Wall Products, Inc.
 - 3. Verify compatibility with selected masonry units.

3.14 SALVAGEABLE MATERIALS

- A. Unless otherwise indicated, excess masonry materials are Contractor's property. At completion of unit masonry work, remove from Project site.

END OF SECTION 04 20 00

SECTION 05 12 00 – STRUCTURAL STEEL

PART 1 GENERAL

1.1 WORK INCLUDED

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 specification sections, apply to work specified in this section.
- B. This section includes furnishing all structural steel, related materials, labor, tools, equipment and services necessary for the fabrication, delivery to the site, unloading, handling, storing and erecting of all structural steel shown on the drawings, and/or specified herein.

1.2 RELATED DOCUMENTS

- A. Comply with the provisions of the latest editions of the following Codes, Specifications and Standards, except as otherwise shown or specified herein.
 - 1. A.I.S.C. "Code of Standard Practice for Steel Buildings and Bridges."
 - 2. A.I.S.C. "Specifications for the Design, fabrication and Erection of Structural Steel for Buildings."
 - 3. AWS "Structural Welding Code."

1.3 SHOP DRAWINGS

- A. Shop drawings shall be checked by the contractor and submitted to the Architect for review in conformance with "Special Provisions" and General Notes before fabrication is begun.
- B. The shop drawings shall include the following:
 - 1. Complete details and schedules for the fabrication of each member.

PART 2 MATERIALS

2.1 STEEL MATERIALS AND COATINGS

- A. Unless otherwise shown or specified, rolled steel plates, shapes (except WF), bars, rods and miscellaneous items shall be structural quality carbon steel complying with ASTM A36 (minimum yield

- 36,000 PSI). Wide flange shapes only shall comply with ASTM A992 (minimum yield 50,000 PSI).
- B. Hollow structural sections (HSS) shall comply with ASTM A500, Grade B (minimum yield 46,000 PSI), for square and rectangular sections.
 - C. Hollow structural sections (HSS) shall comply with ASTM A500, Grade B (minimum yield 46,000 PSI), for round sections.
 - D. High strength threaded fasteners shall be heavy hexagon structural bolts, heavy hexagon nuts and washers complying with ASTM A325.
 - E. Anchor bolts shall comply with ASTM F1554, GR. 36
 - F. Expansion Anchors shall be Hilti Carbon Steel Kwik Bolt II Anchor manufactured by Hilti Fastening systems, or approved equal
 - G. Adhesive Anchors shall consist of an all-thread steel anchor with the HIT HY200 Adhesive (HIT HY70 Adhesive for masonry construction with voids) supplied by Hilti Fastening systems, or approved equal. Install in accordance with the supplier's recommendations.
 - H. Structural steel primer paint shall be standard red oxide primer, oil alkyd, unless noted otherwise.
 - I. Washers for high strength bolts shall be flat circular hardened steel washers conforming to ASTM F436.
 - J. Remove all rolling marks and I.D. marks on exposed steel members.

PART 3 EXECUTION

- A. All welding shall be performed by welders certified to perform each type of weld required. All welds and welding procedures shall comply with AWS D1.1, using E70XX Electrodes unless noted otherwise.
- B. Weld Sizes not shown on design drawings shall be minimum size required by AWS D1.1 (Latest Edition) according to the material thickness being welded. All welds shall be pre-qualified per AWS D1.1 (Latest Edition)
- C. Steel Framework shall not be assumed structurally stable until all members are in place and connections are installed. Any use of the partially erected framework for temporary support of any kind

shall be done only at the contractor's risk.

- D. Any camber existing in beams shall be turned positive upward.
- E. Burning of holes in structural steel is Not Permitted.
- F. Maintain work in a safe and stable condition during erection. Provide temporary shoring and bracing members as required, with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made.
- G. Shop prime all structural steel with standard red oxide primer to a minimum of 2 mil dry film thickness unless noted otherwise.

END OF SECTION

05 50 00 – METAL FABRICATIONS

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 the following:
 - 1. Steel framing and supports for mechanical equipment.
 - 2. Steel framing and supports for movable partition system.
 - 3. Loose bearing and leveling plates.
 - 4. Steel weld-plates and angles for casting into concrete.
 - 5. Fasteners.

1.03 SUBMITTALS

- A. Shop Drawings: Show fabrication and installation details for metal fabrications.
 - 1. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items.

1.04 QUALITY ASSURANCE

- A. Welding: Qualify procedures and personnel according to the following:
 - 1. AWS D1.1, "Structural Welding Code--Steel."
 - 2. AWS D1.3, "Structural Welding Code--Sheet Steel."

1.05 PROJECT CONDITIONS

- A. Field Measurements: Verify actual locations of walls and other construction contiguous with metal fabrications by field measurements before fabrication and indicate measurements on Shop Drawings.
 - 1. Established Dimensions: Where field measurements cannot be made without delaying the Work, establish dimensions and proceed with fabricating metal fabrications without field measurements. Coordinate wall and other contiguous construction to ensure that actual dimensions correspond to established dimensions.
 - 2. Allow for trimming and fitting at site.

1.06 COORDINATION

- A. Coordinate installation of anchorages for metal fabrications. 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.

Part 2 Products

2.01 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include manufacturers specified.

2.02 METALS, GENERAL

- 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.

2.03 FERROUS METALS

- A. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Steel Tubing: ASTM A 500, cold-formed steel tubing.

2.04 FASTENERS

- A. General: Unless otherwise indicated, provide Type 304 stainless steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633, Class Fe/Zn 5, at exterior walls. Provide stainless-steel fasteners for fastening aluminum. Select fasteners for type, grade, and class required.
- B. Steel Bolts and Nuts: Regular hexagon-head bolts, ASTM A 307, Grade A; with hex nuts, ASTM A 563; and, where indicated, flat washers.
- C. Anchor Bolts: ASTM F 1554, Grade 36.
 - 1. Provide hot-dip or mechanically deposited, zinc-coated anchor bolts where item being fastened is indicated to be galvanized.

- D. Expansion Anchors: Anchor bolt and sleeve assembly with capability to sustain, 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, conducted by a qualified independent testing agency.
 - 1. Material for Anchors in Interior Locations: Carbon-steel components zinc-plated to comply with ASTM B 633, Class Fe/Zn 5.

2.05 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
- B. Shop Primers: Provide primers that comply with Division 09 Section "Painting".
- C. Galvanizing Repair Paint: Provide paint that complies with Division 09 Section "Painting" and ASTM A-780.
- D. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.
- E. 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.

2.06 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 true to line and level 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 where possible. Where exposed fasteners are required, use Phillips flat-head (countersunk) screws or bolts, unless otherwise indicated. Locate joints where least conspicuous.
- G. Fabricate seams and other connections that will be 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.

2.07 LOOSE BEARING AND LEVELING PLATES

- A. Provide loose bearing and leveling plates for steel items bearing on concrete construction. Drill plates to receive anchor bolts and for grouting.
- B. Galvanize plates after fabrication.

2.08 STEEL WELD PLATES AND ANGLES

- A. Provide steel weld plates and angles not specified in other Sections for items supported from/by concrete construction as needed to complete the Work. Provide each unit with not less than two integrally welded steel strap anchors for embedding in concrete.

2.09 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Finish metal fabrications after assembly.

2.14 STEEL AND IRON FINISHES

- A. Galvanizing: Hot-dip galvanize items as indicated to comply with applicable standard listed below:
 1. ASTM A 123/A 123M, for galvanizing steel and iron products.
 2. ASTM A 153/A 153M, for galvanizing steel and iron hardware.

- B. Preparation for Shop Priming: Prepare uncoated ferrous-metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
 - 1. Interiors (SSPC Zone 1A): SSPC-SP 3, "Power Tool Cleaning."
- C. Shop Priming: Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finishes and those to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with SSPC-PA 1, "Paint Application Specification No. 1: Shop, Field, and Maintenance Painting of Steel," for shop painting.
 - 1. Paint corners, crevices, bolts, welds, and sharp edges.

Part 3 Execution

3.01 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 bolts, 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.

3.02 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.

3.03 INSTALLING BEARING AND LEVELING PLATES

- A. Clean concrete bearing surfaces of bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of plates.
- B. Set bearing and leveling plates on wedges, shims, or leveling nuts. After bearing members have been positioned and plumbed, tighten anchor bolts. Do not remove wedges or shims but, if protruding, cut off flush with edge of bearing plate before packing with grout.
 - 1. Use nonshrink grout, either metallic or nonmetallic, in concealed locations where not exposed to moisture; use nonshrink, nonmetallic grout in exposed locations, unless otherwise indicated.
 - 2. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

3.04 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.

END OF SECTION 05 50 00

06 10 00 – ROUGH CARPENTRY

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 the following:
 - 1. Wood blocking and nailers.
 - 2. Plywood backing panels.
 - 3. Preservative treatment, borate type.

1.03 DEFINITIONS

- A. Dimension Lumber: Lumber that is cut to certain pre-determined sizes, that is sawn, planed and smooth, ready for building applications.
- B. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - 1. NeLMA: Northeastern Lumber Manufacturers' Association.
 - 2. NLGA: National Lumber Grades Authority.
 - 3. SPIB: The Southern Pine Inspection Bureau.
 - 4. WWPA: Western Wood Products Association.

1.04 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - 1. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - a. Manufacturer's Certificate: Certify that Products conform to specified requirements.
 - 2. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.

3. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
- B. Research / Evaluation Reports: For the following, showing compliance with building code in effect for Project:
1. Wood-preservative-treated wood.
 2. Power-driven fasteners.
 3. Expansion anchors.
 4. Metal framing anchors.

1.05 QUALITY ASSURANCE

- A. Source Limitations for Engineered Wood Products: Obtain each type of engineered wood product through one source from a single manufacturer.
- B. Source Quality: Obtain each type of treated wood from a single manufacturer.
1. Surface Burning Characteristics: ASTM E84.
 - a. Flame Spread Index: 25, maximum.
 - b. Smoke Developed Index: 450, maximum.
 2. Moisture Content After Treatment:
 - a. Lumber: Maximum 19-percent.
 - b. Structural Panels: Maximum 15-percent.
- C. Apply label from agency approved by authority having jurisdiction to identify each fire retardant treated material. Include the following identification:
1. Inspection agency.
 2. Standard to which the material was treated.
 3. Treating facility.
 4. Treatment material and retention.
 5. End use for which the product is suitable.
 6. Kiln dried after treatment.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

Part 2 Products

2.01 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules

of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory mark each piece of lumber with grade stamp of grading agency.
2. For exposed lumber indicated to receive a stained or natural finish, omit grade stamp and provide certificates of grade compliance issued by grading agency.
3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
4. Provide dressed lumber, S4S, unless otherwise indicated.

2.02 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWWPA C2, using preservative chemicals acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat items indicated on Drawings, and the following:
 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, sleepers, blocking, and similar concealed members in contact with masonry or concrete.
- E. Note that, since 2004-2005, treated wood materials cannot be installed in direct contact with some metals without danger of corrosion.
 1. Fasteners shall be hot-dipped galvanized or stainless steel. Follow wood and metal suppliers' recommendations in selection of fasteners.
 2. Follow wood and metal suppliers' recommendations to isolate treated lumber from metal materials (flashings, fittings, etc.) where necessary.

2.03 PRESERVATIVE WOOD TREATMENT – BORATE

- A. Manufacturers:
 1. Arch Wood Protection; SillBor Borate-Treated Wood.
 2. Chemical Specialties Inc.; Timber Saver PT.
 3. Osmose; Advance Guard Brand Borate Pressure Treated Wood.

- B. Description: Borate preservative wood treatment, factory applied to wood materials.
 - 1. Where wood is directly exposed to weather and where in direct contact with the ground, do not apply borate preservative wood treatment. Instead apply ACQ preservative wood treatment.
- C. Wood Preservative Treatment: Urea formaldehyde free pressure treatment, AWPA C1 using Disodium Octoborate Tetrahydrate (DOT) preservative with following minimum retention:
 - 1. Above Grade: 0.25 pcf.
- D. Field Treatment Materials: Manufacturer's recommended type, compatible with pressure treatment materials.
- E. Shop pressure treat lumber materials indicated on Drawings and lumber used for the following applications:
 - 1. Wood blocking and nailers associated with roofing or in contact with concrete or masonry.
- F. Kiln dry wood after treatment to maximum moisture content specified in other sections.

2.04 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - 1. Blocking.
 - 2. Nailers.
 - 3. Furring.
 - 4. Hanging strips.
- B. For items of dimension lumber size, or in contact with roofing, provide Construction or No. 2 grade lumber with 19-percent maximum moisture content of any species.
- C. For concealed boards, provide lumber with 19-percent maximum moisture content and any of the following species and grades:
 - 1. Mixed southern pine, No. 2 grade; SPIB.
 - 2. Eastern softwoods, No. 2 Common grade; NeLMA.
 - 3. Northern species, No. 2 Common grade; NLGA.
 - 4. Western woods, Standard or No. 2 Common grade; WCLIB or WWPA.
- D. For blocking not used for attachment of other construction, Utility, Stud, or No. 2 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.

- E. For blocking, nailers, and furring used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

2.05 PLYWOOD BACKING PANELS

- A. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, in thickness indicated or, if not indicated, not less than 3/4-inch nominal thickness and fire resistive treated. Paint panel according to Division 09 Section "Painting" **before installing equipment.**

2.06 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - 1. Where rough carpentry is exposed to weather, in ground contact, in pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A-153 / A-153M, or stainless steel fasteners.
- B. Nails, Brads, and Staples: ASTM F 1667.
- C. Power-Driven Fasteners: NES NER-272.
- D. Wood Screws: ASME B18.6.1.
- E. Screws for Fastening wood blocking or nailers to Metal Roof Deck: Steel drill screws, in type and length recommended by screw manufacturer for thickness of material to be attached, with organic-polymer or other corrosion-protective coating having a salt-spray resistance of more than 800 hours according to ASTM B 117. Countersink fastener flush with surface of furring.
- F. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).
- G. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
- H. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - 1. Material: Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).

2.07 PLYWOOD

- A. Trademark: Identify each plywood panel with appropriate APA trademark.
- B. Concealed Performance-Rated Plywood: Where plywood panels will be used for concealed types of applications, provide APA performance-rated panels complying with requirements indicated for grade designation, span rating, exposure durability classification, edge detail (where applicable) and thickness.
 - 1. Wall and Roof Exterior Sheathing: APA Rated Sheathing
 - a. Exposure durability classification: Exterior
 - b. Span rating: As required to suit structure/support spacing indicated.
 - c. Basis of Design: 5/8" CDX, unless noted otherwise.

2.08 AIR BARRIER: NONE**2.08 MISCELLANEOUS MATERIALS: NONE****Part 3 Execution****3.01 INSTALLATION, GENERAL**

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate nailers, blocking, grounds, furring, and similar supports to comply with requirements for attaching other construction.
- B. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
- C. Do not splice structural members between supports, unless otherwise indicated.
- D. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
- E. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
- F. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- G. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - 1. NES NER-272 for power-driven fasteners.

2. Table 2304.9.1, "Fastening Schedule," in Kentucky Building Code.

- H. Use common wire nails, unless otherwise indicated (as in case of treated lumber applications). Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.

3.02 AIR BARRIER INSTALLATION: NONE

3.03 WOOD BLOCKING, AND NAILER INSTALLATION

- A. Install where indicated and where required for attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
- B. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

3.04 FIELD TREATMENT

- A. Treat cuts and bored holes in pressure treated lumber and plywood with field treatment materials in accordance with wood treatment manufacturer's instructions.

3.05 PROTECTION

- A. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 00

06 20 00 – FINISH CARPENTRY

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 DESCRIPTION OF WORK

- A. Definition: Finish carpentry includes carpentry work which is exposed to view, is non-structural, and which is not specified as part of other sections.
- B. Rough carpentry is specified in another section within Division 06.
- C. Builders Hardware and wood doors are specified in section within Division 08.

1.03 QUALITY ASSURANCE

- A. Factory-mark each piece of lumber and plywood with type, grade, mill and grading agency identification; except omit marking from surfaces to receive transparent finish, and submit mill certification that material has been inspected and graded in accordance with requirements if it cannot be marked on a concealed surface.

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect finish carpentry materials during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not deliver finish carpentry materials until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.05 JOB CONDITIONS

- A. Conditioning: Installer shall advise Contractor of temperature and humidity requirements for finish carpentry installation areas. Do not install finish carpentry until required temperature and relative humidity have been stabilized and will be maintained in installation areas.
- B. Maintain temperature and humidity in installation areas as required to maintain moisture content of installed finish carpentry within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. The fabricator of woodwork shall determine optimum moisture content and required temperature and humidity conditions.

1.06 SUMMARY

1. Solid Surface Countertops & integral Sinks.
2. Corner Guards.
3. Carpentry work exposed to view.

Part 2 Products

2.01 WOOD PRODUCT QUALITY STANDARDS

- A. Hardwood Lumber Standard: Comply with National Hardwood Lumber Association (NHLA) rules.
- B. Woodworking Standard: Where indicated for a specific product complies with specified provision of the following:
 1. Architectural Woodwork Institute (AWI) "Quality Standards".

2.02 MATERIALS

- A. General:
 1. Nominal sizes are indicated, except as shown by detailed dimensions. Provide dressed or worked and dressed lumber, as applicable, manufactured to the actual sizes and pattern as shown.
 2. Moisture Content of Hardwood Lumber: Provide kiln-dried (KD) lumber having moisture content from time of manufacture until time of installation within the ranges required in the referenced woodworking standard.
 3. Lumber for Transparent Finish: Use species made of solid lumber stock.
 4. Lumber for Painted Finish: At Contractor's option, use pieces which are either glued up lumber or made of solid lumber stock.
- B. Miscellaneous Materials:
 1. Fasteners and Anchorages: Provide nails, screws and other anchoring devices of the proper type, size, material and finish for the application indicated to provide secure attachment, concealed where possible, and complying with applicable Federal Specifications.
 - a. Where finish carpentry is exposed on exterior or in areas of high relative humidity, provide fasteners and anchorages with a hot-dipped zinc coating (ASTM A-153).
 2. Adhesive recommended by manufacturer.
- C. Corner Guards: Basis of design – Pawling Corporation CG-10 rigid vinyl system. System shall be 90 deg. Corner guard with 3" wings and aluminum retainer. Corner Guard shall extend to 8'-0" height. Other approved manufacturers: Johnsonite,

Roppe & approved manufacturer. Color shall be selected from manufacturers standard colors.

D. Solid Surfacing

1. Manufacturer

- a. Available manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - i. Wilsonart [Gibraltar]
 - ii. LG [HiMacs]
 - iii. Dupont [Corian]
 - iv. Staron [Samsung]

2. Solid Surface Sheet

- a. Nominal sheet thickness: 0.50 inch (13 mm)
- b. Surface burning characteristics in accordance with ASTM E 84: Class I or A, and as follows:
- c. Flame spread: < 25.
- d. Smoke developed: <25.
- e. Liquid Absorption, ISO 4586-2, for 1/2 inch material thickness: 0.4 percent after 2 hour period.
- f. Izod Impact, ASTM D 256, Method A: 0.3 foot pounds per inch.
- g. Tensile Modulus, ASTM D 638 Nominal: 1.2 million pounds per square inch.
- h. Thermal Expansion, ASTM D 696: 0.000018 inch per inch per degree F, maximum.
- i. Hardness, ASTM D 2583, Barcol Impressor: 57.
- j. Flexural Toughness, ASTM D 790: 3 (in.-lb./in³).
- k. Deflection Temperature under load, ASTM D 648: 90 degrees C.
- l. Stain Resistance, ANSI Z-124.3 Modified; 3.4: No effect.
- m. Boiling Water Resistance, NEMA LD 3-3.05: No effect.
- n. High Temperature Resistance, NEMA LD 3-3.06: No effect.
- o. Radiant Heat Resistance, NEMA LD 3-3.10: No effect.
- p. Light Resistance, NEMA LD 3-3.03: No effect.
- q. Ball Impact Resistance, NEMA LD 3-3.08, one half pound ball, unsupported: 125 inches.
- r. Specific Gravity (Density ASTM D792): 1.60 grams per cubic centimeter.
- s. Approximate weight: 4.20 pounds per square foot.
- t. Weatherability, ASTM D 2565: Pass.
- u. Fungus Resistance, ASTM G 21: Pass.
- v. Bacterial Resistance, ASTM G 22: Pass.
- w. Pittsburgh Protocol Toxicity: 66.9 grams.
- x. Patterns and Finishes: Selected from manufacturer's full range of available selections.

3. Solid Surface Integral Bowl & Backsplash

Provide integral bowl for sinks & backsplashes at restrooms.

4. Patterns & Finishes: Selected from manufacturer's full range of available selections.

Part 3 Execution

3.01 PREPARATION

- A. Condition wood materials to average prevailing humidity conditions in installation areas prior to installing.
- B. Back prime lumber for painted finish where indicated, or high relative humidity on the interior. Comply with requirements of Division 09 Section "Painting" for primers and their application.

3.02 INSTALLATIONS

- A. Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate work within minimum joints or optimum jointing arrangements, or which are of defective manufacturer with respect to surfaces, sizes or patterns.
- B. Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level countertops; and within 1/16" maximum offset in flush adjoining 1/8" maximum offsets in revealed adjoining surfaces.
- C. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.
- D. Standing and Running Trim: Install with minimum number of joints possible, using full length pieces (from maximum length of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners, to produce tight fitting joints with full surface contact throughout length of joint. Use scarf joints for end-to-end joints.
- E. Anchor finish carpentry work to anchorage devices or blocking built-in or directly attached to substrates. Secure grounds, stripping and blocking with countersunk, concealed fastener heads are required, use fine finishing nail for exposed nailings, countersunk and filled flush transparent as indicated.
- F. Install solid surface systems & corner guards in strict accordance with manufacturer's recommendation.

3.03 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

- A. Repair damaged and defective finish carpentry work wherever possible to eliminate defects functionally and visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean finish carpentry work on exposed and semi-exposed surfaces. Touch up pre-finished finishes to restore damaged or soiled areas.

- C. Refer to Division 09 Section "Painting" for final finishing of installed finish carpentry work.
- D. Protection: Installer of finish carpentry work shall advise Contractor of final protection and maintained conditions necessary to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION 06 20 00

07 20 00 – BUILDING INSULATION**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 DESCRIPTION OF WORK

- A. Extent of building insulation work is shown on the Drawings and indicated by the provisions of this Section.
- B. Applications of building insulation specified in this Section include the following:
 - 1. Concealed building insulation – faced batt insulation
- C. Sound attenuation, blankets shall be specified under Division 09 Section “Gypsum Board Assemblies”.

1.03 QUALITY ASSURANCE

- A. Thermal Conductivity: Thickness indicated are for thermal conductivity (k-value at 75-degrees F) specified for each material. Provide adjusted thickness as directed for equivalent use of material having a different thermal conductivity. Where insulation is identified by “R” value, provide thickness required to achieve indicated value.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer’s product specifications and installation instructions for each type of insulating and material required.

1.05 PRODUCT HANDLING

- A. General Protection: Protect insulations for physical damage.

Part 2 Products**2.01 MATERIALS**

- A. Available manufacturers :
 - a. Knauf Fiber Glass
 - b. Certain Teed Corporation
 - c. Owens Corning

- B. Faced ,Glass –Fiber Blanket Insulation: ASTM C665, Type III (blankets with reflective membrane facing, Class A (membrane –faced with a flame –spread index of 25 or less) ;

Part 3 Execution

3.01 INSPECTION AND PREPARATION

- A. Installer must examine substrates and conditions under which insulation work is to be performed, and must notify Contractor in writing of unsatisfactory conditions. Do not proceed with insulation work until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.02 INSTALLATION

- A. General:

1. Comply with manufacturer's instruction for particular conditions of installation in each case. If printed instructions are not available or do not apply to the Project conditions, consult with manufacturer's technical representative for specific recommendations before proceeding with work.
2. Extend insulation full thickness shown over entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections which interfere with placement.
3. Apply single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.

- B. General Building Insulation:

1. Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations.

3.03 PROTECTION

- A. General: Protect installed insulation from harmful weather exposures and from possible physical abuses, where possible by non-delayed installation of concealing work or, where that is not possible, by temporary covering or enclosure. Installed shall advise Contractor of exposure hazards, including possible sources of deterioration and fire hazards.

END OF SECTION 07 20 00

07 92 00 – JOINT SEALANTS

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.
- B. Refer to the Drawings for locations of work to be performed.

1.02 SUMMARY

- A. This Section includes joint sealants for the following applications, including those specified by reference to this Section:
 - 1. Interior joints in vertical surfaces and horizontal non-traffic surfaces.
 - 2. Interior joints in horizontal traffic surfaces

1.03 WORK INCLUDED

- A. Furnish labor and materials to complete caulking work indicated, as specified herein, or both, including but not limited to:
 - 1. Clean out and caulk and interior joints around door frames, and other wall openings with urethane base caulking.
 - 3. Caulk edges of gypsum board where it meets dissimilar material with urethane base caulking.
 - 4. Caulk joints between dissimilar materials.

1.04 PERFORMANCE REQUIREMENTS

- A. Provide elastomeric joint sealants that establish and maintain watertight and airtight continuous joint seals without staining or deteriorating joint substrates.
- B. Provide joint sealants for interior applications that establish and maintain airtight and water-resistant continuous joint seals without staining or deteriorating joint substrates.

1.05 SUBMITTALS

- A. Product Data: For each joint sealant product indicated.
- B. Samples: For each type and color of joint sealant required.

1. Color: As selected by Architect from manufacturer's full range.
2. Install 12" long sample of selected colors for approval prior to proceeding with caulking work.

- C. Preconstruction field test reports.
- D. Compatibility and adhesion test reports.
- E. Product certificates and test reports.

1.06 QUALITY ASSURANCE

- A. Preconstruction Compatibility and Adhesion Testing: Submit samples of materials that will contact or affect joint sealants to joint sealant manufacturers for testing according to manufacturer's standard test method to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
- B. Single Source: Joint sealants within each type to be one product from a single manufacturer.

1.07 DELIVERY AND STORAGE

- A. Deliver, store, and handle materials to prevent inclusion of foreign materials, damage of materials by water and breakage. Deliver and store packaged materials in original packages until ready for use. Do not use packages or materials showing evidence of water or other damage.

1.08 GUARANTEE

- A. Guarantee that specified work will be free from defects of materials, workmanship for one year from date of Substantial Completion.
- B. Repair and replace such defective work and other work damaged thereby, which becomes defective during guarantee term, without extra cost to the Owner.
- C. The following types of failures are considered defective work: leakage, hardening, cracking, crumbling, melting, shrinking or running of caulking; or staining of adjacent work joint sealant.

Part 2 Products

2.01 MATERIALS, GENERAL

- A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service

and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

C. Acrylic caulking materials are not acceptable.

2.02 MATERIALS

A. Bond Breaker Tape:

1. 3M's 470 or 481 tape, as applicable.

B. Joint Sealant Backing:

1. General:

a. Backer Rod: Resilient closed cell polyethylene foam backer rod designed for use with cold applied joint sealants.

b. Provide sealant backings of material and type that are non-staining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

2. Available Products:

a. Sonneborn Building Products: Sonofoam Backer Rod

b. Dow Chemical Company: Ethafoam

c. Tremco

3. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), O (open-cell material), B (bi-cellular material with a surface skin), or any of the preceding types, as approved in writing by joint sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

4. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.

C. Urethane Base Caulking (typical at interior and exterior joints):

1. One-component urethane non-sag grade sealant, including perimeter of gypsum board / hard surfaced ceilings.

2. Available Products:
 - a. Sonneborn Building Products: Sonolastic NP-1
 - b. Sika Corporation: Sikaflex 1A
 - c. Tremco, Inc.: Vulkem 921 or 931
3. Type: S (single component)
4. Grade: NS (nonsag)
5. Class: 25
6. Use Related to Exposure: NT (non-traffic)

2.04 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.
- C. Masking Tape: Non-staining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

Part 3 Execution

3.01 PREPARATION

- A. Preparation of surfaces, joint packing and application shall be by workers trained in preparation and application of materials proposed for use.
- B. Examine joints and areas to be sealed. Do not proceed until unsatisfactory conditions are corrected. Masonry, mortar joints and concrete shall be dry and fully cured in areas to be sealed.
- C. Surfaces to be sealed shall be clean, dry and dust free. Surface and air temperature shall be greater than 30-degrees F and less than-100 degrees F.
- D. Pack deep joints with back-up material specified. Shallow joints shall use non-bonding tape at bottom of joint. Joint shall be approximately 1/2 depth to width when ready for caulking. Generally, minimum depth shall be 1/4" and maximum depth 1/2", unless otherwise indicated.
- E. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants.

1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant.
 - a. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.
 2. Remove laitance and form-release agents from concrete.
 - a. Clean nonporous surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- F. Joint Priming: Prime joint substrates, where recommended in writing by joint sealant manufacturer, based on preconstruction joint sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint sealant bond; do not allow spillage or migration onto adjoining surfaces.
- G. Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.02 APPLICATION

- A. Prime surfaces and install materials in strict accordance with manufacturer's written directions. Backer rods shall be compression fit.
- B. Compound shall not adhere to back of joints.
- C. Gun sealant from bottom of joint to prevent air bubbles from forming below surface.

3.03 INSTALLATION

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 1. Do not leave gaps between ends of sealant backings.
 2. Do not stretch, twist, puncture, or tear sealant backings.

3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
 1. Place sealants so they directly contact and fully wet joint substrates.
 2. Completely fill recesses in each joint configuration.
 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- F. **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 sealant from surfaces adjacent to joints.
 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 3. Provide concave joint configuration per Figure 5A in ASTM C 1193, unless otherwise indicated.
- G. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.04 JOINTS

- A. Neatly point finish of caulking joints on flush surfaces with tool; remove excess material. Leave joints uniform and slightly concave.
- B. Neatly point finish of caulking joints in internal corners with coving tool; remove excess material.
- C. Caulking where exposed: Free of wrinkles and uniformly smooth. Make caulk joints watertight.
- D. While still sticky, apply sand to exterior control joints to match mortar joints in brick work.

3.05 CLEANING

- A. Immediately clean adjacent materials which have been soiled; leave work in neat, clean condition.

END OF SECTION 07 92 00

08 11 00 – STEEL DOORS AND FRAMES

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. Standard hollow metal frames

- B. Related Sections

- 1. Division 04 Section "Unit Masonry Assemblies" for embedding anchors for hollow metal work into masonry construction.
 - 2. Division 08 Section "Door Hardware" for door hardware for wood doors.
 - 3. Division 08 Section "Glazing" for glazing for hollow metal doors and hollow metal windows.
 - 4. Division 09 Section "Painting" for field painting hollow metal doors, frames and windows.

1.03 DEFINITIONS

- A. Minimum Thickness: Minimum thickness of base metal without coatings.
- B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, fire-resistance rating and finishes.
- B. Shop Drawings: Include the following:
 - 1. Elevations of each frame design.
 - 2. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
 - 3. Locations of reinforcement and preparations for hardware.
 - 4. Details of each different wall opening condition.
 - 5. Details of anchorages, joints, field splices, and connections.
 - 6. Details of accessories.

1.05 QUALITY ASSURANCE

- A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.
- B. Provide frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100 and as herein specified).

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use nonvented plastic.
 - 1. Provide additional protection to prevent damage to finish of factory-finished units.
- B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- C. Store hollow metal work under cover at Project Site. Place in a vertical position with heads up, spaced by blocking, on minimum 4-inch high wood blocking. Do not store in a manner that traps excess humidity.
 - 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation.

1.07 PROJECT CONDITIONS

- A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

1.08 COORDINATION

- A. Coordinate installation of anchorages for hollow metal frames. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors. Deliver such items to Project site in time for installation.

Part 2 Products**2.01 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Amweld Building Products, LLC.

2. Ceco Door Products; an Assa Abloy Group company.
3. Curries Company; an Assa Abloy Group company.
4. Fleming Door Products Ltd.; an Assa Abloy Group company.
5. Metal Products, Inc.
6. Steelcraft; an Ingersoll-Rand company.
7. Republic

2.02 MATERIALS

- A. Cold-Rolled Steel Sheet: ASTM A-1008 / A-1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- B. Hot-Rolled Steel Sheet: ASTM A-1011 / A-1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- C. Galvanized Steel Sheets: Zinc coated carbon steel sheets of commercial quality, complying with ASTM A-526, with ASTM A-525, G 60 zinc coating, mill phosphatized.
- D. Frame Anchors: ASTM A-591 / A-591M, Commercial Steel (CS), 40Z (12G) coating designation; mill phosphatized.
 1. For anchors built into exterior walls, steel sheet complying with ASTM A-1008 / A-1008M (cold-rolled) or ASTM A-1011 / A-1011M (hot-rolled), hot-dip galvanized according to ASTM A-153 / A-153M, Class B.
- E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A-153 / A-153M.
- F. Glazing: Comply with requirements in Division 08 Section "Glazing."
- G. Bituminous Coating: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 15-mil dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
- H. Finish Hardware Preparation:
 1. Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Builders Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A 115 series specification for door and frame preparation for hardware.
 2. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at Project Site.
 3. Locate finish hardware as shown on final shop drawings or, if not shown, in accordance with "Recommended Locations for Builder's Hardware," published by Door and Hardware Institute.
 4. All interior and exterior door frames shall be prepared to receive butts, closers and locksets.

2.03 STANDARD HOLLOW METAL FRAMES

- A. General: Comply with ANSI / SDI A250.8 and with details indicated for type and profile.
- B. Interior Frames: Fabricated from cold-rolled steel sheet.
 - 1. Fabricate frames with mitered or coped corners.
 - 2. Fabricate frames as face welded unless otherwise indicated.
 - 3. Frames for Level 2 Steel Doors: **16-gauge** thick steel sheet.
 - 4. Frames for Wood Doors: 16-gauge thick steel sheet.
 - 5. Frames for View Windows: 16-gauge thick steel sheet.
- 3. Hardware Reinforcement: Fabricate according to ANSI / SDI A250.6 with reinforcement plates from same material as frames.

2.04 FRAME ANCHORS

- A. Jamb Anchors:
 - 1. Stud-Wall Type: Designed to engage stud, welded to back of frames; not less than 0.042-inch thick.
- B. Floor Anchors: Formed from same material as frames, not less than 0.042-inch thick, and as follows:
 - 1. Monolithic Concrete Slabs: Clip-type anchors, with two holes to receive fasteners.

2.05 FABRICATION

- A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.
- B. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 100.
- C. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Welded Frames: Weld joints as noted in paragraph 2.04; grind, fill, dress, and make smooth, flush, and invisible.
 2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
 3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
 4. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
 5. Jamb Anchors: Provide number and spacing of anchors as follows:
 - b. Stud-Wall Type: Locate anchors not more than 18-inches from top and bottom of frame. Space anchors not more than 32-inches o.c. and as follows:
 - 1) Four anchors per jamb from 60 to 90-inches high.
 6. Door Silencers: Except on weather-stripped doors, drill stops to receive door silencers as follows. Keep holes clear during construction.
 - a. Single-Door Frames: Drill stop in strike jamb to receive three door silencers.
 - b. Double-Door Frames: Drill stop in head jamb to receive two door silencers.
- D. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.
- E. Hardware Preparation: Factory prepare hollow metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware Schedule and templates furnished as specified in Division 08 Section "Door Hardware."
1. Locate hardware as indicated, or if not indicated, according to ANSI / SDI A250.8.
 2. Reinforce doors and frames to receive non-templated, mortised and surface-mounted door hardware.
 3. Comply with applicable requirements in ANSI / SDI A250.6 and ANSI / DHI A115 Series specifications for preparation of hollow metal work for hardware.

2.06 STEEL FINISHES

- A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pretreating.
1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

Part 3 Execution

3.01 EXAMINATION

- A. Examine substrates, 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 embedded and built-in anchors to verify actual locations before frame installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
 - 1. Squareness: Plus or minus 1/16-inch, measured at door rabbet on a line 90-degrees F from jamb perpendicular to frame head.
 - 2. Alignment: Plus or minus 1/16-inch, measured at jambs on a horizontal line parallel to plane of wall.
 - 3. Twist: Plus or minus 1/16-inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - 4. Plumbness: Plus or minus 1/16-inch, measured at jambs on a perpendicular line from head to floor.
- C. Drill and tap doors and frames to receive non-templated, mortised, and surface-mounted door hardware.

3.03 INSTALLATION

- A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- B. Placing Frames:
 - 1. Comply with provisions of SDI-105 "Recommended Erection Instructions For Steel Frames", unless otherwise indicated.
 - 2. Except for frames located at in-place concrete or masonry and at drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.

3. In masonry construction, locate (3) wall anchors per jamb at hinge and strike levels. Building-in of anchors and grouting of frames is specified in Division 04 Sections.
 4. At in-place concrete or masonry construction, set frames and secure to adjacent construction with machine screws and masonry anchorage devices. Grout all frames solid.
- C. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI / SDI A250.11.
1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - b. Install frames with removable glazing stops located on secure side of opening.
 - c. Install door silencers in frames before grouting.
 - d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - e. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - f. Field apply bituminous coating to backs of frames that are filled with grout containing anti-freezing agents.
 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on Shop Drawings.
 3. Metal-Stud Partitions: Solidly pack mineral-fiber insulation behind frames.
 4. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16-inch, measured at door rabbet on a line 90-degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16-inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16-inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16-inch, measured at jambs at floor.

3.04 ADJUSTING AND CLEANING

- A. Final Adjustments: Check and readjust operating finish hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- B. Remove grout and other bonding material from hollow metal work immediately after installation.
- C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- D. Galvanized Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 08 11 00

08 14 16 – WOOD DOORS

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. Solid-core doors with wood-veneer faces.
 - 2. Factory finishing wood doors.
 - 3. Factory fitting wood doors and factory machining for hardware.

1.03 SUBMITTALS

- A. Product Data: For each type of door indicated. Include details of core and edge construction and trim for openings. Include factory-finishing specifications.
- B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details not covered in Product Data; location and extent of hardware blocking; and other pertinent data.
 - 1. Indicate dimensions and locations of mortises and/or holes for hardware.
 - 2. Indicate dimensions and locations of cutouts.
 - 3. Indicate requirements for veneer matching.
 - 4. Indicate doors to be factory finished and finish requirements.
 - 5. Indicate fire-protection ratings for fire-rated doors.
- C. Samples for Verification:
 - 1. Factory finishes applied to actual door face materials, approximately 8 by 10-inches, for each material and finish. For each wood species and transparent finish, provide set of three samples showing typical range of color and grain to be expected in the finished work.
 - 2. Corner sections of doors, approximately 8 by 10-inches, with door faces and edges representing actual materials to be used.
 - a. Provide samples for each species of veneer and solid lumber required.
 - 3. Metal frames for lite openings are specified in Division 08 Section "Standard Steel Doors and Frames" and installed in this Section.
- D. Warranty: Sample of special warranty.

1.04 QUALITY ASSURANCE

- A. Source Limitations: Obtain flush wood doors from single manufacturer.
- B. Quality Standard: In addition to requirements specified, comply with WDMA I.S.1-A, "Architectural Wood Flush Doors."

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Comply with requirements of referenced standard and manufacturer's written instructions.
- B. Package doors individually in plastic bags or cardboard cartons.
- C. Mark each door on top and bottom rail with opening number used on Shop Drawings.

1.06 PROJECT CONDITIONS

- A. Environmental Limitations: Do not deliver or install doors until spaces are enclosed and weathertight, wet work in spaces is complete and dry, and HVAC system is operating and maintaining ambient temperature and humidity conditions at occupancy levels during the remainder of the construction period.

1.07 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace doors that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Warping (bow, cup, or twist) more than 1/4-inch in a 42-by-84-inch section.
 - b. Telegraphing of core construction in face veneers exceeding 0.01-inch in a 3-inch span.
 - 2. Warranty shall also include installation and finishing that may be required due to repair or replacement of defective doors.
 - 3. Warranty Period for Solid-Core Interior Doors: Life of installation.

Part 2 Products**2.01 MANUFACTURERS**

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:

1. Algoma Hardwoods, Inc.
2. Eggers Industries.
3. Graham
4. Marshfield Door Systems, Inc.
5. Mohawk Flush Doors, Inc.; a Masonite company.
6. Ohio Valley Doors
7. Oshkosh Architectural Door Company.

2.02 DOOR CONSTRUCTION, GENERAL

A. WDMA I.S.1-A Performance Grade:

1. Extra Heavy Duty:

B. General: Provide wood doors complying with applicable requirements of referenced standards for kinds and types of doors indicated and as specified.

1. Face Panels: Manufacturer's standard 2-ply hot pressed face panels, unless otherwise indicated.
2. Exposed Surfaces: Provide kind shown or scheduled and as further specified. Provide same exposed surface materials on both faces of each door, unless otherwise indicated.

C. Structural Composite Lumber Core Doors:

1. Structural Composite Lumber: WDMA I.S.10.
 - a. Screw Withdrawal, Face: 700 lbf .
 - b. Screw Withdrawal, Edge: 400 lbf.
 - c. 5-inch top-rail blocking.
 - d. 5-inch bottom-rail blocking, in doors indicated to have protection plates.
 - e. 2-1/2" side rail blocking (minimum), both sides.
2. Edge Construction: At edge stiles, provide minimum 1/4" solid wood construction (to match face veneer) with improved screw-holding capability and split resistance. Comply with specified requirements for exposed edges.

2.03 VENEERED-FACED DOORS FOR TRANSPARENT FINISH

A. Interior Solid-Core Doors:

1. Grade: Premium, with Grade A faces.
2. Species: Red Oak
3. Cut: Rotary Cut
4. Match between Veneer Leaves: Book match.
5. Assembly of Veneer Leaves on Door Faces: Balance match.

6. Pair and Set Match: Provide for doors hung in same opening or separated only by mullions.
7. Exposed Vertical Edges: Same species as faces or a compatible species.
8. Core Structural Composite Lumber.
9. Construction: Five plies. Stiles and rails are bonded to core, then entire unit abrasive planed before veneering.

2.05 FABRICATION

- A. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting unless otherwise indicated.
 1. Comply with requirements in NFPA 80 for fire-rated doors.
- B. Factory machine doors for hardware that is not surface applied. Locate hardware to comply with DHI-WDHS-3. Comply with final hardware schedules, door frame Shop Drawings, DHI A115-W series standards, and hardware templates.
 1. Field measure locations where new doors are installed in existing frames for correct hardware placement.
- C. Openings: Cut and trim openings through doors in factory.
 1. Metal Lite Openings: Cut openings with the profile indicated.
 2. Glazing: Field install glazing in doors indicated to be factory finished. Comply with applicable requirements in Division 08 Section "Glazing."

2.06 FACTORY FINISHING

- A. General: Comply with referenced quality standard for factory finishing. Complete fabrication, including fitting doors for openings and machining for hardware that is not surface applied, before finishing.
 1. Finish faces, all four edges, edges of cutouts, and mortises. Stains and fillers may be omitted on top and bottom edges, edges of cutouts, and mortises but top and bottom edges may not be left raw/rough.
- B. Finish doors at factory.
 1. Stain color of new doors to match existing doors. Selection to be provided once sample refinished doors are review and approved.
- C. Transparent Finish:
 1. Grade: Premium.
 2. Finish: WDMA TR-6 catalyzed polyurethane.
 3. Staining: to match existing doors..
 4. Effect: Semi-filled finish, produced by applying an additional finish coat to partially fill the wood pores.

5. Sheen: Semi-gloss.

Part 3 Execution

3.01 EXAMINATION

- A. Examine doors and installed door / frames before hanging doors.
 1. Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with level heads and plumb jambs.
 2. Reject doors with defects.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

- A. Hardware: For installation, see Division 08 Section "Door Hardware."
- B. Installation Instructions: Install doors to comply with manufacturer's written instructions and the referenced quality standard, and as indicated.
- C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
- D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.
- E. Clearance: For non-rated doors, provide clearances of 1/8" at jambs and heads; 1/8" at meeting stiles for pairs of doors; and 1/2" from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide clearance from bottom of door to top of threshold.
 1. For rated doors, comply with NFPA requirements.

3.03 ADJUSTING

- A. Operation: Re-hang or replace doors that do not swing or operate freely.
- B. Finished Doors: Replace doors that are damaged or that do not comply with requirements. Doors may be repaired or refinished if work complies with requirements and shows no evidence of repair or refinishing.

END OF SECTION 08 14 16

08 71 00 – DOOR HARDWARE

Part 1 General

1.01 SUMMARY

A. Section Includes:

1. Furnish, deliver and install hardware for hollow metal and flush wood swinging doors.

B. Related Sections

1. Hollow Metal Doors and Frames
2. Flush Wood Doors

C. Allowances - Allowances are not applicable to the work described in this section.

1.02 REFERENCES

- A. ANSI A117.1 - 1992 Accessible and Usable Buildings and Facilities
- B. ANSI/BHMA A156.18 Standard for Materials and Finishes - 2000
- C. DHI Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames - 1994
- D. DHI Recommended Locations for Architectural Hardware for Wood Flush Doors - 1993
- E. DHI Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames - 1996
- F. DHI Sequence and Format for the Hardware Schedule - 1993
- G. Kentucky Building Code - 2013
- H. NFPA 80 Fire Doors and Windows
- I. NFPA 101 Life Safety Code

1.03 SUBMITTALS

- A. Schedules - Submit (6) complete vertical hardware schedules as modeled in DHI Sequence and Format for the Hardware Schedule, 1993. Include shop drawings of other work affected by builders hardware and other information essential to the coordinated review of hardware schedule. Include cross-reference from Hardware Sets to indications on Drawings both on floor plans and door and frame schedule. Include:

1. Type, style, function, size and finish of each item.
2. Fastenings and other pertinent information.
3. Explanation of all abbreviations, symbols, codes, etc., contained in schedule.
4. Mounting locations for hardware.
5. Door and frame sizes and materials.
6. Keying information.
7. Name and manufacturer of each item.

8. Notes in the specification hardware sets transcribed verbatim into submittal hardware sets.

Obtain architect's approval of schedule before delivering hardware to job. Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

- C. Product Data - Submit (6) copies of catalog data sheets for all items specified in this section.
- D. Samples - Provide (3) hinges of each weight, size and finish as follows:
1. Standard Weight, 4.5 x 4.0, 630
 2. Standard Weight, 4.5 x 4.0, 652
 3. Heavy Weight, 5.0 x 4.5, 630
 4. Heavy Weight, 5.0 x 4.5, 652
- E. Templates - The hardware supplier shall promptly furnish templates and approved hardware schedules to all manufacturers of doors and frames.
- F. Operations and Maintenance Data - Furnish one 3-ring binder labeled with project name, completion date, and "Door Hardware", complete with keying and hardware schedules and manufacturer's catalog sheets, installation instructions, and templates for each specified item.

1.04 QUALITY ASSURANCE

- A. Substitutes - No substitutes allowed other than acceptable equals shown in this section due to building and district-wide standardization.
- B. Single-source Manufacturer – Obtain each type of hardware (locks, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.
- C. Supplier Qualifications - The supplier must employ a certified Architectural Hardware Consultant or a person with equivalent qualifications to supervise the furnishing and scheduling of hardware and who is available, at reasonable times during the course of the work, for consultation about project's hardware requirements, to Owner, Architect, and Contractor. Supplier is responsible for providing hardware suitable for proper door function and to meet the requirements of applicable codes and of the authority having jurisdiction. Supplier shall bring any discrepancies between what is specified and what is acceptable to the authority having jurisdiction to the attention of the architect at least ten days before the bid date, so that an addendum may be issued.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Marking and Packaging - Deliver hardware to the job-site in original manufacturer's packages with installation instructions. Tag or mark each item to correspond with

approved hardware schedules. Similarly, when necessary, deliver hardware to aluminum door and frame suppliers so as not to delay project completion.

- B. Delivery - Deliver hardware to the job-site from the same location and on the same day. Drop shipping is not acceptable.
- C. Storage - Furnish a clean and dry room under lock and key with shelving adequate for the protection, organization, and storage of hardware. Utilize room solely for this purpose from the time of delivery until installation. Control handling and installation of hardware items, which are not immediately replaceable, so that the completion of the work will not be delayed by the hardware losses, both before and after installation.

1.06 WARRANTY

- A. Allowable equals must have warranty equal or longer than the warranty of specified items; if aforesaid warranty is not published, furnish copy of amended warranty signed by president of manufacturer.

1.07 MAINTENANCE

- A. Maintenance Service - No maintenance contracts required for items in this section.
- B. Extra Materials – None required.
- C. Tools – Furnish a complete set of specialized tools and maintenance instructions needed for Owner's continued adjustment, maintenance, and removal and replacements of door hardware.

Part 2 Products

2.01 MANUFACTURERS - The following companies manufacturer products which are used as the basis of design in the 3.07 section hardware sets for purposes of establishing minimum requirements. Provide either the product designated, or, where more than one manufacturer is listed in the particular product section, the comparable product of one of the other manufacturers which comply with requirements including those specified elsewhere in this section.

- | | |
|-----------------------|-------------------|
| A. Hinges | Hagar (Hag) |
| B. Closers | LCN Closers (LCN) |
| C. Miscellaneous Trim | Trimco (TRI) |

2.02 MATERIALS - Furnish items whose model numbers are listed in this section, or furnish products of the same quality, size, weight, function, materials, aesthetic appeal, durability, sturdiness and warranty manufactured only by acceptable manufacturers as specified in this section.

- A. Fasteners - On wood doors where hardwood, structural composite material, or fire door blocking are not available for the full depth penetration of all of the attachment screws of a particular hardware item, furnish sex bolts for that item. Otherwise, provide Phillips flathead screws except as otherwise specified. Finish exposed screws to match the hardware finish or, if exposed in surfaces of other work, to

match the finish of such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.

B. Hinges

1. Interior Doors:

- a. Furnish (5) knuckle full mortise ball-bearing button tip template hinges manufactured by Bommer, Ives, McKinney or PBB.
- b. Interior: non-rising pins. Exterior reverse-bevel: non-removable pins.
- c. Quantity:
 - 1) (2) hinges - Doors less than 60" high
 - 2) (3) hinges - Doors 60 - 90" high
 - 3) (4) hinges - Doors 90 - 120" high
- d. Height, Width, and Weight
 - 1) Furnish 5" high heavyweight hinges for doors 3'6" or more in width or with exit devices. Furnish 4-1/2" high standard weight hinges for balance of doors without exit devices.
 - 2) Furnish 4" wide butt hinges unless proper clearance to achieve full degree of opening requires a different type or width.
- e. Base Metal
 - 1) Stainless Steel – Exterior doors, in-swinging restroom doors, and doors potentially contacting corrosive fumes, steam or liquids.
 - 2) Steel – balance of doors

C. Door Closers

1. Furnish LCN* 4040XP series closers. Acceptable equals: Stanley D-4550 series, Corbin-Russwin DC8000 series.
2. Furnish closers able to be mounted for proper clearance and function. Closers shall not mount exposed to exterior elements or on the corridor side of doors, except where specified in HW sets. Provide heavy-duty double forged arms with closers except for in-swinging exterior doors.
3. Furnish spacers so that (5) screws minimum can properly secure heavy duty parallel arm brackets to hollow metal headers. Spacer finish to match closer finish or adjoining substrate.
4. Provide drop plates, mounting brackets, etc., as required for proper mounting of closers.
5. Closers shall have 1-1/2" minimum diameter cast iron or R14 cylinders, be non-handed, multi-sized, and have ten year warranties.

D. Protective Plates

1. Furnish kick plates on the push side of doors with closers swinging out of areas accessible to non-maintenance personnel. Kick plates shall be 300 series

- stainless steel, .050" thick, 8" high, 2" less door width, and beveled (4) sides.
2. Furnish mop plates on the pull side of in-swinging restroom or kitchen doors. Mop plates shall be 300 series stainless steel, .050" thick, 4" high, 1" less door width, and beveled (4) sides.
 3. Furnish armor plates on the push side of out-swinging exterior kitchen doors. Armor plates shall be 300 series stainless steel, .050" thick, 36" high, 2" less door width, and beveled (4) sides unless otherwise noted.
 4. Acceptable manufacturers: Trimco, Rockwood, Ives.
- E. Door Stops and Holders - Furnish stops wherever necessary to prevent door or hardware from striking a partition or obstruction.
1. Overhead Stops – Acceptable manufacturers: Glynn-Johnson, ABH.
 2. Wall Stops - Furnish cast brass or bronze stops with concave rubber inserts with imbedded steel washer to clamp rubber to wall. Furnish fasteners appropriate for wall condition. Acceptable products: Trimco 1270CV. Acceptable manufacturers: Ives, Rockwood, Hiawatha, Burns.
 3. Wall Stop/Holders shall be heavy cast bronze with adjustable holding force designed to accommodate multiple degrees of hold open and up to 1/4" of door sag, equal to Trimco 1283-6S. Acceptable equals: none.

2.03 FINISHES

- A. Furnish items of finish and base metal for all significant surfaces in compliance with ANSI/BHMA A156.18, 2000 as follows:
1. 626 – Push / Pulls
 2. 627 – Thresholds
 3. 652 - Hinges as specified
 4. 689 – Closers, angle brackets, spacer blocks, mullions

Part 3 Execution

- 3.01 **EXAMINATION** - Examine doors, frames, and hardware for conditions preventing the proper function of the opening. Correct problems.

3.02 INSTALLATION

- A. Perform work by a craftsman skilled and experienced in the installation of finish hardware. Mortise items flush with door or frame surface. Apply hardware only after painting is finished. Exactly follow manufacturer's instructions.
- B. Hardware locations.
1. Install surface mounted items as directed by DHI Recommended Locations for Builders Hardware for Custom Steel Doors and Frames, 1996, DHI Recommended Locations for Architectural Hardware for Standard Steel Doors

and Frames - 1994, or DHI Recommended Locations for Architectural Hardware for Wood Flush Doors.

3.03 FIELD QUALITY CONTROL - After the installation of hardware is complete, furnish the architect with a complete report signed by a certified Architectural Hardware Consultant or a person with equivalent qualifications, detailing his/her inspection of all hardware items for proper application, function, and code compliance.

3.04 ADJUSTING AND CLEANING

- A. Adjust closers for proper latch and closing speeds, spring power, backcheck, and delayed action.
- B. Adjust hardware for proper latching, locking, and closing.
- C. At final completion, leave hardware free from dirt, paint, scratches, dents or imperfections in the appearance of significant surfaces.
- D. Clean adjacent surfaces soiled by hardware installation.

3.05 PROTECTION - After hardware is installed, cover exposed hardware surfaces to prevent scratching, tarnishing or other damage. Leave hardware covered until building is ready for final inspection.

Refer to drawing sheet A1.1 for required hardware.

END OF SECTION 08 71 00

09 29 00 – GYPSUM BOARD ASSEMBLIES**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.
- B. Refer to the Drawings for locations of work to be performed.

1.02 SUMMARY

- A. Section includes:
 - 1. Metal stud wall framing.
 - 2. Gypsum board & joint treatment.
 - 3. Acoustical insulation

1.03 PERFORMANCE REQUIREMENTS

- A. Stud Selection: Select stud thickness so unbraced span does not exceed heights permitted by the Steel Stud Manufacturers Associations (SSMA) with maximum deflection of 1/360 for 5 psf uniform load.

1.04 SUBMITTALS

- A. Shop Drawings:
 - 1. Indicate details associated with suspended ceilings.
- B. Product Data:
 - 1. Submit data on metal framing, gypsum board, joint tape; and acoustic accessories.
 - 2. Indicate maximum unbraced height permitted for each stud gauge and yield strength.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with the following Gypsum Association reference standards:
 - 1. GA-214 - Recommended Specification: Levels of Gypsum Board Finish.
 - 2. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

1.06 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 documented experience.

Part 2 Products

2.01 GYPSUM BOARD ASSEMBLIES

- A. Metal Framing Manufacturers:
 - 1. Current member of SSMA.
- B. Available Gypsum Board and Joint Treatment Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Georgia Pacific
 - 2. Lafarge North America
 - 3. National Gypsum
 - 4. United States Gypsum Company

2.02 INTERIOR GYPSUM BOARD

- A. Comply with ASTM C-36 / C-36M or ASTM C-1396 / C-1396M, as applicable to type of gypsum board indicated and whichever is more stringent.
- B. General Use, High Impact applications: **below ceiling**
 - 1. Basis-of-Design Product: National Gypsum Hi-Impact XP Wallboard system or a comparable product by one of the manufacturers listed above. ASTM C-36, manufactured to produce greater resistance to surface indentation and through penetration than standard gypsum panels.
 - 2. Available Manufacturers: Subject to compliance with requirements, provide the basis of design product or a comparable product by one of the Available Manufacturers listed in the Gypsum Board Assemblies Article above.
 - 3. Thickness: 5/8-inch.
 - 4. Long Edges: Tapered and featured (rounded or beveled) for prefilling.
 - 5. Additional applicable testing for impact-resistant material:

- a. Surface Abrasion – Modified ASTM D-4977 – Mean Depth of Abrasion: 0.015”.
- b. Surface Indentation Resistance – Modified ASTM D-5420: Mean Depth of Abrasion: 0.114”.
- c. Single Drop Soft Body Impact Test – Modified ASTM E-695 – ft/lbs required to penetrate: equal/greater than 540.
- d. Progressive Soft Body Impact Test – Modified ASTM E-695 – ft/lbs required to penetrate: equal/greater than 420.
- e. Hard Body Impact Test – Ft/lbs required to penetrate: equal/greater than 160.

C. Low-impact application: **above ceiling**

1. Type X
2. Thickness: 5/8-inch.
3. Long Edges: Tapered and featured (rounded or beveled) for pre-filling.

2.03 FRAMING MATERIALS

- A. Studs and Tracks: ASTM C-645; galvanized sheet steel, size as indicated on Drawings, 'C' shape with the following minimum base metal thicknesses:
 1. Studs: Minimum 20-gauge / 33 mils, yield stress, $F_y = 33$ ksi.
 2. Studs and tracks with thicknesses equivalent to those specified are permitted, provided structural properties meet or exceed properties of studs with specified thickness.
- B. Deep Leg Deflection Track: ASTM C-645 top runner with 2-1/2” or greater deep flanges, 30 mils, 20-gauge, 33 ksi.
- C. Furring, Framing and Accessories: ASTM C-645.
- D. Fasteners for Framing: ASTM C-1513.
- E. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.

2.05 ACCESSORIES

- A. Acoustic Insulation: ASTM C-665, Type I, unfaced semi rigid mineral fiber or fiberglass batt type, thickness indicated on Drawings, friction fit, with maximum flame/smoke properties of 25/450 in accordance with ASTM E-84.
- B. Metal Trim: ASTM C-1047; hot-dipped galvanized steel; with or without paper facing.
 1. Corner beads.
 2. Edge Beads: Profile to suit application.
 3. Expansion joints.

C. Joint Materials:

1. Gypsum Board: ASTM C-475 / C-475M; reinforcing tape, joint compound, and water.

D. Fasteners for Gypsum Board:

1. Metal Framing 33-mils Thick and Less: ASTM C-1002, Type S.
2. Metal Framing Greater than 33-mils Thick: ASTM C-954.

Part 3 Execution

3.01 EXAMINATION

- A. Verify that site conditions are ready to receive work and opening dimensions are as indicated on Drawings.

3.02 INSTALLATION

A. Metal Stud Framing Installation:

1. Install framing studs in accordance with GA-216 and GA-600.
2. Framing Spacing: 16"o.c.
3. Extend studs minimum 6-inches above ceilings, unless otherwise specified or otherwise indicated on Drawings.
 - a. Laterally brace studs within 3-inches of top track.
 - b. Do not attach metal stud runner track to the metal roof deck. Provide support from structural members only.
4. Extend stud framing through the ceiling to the structure above for partitions.
 - a. Provide deep leg deflection track as top runner.
 - b. Maintain clearance under structural building members to avoid deflection transfer to studs.
 - c. Laterally brace studs within 12-inches of top track.
 - d. Do not fasten studs to top track.
5. Door Opening Framing: Install a pair of 16-gauge studs at door frame jambs. Install stud tracks on each side of opening, at frame head height, and between studs and adjacent studs.
6. Blocking: Bolt or screw steel channels to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, hardware, handrails, grab bars, and other fittings and fixtures supported by gypsum board partitions.

B. Acoustic Accessories Installation:

1. Comply with ASTM C-919 and manufacturer's instructions to achieve STC ratings indicated on Drawings.
2. Place acoustic insulation in partitions tight within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and tight to items passing through partitions.
3. Close off sound flanking paths around or through gypsum board assemblies including sealing partitions above acoustic ceilings.

C. Gypsum Board Installation:

1. Install gypsum board in accordance with GA-216 and GA-600.
2. Erect single layer gypsum board vertically, with edges occurring over firm bearing.
3. Use screws when fastening gypsum board to metal furring or framing.
4. Place control joints consistent with lines of building spaces as indicated and at the following spacing when not indicated:
 - a. Maximum Length Between Control Joints: 30- feet.
 - b. Maximum Ceiling Area Contained Between Control Joints: 900 sf.
 - c. At corners of door heads.
5. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials and locations as indicated.

F. Joint Treatment:

1. Finish in accordance with the following GA-214 Levels:
 - a. Level 1: None.
 - b. Level 2: Wall surfaces above finished ceilings, concealed from view.
 - c. Level 3: None.
 - d. Level 4: None.
 - e. Level 5: Wall surfaces exposed to view.
2. Joints Exposed to View: Feather coats on to adjoining surfaces so that camber is maximum 1/32-inch.

3.03 ERECTION TOLERANCES

- A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8-inch in 10 feet in any direction.

END OF SECTION 09 29 00

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.
- B. Refer to the Drawings for locations of work to be performed.

1.02 DEFINITIONS

- A. Tile includes ceramic surfacing units made from clay or other ceramic materials. The types of work of this Section include:
 - 1. Ceramic Tile Floor & Base

1.03 QUALITY ASSURANCE

- A. Tile Manufacturing Standard: TCA 137.1. Furnish tile complying with Standard Grade requirements, unless otherwise indicated.
- B. Proprietary Materials: Handle, store, mix and apply proprietary setting and grouting materials in compliance with manufacturer's instructions.
 - 1. Provide materials obtained from one source for each type of color of tile, grout and setting material.

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical information and installation instructions for materials required, except bulk materials. Include certifications and other data to show compliance with these Specifications.
- B. Samples:
 - 1. For initial selection of colors, submit manufacturer's color charts consisting of actual tiles or sections of tiles showing full range of colors available, for each type of tile specified. Include samples of grout and accessories requiring color selection.

1.05 PRODUCT HANDLING

- A. Deliver packaged materials and store in original containers with seals unbroken and labels intact until tie of use, in accordance with manufacturer's instructions.

1.06 JOB CONDITIONS

- A. Maintain environmental conditions and protect work during and after installation in accordance with referenced standards and manufacturer's printed recommendations.

Part 2 Products

2.01 TILE PRODUCTS

- A. Ceramic Tile Floor : 2" x 2" pattern to match tile in existing Toilet Rooms & base same height as in existing Toilet Rooms with bullnose top (with cove), matte finish units.
 - 1. Manufacturers:
 - a. Dal-Tile Corp.
 - b. American Olean Tile Co.
 - c. United States Ceramic Tile Co.
 - 2. Type: Natural clay units with water absorption not exceeding 3%.
 - 3. Color: As selected by Architect from full range.
- B. Trim and Special Shapes: Rounded external corners and trim shapes, of same material and finish as base.
- C. Threshold : Marble threshold – 6" wide x opening size x 5 /8" single bevel where tile floor abuts resilient floor.

2.02 MORTAR AND GROUT

- A. Thin-Set Cement Mortar (for ceramic tile): latex modified portland cement mortar; ANSI A-118.4.
- B. Thick-Set Cement Mortar (for quarry tile): ANSI A-108.1.
- C. Latex-Portland Cement Grout: Proprietary compound composed of portland cement with latex additive for a more flexible and less permeable grout. Color as selected by Architect from manufacturer's standard colors.
 - 1. Provide product with latex additive which is compatible with latex additive in latex-portland cement mortar.
 - 2. Products offered by manufacturers to comply with requirements, include the following:
 - a. Latex Modified Floor Grout: L&M-Surco Mfg., Inc.
 - b. Laticrete Dry Bond: Laticrete International, Inc.
 - c. Custom Building Products

2.03 MISCELLANEOUS MATERIALS

- A. Temporary Protective Coating: Either product indicated below that is formulated to protect exposed surfaces of tile against adherence of mortar and grout; compatible with tile, mortar and grout products; or easily removable after grouting is completed without damaging grout or tile.
 - 1. Petroleum paraffin wax, fully refined and odorless, containing at least 0.5 percent oil with a melting point of 120 to 140 degrees F per ASTM D-87.
 - 2. Grout release in form of manufacturer's standard proprietary liquid coating that is specially formulated and recommended for use as temporary protective coating for tile.
- B. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specially approved for materials and installations indicated by tile and grout manufacturers.
- C. Grout Sealer: Manufacturer's standard silicone product for sealing grout joints that does not change color or appearance of grout.
 - 1. Products:
 - a. MAPEI Corp.; KER 004, Keraseal Penetrating Sealer for unglazed grout and tile
 - b. W.R. Bonsal Company; Grout Sealer
 - c. Bostik; CermaSeal Grout Sealer
 - d. C-Cure; Penetrating Sealer 978

Part 3 Execution

3.01 INSPECTION

- A. Examine surfaces to receive tile work and conditions under which tile will be installed. Do not proceed with tile work until surfaces and conditions comply with requirements indicated in referenced tile installation standard.

3.02 INSTALLATION, GENERAL

- A. ANSI Tile Standard: Comply with applicable parts of ANSI 108 series of tile installation standards included under "American National Standard for the Installation of Ceramic Tile".
- B. TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation", comply with TCA installation methods indicated or, if not otherwise indicated, as applicable to installation conditions shown.

- C. Extend tile work into recess under or behind equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disrupting pattern or joint alignments. Lay-out room so as not to have cuts less than half a tile.
- D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures and other penetrations so that plates, collars, or covers overlap tile.
- E. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base and trim are same size. Lay-out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joints widths, unless otherwise shown.
- F. Expansion Joints: Locate expansion joints and other sealant filled joints, including control, contraction and isolation joints, where indicated, or if not indicated, at spacing and location recommended in TCA "Handbook for Ceramic Tile Installation", and approved by Architect.
- G. Grout tile to comply with referenced installation standards, using grout materials indicated.
 - 1. Mix and install proprietary components to comply with grout manufacturer's directions.

3.03 FLOOR INSTALLATION METHOD

- A. Ceramic : Install tile to comply with requirements indicated below for setting bed methods, TCA installation methods related to types of subfloor construction and grout types:
 - 1. Thick Set-Portland Cement Mortar: ANSI A-108.1
 - a. Bond Coat: Portland cement paste on plastic bed; or thin-set portland cement on cured bed, ANSI A-108.5, at Contractor's option.
 - b. Concrete Subfloors, Interior: TCA F121
 - c. Grout: Latex-Portland Cement
 - d. Waterproofing and Antifracture Membrane:
 - 1) Laticrete International - No. 9235
 - 2) Mapro - PRP 315
 - 3) Mer-Kote Products - BFP Membrane

3.05 CLEANING AND PROTECTION

- A. Cleaning: Upon completion of placement and grouting, clean all tile surfaces so they are free of foreign matter.

1. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but not sooner than (14) days after installation. Protect metal surfaces, cast and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
- B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, or otherwise defective work.
- C. Sealer for Grout: Apply sealer to cementitious grout joints according to grout sealer manufacturer written instructions. As soon as grout sealer has penetrated grout joints, remove excess sealer that has gotten on tile faces by wiping with soft cloth.
- D. Protection: When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with "Kraft" paper or other heavy covering during construction period to prevent damage and wear.
1. Prohibit foot and wheel traffic from using tiled floors for at least three days after grouting is completed.
 2. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

3.06 MAINTENANCE STOCK

- A. Provide (1) unopened and any partial boxes of ceramic tile base to Owner at completion of the Project.

END OF SECTION 09 30 00

09 51 13 – ACOUSTICAL LAY-IN CEILINGS

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.
- B. Refer to the drawings for locations of work to be performed.

1.02 SUMMARY

- A. This Section includes acoustical panels and exposed suspension systems for ceilings. The scope of work is rework of existing systems where walls have been removed & complete new systems in new toilet rooms & adjacent alcove.

1.03 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each exposed finish.
- C. Product test reports.
- D. Maintenance data.

1.04 QUALITY ASSURANCE

- A. Acoustical Testing Agency Qualifications: An independent testing laboratory or an NVLAP-accredited laboratory.
- B. Fire-Test-Response Characteristics:
 - 1. Surface-Burning Characteristics: Acoustical panels complying with ASTM E-1264 for Class A materials, when tested per ASTM E-84.
 - a. Smoke-Developed Index: 450 or less.

Part 2 Products

2.01 ACOUSTICAL LAY-IN CEILINGS, GENERAL

- A. Acoustical Panel Standard: Comply with ASTM E-1264.
- B. Metal Suspension System Standard: Comply with ASTM C-635.

- C. Attachment Devices: Size for five times the design load indicated in ASTM C-635, Table 1, "Direct Hung," unless otherwise indicated. Comply with seismic design requirements.
- D. Wire Hangers, Braces, and Ties: Zinc-coated carbon-steel wire; ASTM A-641 / A-641M, Class 1 zinc coating, soft temper.
 - 1. Size: Select wire diameter so its stress at 3 times hanger design load (ASTM C-635, Table 1, "Direct Hung") will be less than yield stress of wire, but provide not less than 9-gauge diameter wire.
- E. Metal Edge Moldings and Trim: Type and profile indicated or, if not indicated, manufacturer's standard moldings for edges and penetrations that comply with seismic design requirements; formed from sheet metal of same material, finish, and color as that used for exposed flanges of suspension system runners.

2.02 ACOUSTICAL PANELS FOR ACOUSTICAL LAY-IN CEILINGS

- A. **Type I:** acoustical tile ceiling panel (2x4):
 - 1. Available manufacturers: USG Interiors, Inc., Auratone "Radar Climaplus", water-felted mineral-fiber ceiling panel unit, or approved equal as manufactured by the following in the NEW ceiling areas. Match existing panel unit in the rework ceiling areas.
 - a. Armstrong
 - b. Celotex
 - 2. Color: white
 - 3. Size: nominal 2" x 4" x 5/8" thick
 - 4. Square cut edge

2.03 METAL SUSPENSION SYSTEM FOR ACOUSTICAL LAY-IN CEILINGS

- A. Product: Subject to compliance with requirements, provide USG Interiors LLC or a comparable product by one of the following:
 - 1. Armstrong
 - 2. Chicago Metallic Corporation
 - 3. Donn
- B. Exposed Grid System: 15/16-inch DX, low-gloss, double-web, rotary stitched, inverted tee, non-fire rated, main and cross runners roll formed from cold-rolled steel sheet, pre-painted, electrolytically zinc coated, or hot-dip galvanized according to ASTM A-653 / A-653M, not less than G30 (Z90) coating designation, with pre-finished 15/16-inch wide metal caps on flanges.
 - 1. Structural Classification: Intermediate-duty system.

2. End Condition of Cross Runners: Override (stepped) type.
3. Cap Material: Steel cold-rolled sheet.
4. Low-gloss white (for Type I, II and III)
5. Low-gloss black (for Type IV)
6. Wall molding: 7/8" x 7/8" (MT)

Part 3 Execution

3.01 EXAMINATION

- A. Examine substrates and structural framing to which acoustical panel ceilings attach or abut, with Installer present, for compliance with requirements specified in other Sections that affect ceiling installation and anchorage. Do not proceed with installation until unsatisfactory conditions have been corrected.
- B. Above Ceiling Inspection: **BEFORE** installing any ceiling tile, the Architect will conduct an above ceiling inspection and report deficiencies in the Work. Do not install tile until a re-inspection is made to ensure corrective work is acceptable.

3.02 INSTALLATION

- A. Comply with ASTM C-636 and seismic design requirements indicated, per manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."
- B. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders.
- C. Suspend ceiling hangers from building's structural members, plumb and free from contact with insulation or other objects within ceiling plenum. Splay hangers only where required to miss obstructions; offset resulting horizontal forces by bracing, countersplaying, or other equally effective means. Where width of ducts, and other construction within ceiling plenum, produces hanger spacing that interferes with location of hangers; use trapezes or equivalent devices. When steel framing does not permit installation of hanger wires at spacing required, install carrying channels or other supplemental support for attachment of hanger wires.
 1. Space hanger wires at 4'-0" o.c., and within 6" of end of main beams and splice joints.
 2. Install hanger wires at each corner of lay-in light fixture that is not bearing on (2) main beams (i.e. support cross tees at each end).
 3. Do not support ceilings directly from permanent metal forms or floor deck; anchor into concrete slabs.
 4. Do not attach hangers to steel deck tabs or to steel roof deck.
- E. Install edge moldings and trim of type indicated at perimeter of acoustical ceiling area and where necessary to conceal edges of acoustical panels. Screw attach moldings to substrate at intervals not more than 16-inches o.c. and not more than 3-

inches from ends, leveling with ceiling suspension system to a tolerance of 1/8-inch in 12-feet.

- F. Install suspension system runners so they are square and securely interlocked with one another. Remove and replace dented, bent, or kinked members.
- G. Lay-in ceiling contractor shall install ceilings at height noted in the Room Finish Schedule. Coordinate with the Mechanical and Electrical Contractor to ensure adequate space for their work. Consult with Architect before any change is made to ceiling heights specified.
- H. Install acoustical panels with undamaged edges and fit accurately into suspension system runners and edge moldings. Scribe and cut panels at borders and penetrations to provide a neat, precise fit.

END OF SECTION 09 51 13

09 65 00 – RESILIENT FLOORING AND ACCESSORIES**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 DESCRIPTION OF WORK

- A. Extent of resilient flooring and accessories is shown on Drawings and in Schedules.
- B. Provide wall base as noted on the Room Finish Schedule and on all casework exposed sides.
- C. Special floor preparation required to grind floor, fill cracks and leveling fill as required for a smooth installation in areas where new resilient flooring shall be installed adjacent to existing resilient flooring & in areas where new resilient flooring shall be installed in areas that had no previous finish.

1.03 QUALITY ASSURANCE

- A. Manufacturer: Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.
 - 1. Wherever possible, provide required resilient flooring and accessories produced by a single manufacturer.
- B. Fire Test Performance: Unless otherwise indicated, provide resilient flooring having the following classifications or properties when tested in accordance with the standard fire tests referenced below:
 - 1. Flame Spread: Not more than 75 as per ASTM E 84.
 - 2. Smoke Developed: Not more than 450 as per ASTM E662.

1.04 SUBMITTALS

- A. Product Data: Submit 2-copies of manufacturer's technical data and installation instructions for each type of resilient flooring and accessory.
- B. Samples: Submit, for verification purposes, samples of each type, color, and pattern of resilient flooring, including accessories, required, indicating full range of color and pattern variation.
- C. Maintenance Instructions: Submit 2-copies of manufacturer's recommended maintenance practices for each type of resilient flooring and accessory.

1.05 JOB CONDITIONS

- A. Maintain minimum temperature of 70-degrees F in spaces to receive resilient flooring for at least 48-hours prior to installation, during installation, and not less than 48-hours after installation. Store resilient flooring materials in spaces where they will be installed for at least 48-hours before beginning installation. Subsequently, maintain minimum temperature of 70-degrees F in areas where work is completed.
- B. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test.

Part 2 Products

2.01 ACCEPTABLE MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include the following:
 - 1. Solid Vinyl Tile:
 - a. American Biltrite, Texas Granite (Basis of Design Product) or approved equal by:
 - 1. Tarkett
 - 2. Flexco
 - 3. StaticWorx
 - 2. Wall Base:
 - a. Flexco
 - b. Roppe Corporation
 - c. Johnsonite
 - d. Nora

2.02 MATERIALS

- A. Colors and Patterns: As shown or as selected by Architect / Owner from manufacturer's standards.
 - 1. Maximum of three (3) colors shall be selected.

B. Solid Vinyl Tile Flooring:

1. 12-inch x 12-inch, unless otherwise indicated.
2. Non-asbestos
3. Thickness: 1/8-inch
4. **Furnish tile from (1) lot sufficient for the entire Project, including repair and attic stock.**

C. Resilient Base:

1. Provide base complying with FS SS-W-40A, Type I, rubber with matching end stops and preformed or molded corner units and as follows:
 - a. Colors and Patterns: As selected from manufacturer's full range.
 - b. Height: 4".
 - c. Thickness: 1/8".
 - d. Style: Standard set-on cove.

D. Accessories:

1. Edge Reducing Strips: Beveled 1-inch to 1-1/2-inch wide by thickness required of vinyl or rubber, same manufacturer as base; colors as selected by Architect.
2. Moldings and Edge Strips: Same material as flooring, profile to suit flooring material transitions.

E. Adhesives:

1. Provide water resistant type adhesive as recommended by manufacturer of material being installed.
2. Asphalt emulsions and other non-waterproof emulsions will not be accepted.
3. Non-Asbestos.
4. Contractor and Manufacturer must warrant that adhesive will not bleed or seep through tile joints after installation.
5. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.

F. Trowelable underlayment and patching compound:

1. Latex modified, Portland cement based formulation as manufactured by Ardex or approved equal. Gypsum based products are not acceptable.

Part 3 Execution

3.01 PREPARATION

- A. Install resilient flooring materials upon subflooring as indicated.

- B. Perform mat bond tests in each major area (1 per ~ 1,000 sq. ft.). This shall consist of the proposed subfloor preparation, mitigation and leveling or smoothing products. Examine after 72-hours to determine whether the bond of the system is very good to the substrate, if the preparation is sufficient and to look for signs of moisture. Do not proceed with the installation until all the results of the bond test are acceptable.
- C. Inspect subflooring before starting work. Notify Architect in writing of any defects in subflooring. Do not proceed with the Work of this Section until such defects have been entirely corrected. Starting of the Work of this Section shall mean acceptance of condition of the subflooring by Contractor for the Work of this Section.
- D. Immediately prior to installation of resilient flooring materials, subflooring shall be level, free of springiness, dust, grit, grease, thoroughly dry and in proper condition to receive flooring.
- E. Subflooring is to have high spots ground smooth and low spots filled with Ardex or other approved cementitious latex based fill material. Floor to be smooth without dimples or bumps. Entire area of floor is to be sanded prior to installation of flooring. Sweep or vacuum, mop slab to remove all loose material prior to application of primer or adhesive to ensure a smooth finished floor.

3.02 INSTALLATION

- A. General:
 - 1. Extend resilient flooring to walls.
 - 2. Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll flooring at perimeter of each covered area to assure adhesion.
- B. Deliver materials to the Project Site in manufacturer's original containers with brand name identified. Store materials at 70-degrees F. Maintain 70-degrees F in spaces where flooring is being installed for at least 48-hours before, during and 48-hours after installation. Provide adequate ventilation to take off moisture and fumes. Unless otherwise specified, materials and methods used are per manufacturer's recommendations.
- C. Adhesive: Apply adhesive to floor with notched steel trowel, as per manufacturer's printed installation directions.
- D. Tile: Lay tile so that entire under surface will be bonded securely in place. Fit tiles so that each is in tight contact with surrounding tiles and align joints.
 - 1. Tile shall be laid with grain running in one direction. Checkerboard style is not acceptable.

2. Edges: Lay field out from midpoint of long axis of space so that opposite edge tile will be of equal width, discounting minor offsets. Scribe tile carefully to wall and cut to ensure clean sharp edge. Adjust as necessary to avoid use of cut widths less than 1/2 tile at room perimeters. Lay tile square to room axis, unless otherwise shown.
 3. Remove tile and replace where tiles indicate “telegraphing” or “pings” of dirt or debris or other imperfections as determined by Architect.
- E. Base: Secure base to walls, partitions, with waterproof cement. Make joints tight; ensure that base has its top, bottom and edges are in firm contact with wall and floor.
- F. Accessories:
1. Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

3.03 CLEANING AND PROTECTION

- A. Initial Maintenance (min, 72-hours after installation):
1. Dust mop or vacuum the floor to remove dirt or girt.
 2. Survey the floor for any damaged areas.
 3. Wet mop areas using a green seal certified cleaner.
 4. Scrub the floor thoroughly with a floor scrubber using the manufacturer approved pad. Do not allow the area to dry during scrubbing.
 5. Wet vacuum the soiled solution, rinse the floor with clean water and allow to dry.
 6. Buff to a high shine per the manufacturer’s instructions (NO WAX).
- B. Remove any excess adhesive or other surface blemishes, using neutral type cleaners as recommended by flooring manufacturer. **Protect installed flooring with heavy “Kraft” paper or other covering.**
- C. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

3.04 ADDITIONAL MATERIALS (Attic Stock):

- A. Provide to Owner, and store in place designated by the Owner, (2) unopened boxes of each material and color installed.

END OF SECTION 09 65 00

09 90 00 – PAINTING**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.
- B. Refer to the Drawings for locations of work to be performed.

1.02 WORK INCLUDED

- A. Furnish labor and materials to complete painting work indicated, as specified herein, or both.
- B. The following specifications cover complete painting; finishing of wood, gypsum wallboard, concrete, concrete masonry, unfinished metal, other surfaces throughout the exterior and interior of building, except otherwise specified.
- C. Furnish tools, ladders, drip cloths, masking, scaffolding and other equipment necessary for complete work.
- D. Examine Specifications for various other trades; become familiar with their provisions regarding their painting; paint or finish surfaces that are left unfinished by requirements for other Sections.
- E. DO NOT paint or finish copper, bronze, chromium plate, nickel, stainless steel, aluminum, Monel metal, except as otherwise specified.
- F. If woodwork, metal or any other surface to be finished cannot be put in proper condition for finishing by customary cleaning, sanding, puttying operations, notify Architect in writing, or assume responsibility for and rectify any unsatisfactory finish resulting.
- G. Related Sections include the following:
 - 1. Division 05 Sections for shop priming of metal substrates with primers specified in this Section.

1.03 WORK NOT INCLUDED

- A. Shop coat specified under other trades.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated.

- B. Samples for Initial Selection: For each type of topcoat product indicated.
- C. Samples for Verification: For each type of paint system and in each COLOR and GLOSS of topcoat indicated.
 - 1. Submit Samples on rigid backing, 8-inches square.
 - 2. Step coats on Samples to show each coat required for system.
 - 3. Label each coat of each Sample.
 - 4. Label each Sample for location and application area.
- D. Product List: For each product indicated, include the following:
 - 1. Cross-reference to paint system and locations of application areas. Use same designations indicated on Drawings and in schedules.

1.05 TEST PANELS

- A. Paint Finish: Contractor is to provide finish as specified on test panels required in Division 09 Section, Gypsum Board Assemblies. Finish only a portion of panel. Stagger coats so each coat is visible. Apply in the same manner as will be used during construction.

1.06 QUALITY ASSURANCE

- A. Applicator Qualifications: A firm with (3) years experience in applying paints and coatings similar in material, design, and extent to those indicated for this Project, whose work has resulted in applications with a record of successful in-service performance.

1.07 PROJECT CONDITIONS

- A. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50- and 95-degrees F.
- B. Do not apply paints when relative humidity exceeds 85-percent; at temperatures less than 5-degrees F above the dew point; or to damp or wet surfaces.

1.08 STORAGE

- A. Store materials used on job in single place. Keep such storage neat and clean; rectify damage thereto or to its surroundings.
- B. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45-degrees F.
 - 1. Maintain containers in clean condition, free of foreign materials and residue.
- C. Remove oily rags, waste, etc., from building every night; take precautions to avoid danger of fire.

1.09 EXTRA MATERIALS

- A. Furnish extra materials described below that are from same production run (batch mix) as materials applied and that are packaged for storage and identified with labels describing contents.
 - 1. Quantity: Furnish an additional (1) gallon of each material and color applied.

Part 2 Products

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include the following:
 - 1. Porter Paints / PPG (**Basis of Design product**)
 - 2. Sherwin Williams
 - 3. ICI
 - 4. Benjamin Moore & Co.

2.02 PAINT, GENERAL

- A. Material Compatibility:
 - 1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - 2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Colors: As selected by Architect from manufacturer's full range of colors.

2.03 MATERIALS

- A. Materials Used: Exactly as specified in brand and quality. No claim as to unavailability of any material specified, or unwillingness to use same, or inability to produce first class work with same, will be entertained unless such claims are made in writing and submitted with Proposal. Deliver specified products in original containers, with seals unbroken and labels intact.
- B. Use materials only as specified by manufacturer's direction label on container.
- C. Painting materials, such as linseed oil, shellac, turpentine, etc.: pure, highest quality, bear identifying label on container.
- D. Base Proposal on use of specific brand and quality. If Contractor desires to use materials other than those specified, submit request in writing for approval; give

manufacturer's name, specify name of each product offered as a substitute. Requests for approval must be received by Architect no later than (10) days before date and time set to receive bids and such approval must be obtained in writing before bids are submitted; otherwise, only specified products are to be furnished.

Part 3 Execution

3.01 EXAMINATION

- A. Examine substrates and conditions, with Applicator present, for compliance with requirements for maximum moisture content and other conditions affecting performance of work.
- B. Maximum Moisture Content of Substrates: When measured with an electronic moisture meter as follows:
 - 1. Concrete: 12-percent.
 - 2. Masonry (Clay and CMU): 12-percent.
 - 3. Wood: 15-percent.
 - 4. Gypsum Board: 12-percent.
- C. Verify suitability of substrates, including surface conditions and compatibility with existing finishes and primers.
- D. Begin coating application only after unsatisfactory conditions have been corrected and surfaces are dry.
 - 1. Beginning coating application constitutes Contractor's acceptance of substrates and conditions.

3.02 PREPARATION

- A. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
- B. Remove plates, machined surfaces and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - 1. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
 - 2. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.

- C. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulates.
 - 1. Remove incompatible primers and re-prime substrate with compatible primers as required to produce paint systems indicated.

- D. Concrete Masonry Substrates: Remove 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.

- E. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.

- F. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.

- G. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.
 - 1. **Contractor has the option to either achieve a Level 5 Drywall finish by skim coating the gypsum board with finishing compound and utilizing the USG First Coat primer OR by using specified Max Prime gypsum board primer over a Level 4 finish.**

3.03 APPLICATION

- A. Apply paints according to manufacturer's written instructions.
 - 1. Use applicators and techniques suited for paint and substrate indicated.
 - 2. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture.
 - 3. Paint exposed surfaces of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.

- B. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.

- C. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.

- D. Prior to second coat of paint, contact Owner and Architect for inspection and approval in order to proceed with the next coat.

- E. At existing CMU and Gypsum Wall partitions, use paint specification for these substrates as indicated in the Finish Schedule (3.05) and with exception that only the areas that have been patched need to be primed.

3.04 WORKMANSHIP

- A. Workmanship: Very best, spread materials evenly; flow on smoothly without runs, sags or brush marks. Employ skilled mechanics.
- B. Clean surfaces that are to be painted, including floors. Surfaces are to be free of loose dirt, tape, staples, adhesive residue and other foreign materials. Dust before painting starts.
- C. Prior to first coat, do all necessary puttying of holes, cracks, etc., with putty color that matches finish. Bring putty **flush** with adjoining surfaces in neat, workmanlike manner.
- D. Wash metal surfaces with alcohol or deglosser to remove any dirt or grease before applying materials. Where rust or scale is present, use a wire brush or sandpaper to clean before painting. Clean shop coats of paint that become marred and touch-up with specified primer.
- E. Clean galvanized metal surfaces with Thinner or Galva Prep per manufacturer's directions for use before applying primer.
- F. Cover surfaces to be stained with uniform stain coat, wipe off excess.
- G. Tint undercoats of paint and enamel to same or approximate final coat shade.
- H. Work where coat of material has been applied, inspected and approved by Owner / Architect before application of succeeding specified coat, otherwise no credit for coat applied will be given. Contractor automatically assumes responsibility to recoat work in question.
- I. Protect work at all times. Protect adjacent work and materials with suitable covering or other method during work progress. Upon completion of work, remove paint, varnish spots from floors, glass and all other surfaces. Remove from premises all rubbish and accumulated materials of whatever nature not caused by other trades. Leave work clean, orderly and in acceptable condition.
- J. Paint mechanical, electrical piping and conduit, plumbing, etc. as indicated in Division 20, 21, 22, 23, 25, 26, 27 and 28 Sections.

3.05 FINISH SCHEDULE

- A. Names of finish materials in list below refer to Porter Paints, unless otherwise noted.

B. Interior:

1. Concrete and CMU (Semi-Gloss):

a. Surfaces:

1) Walls

b. Primer: Acri-Fill Block Fill #896

1) DFT = 10.0 mils minimum, may require multiple coats to be pin-hole free

c. Two Finish Coats: Advantage 900 Semi-Gloss Enamel #919

1) DFT = 1.5 mils per coat.

2. Metal - Ferrous and Galvanized (Semi-Gloss):

a. Surfaces:

1) H.M. Doors & Frames, Lintels, Ductwork, Railings and other ferrous surfaces

b. Cleaner for galvanized surfaces: Galva-Prep #33

c. Primer: Glyptex Rust Inhibitive Primer #296

1) DFT = 2.0 mils

d. Two Finish Coats: DTM Acrylic Satin Enamel #2809

1) DFT = 2.5 - 3.0 mils per coat.

3. Gypsum Board – Finish to match finish of existing paint surfaces.

a. Prime Coat : Interior latex primer / sealer- Speed –Hide 6-2 Primer

b. Top Coat : (2) two coats Latex Eggshell Finish

3.06 CLEANING AND PROTECTION

A. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.

B. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.

C. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by Architect, and leave in an undamaged condition.

- D. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

END OF SECTION 09 90 00

10 14 00 – BUILDING SIGNAGE

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. Provide specialty building signage:
 - 1. Tactile Plaque Signs at each Toilet Room

1.03 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data and installation instruction for each type of sign required.
- B. Samples: Submit samples of each sign type and material showing finishes, colors, surfaces textures and qualities of manufacturer and design of each sign component including graphics.
 - 1. Submit full-size sample units, if requested by Architect. Acceptable units may be installed as part of the Work.
- C. Shop Drawings: Submit shop drawings for fabrication and erection of specialty signs. Include plans, elevations and large scale details of sign wording and lettering layout. Show anchorages and accessory items. Furnish location template drawings for items supported or anchored to permanent construction.

1.04 QUALITY ASSURANCE

- A. Comply with governing codes and regulations. Provide products of acceptable manufacturers which have been in satisfactory use in similar service for three (3) years. Use experienced installers. Deliver, handle and store materials in accordance with manufacturer's instructions.

Part 2 Products

2.01 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, provide one of the following:

1. Andco
2. A.S.I.
3. A.R.K. Ramos
4. Cornerstone
5. Mills
6. Bayuk

2.02 TACTILE PLAQUE AND ROOM SIGNS

A. Coordinate Toilet Room Sign with owner/owners representative.

B. Materials:

1. Mounting: Mount to the wall surface with permanent double-faced, high bond, vinyl foam tape and silicone adhesive for irregular, porous or vinyl covered surfaces and (1) screw in each corner. Provide countersunk mounting holes.
2. ADA Specifications: All content and style complies with ADDAG (4.30.107), Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities.
3. Braille: Grade 2 Braille is to be the same color as the sign face, with no interruption of the smooth, clean surface of the sign.
 - a. Provide Braille room names and numbers integral with sign construction in correspondence with printed names and numbers. Surface applied Braille is not acceptable.
4. Contrast: The background of the sign must be matte or non-glare in appearance. The contrast between the background and characters shall be a minimum of 70 to 1, and the gloss of the materials used shall be within 11 to 19 degrees on a 60 degrees.

C. Toilet Room and Handicap Signage :

1. Toilet room handicap signs shall be 8-inches wide x 8-inches tall x 1/8-inch (min.) thick with handicap symbol (for gang and individual restrooms). Provide Grade 2 Braille and 3/8-inch radius corners. Sign face and text color shall be selected by Architect from full range of colors.

Part 3 Execution

3.01 INSTALLATION, GENERAL

- A. Install a Toilet room sign at each Toilet Room.
- B. Install signage units and components at locations shown or scheduled, securely mounted with adhesive tape and screws. Attached signs to substrate in accordance with manufacturer's instruction based on anchorage method indicated.
- C. Install sign components level, plumb and at heights determined by the Architect. Cooperate with other trades for installation of sign units to the finish surface.
- D. Do not install signs until substrates have received all required finishes and finish coats. Damaged sign units, as determined by the Architect, shall be replaced at the expense of the Contractor.

3.02 CLEANING AND PROTECTION

- A. Restore any damaged finishes. Clean and protect work from damage.
- B. At the completion of the installation, clean sign surfaces in accordance with manufacturer's instructions.

END OF SECTION 10 14 00

10 21 13 – SOLID PHENOLIC TOILET PARTITIONS

PART 1 GENERAL

1.1 SECTION INCLUDES

Compact Laminate (Solid Phenolic), Moisture Resistant Substrate:

1. Toilet partitions.
2. Urinal privacy screens.

SUBMITTALS

A. Submit under provisions of Section 01 30 00 - Administrative Requirements.

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.

E. Shop Drawings: Submit manufacturer's shop drawings for each product specified, including the following:

1. Plans, elevations, details of construction and attachment to adjacent construction.
2. Show anchorage locations and accessory items.
3. Verify dimensions with field measurements prior to final production of toilet compartments.

F. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

G. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square representing actual product, color, and patterns.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Minimum 10 year experience manufacturing similar products.

B. Installer Qualifications: Minimum 2 year experience installing similar products.

C. Single Source Requirements: To the greatest extent possible provide products from a single manufacturer.

D. Accessibility Requirements: Comply with requirements applicable in the jurisdiction of the project, including but not limited to ADA and ICC/ANSI A117.1 requirements as applicable.

E. 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 is approved by Architect.
3. Refinish mock-up area as required to produce acceptable work.

1.5 PRE-INSTALLATION MEETINGS

A. Convene minimum two weeks prior to starting work of this section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in manufacturer's unopened packaging bearing the brand name and manufacturer's identification until ready for installation.

B. Handling: Handle materials to avoid damage.

1.7 PROJECT CONDITIONS

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

1.8 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 WARRANTY

A. Manufacturer's 1/2s Warranty (SierraSeries and DuraLineSeries): Manufacturer's 1/2s standard 25 year limited warranty for panels, doors, and stiles against breakage, corrosion, delamination, and defects in factory workmanship. Manufacturer's 1/2s standard 1 year guarantee against defects in material and workmanship for stainless steel door hardware and mounting brackets.

B. Manufacturer's 1/2s Warranty (DesignerSeries and MetroSeries): Manufacturer's 1/2s standard 2 year warranty for materials and workmanship.

C. Manufacturer's 1/2s Warranty (TrimLineSeries and AccentSeries): Manufacturer's 1/2s standard 5 year warranty for materials and workmanship.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Bobrick Washroom Equipment, Inc., which is located at: 6901 Tujunga Ave.; North Hollywood, CA 91605-5882; Tel: 818-764-1000; Fax: 818-765-2700; Email: info@bobrick.com; Web: www.bobrick.com

B. Basis of Design Products: Based on the quality and performance requirements of the project, specifications are based solely on the products of Bobrick Washroom Equipment, Inc. www.bobrick.com. Location of manufacturing shall be the United States.

C. Substitutions: The Architect will consider products of comparable manufacturers as a substitution, pending the Contractor's submission of adequate documentation of the substitution in accordance with procedures in Division 1 of the Project Manual. Documentation shall include a list of five similar projects of equivalent size where products have been installed for a minimum of two years, and manufacturer's certification that products are fabricated in the United States.

2.3 COMPACT LAMINATE (SOLID PHENOLIC), MOISTURE RESISTANT SUBSTRATE

Compact Laminate (Solid Phenolic) Toilet Partitions: Design Type:

a. Standard Height.

1) Door/Panel Height: 58 inches (147 cm).

2) Floor Clearance: 12 inches (30 cm).

b. Maximum Height.

- 1) Door/Panel Height: 72 inches (183 cm).
- 2) Floor Clearance: 4-5/16 inches (11 cm).

Mounting Configuration:

a. Floor-mounted.

- 1) Stile Standard Height: 69 inches (175 cm); Maximum Height: 75-5/16 inches (194 cm).
- b. Floor-mounted, overhead-braced with satin finish, extruded anodized aluminum headrails, 0.065 inch (1.65 mm) thick with anti-grip profile.
 - 1) Stile Maximum Height: 83 inches (211 cm).

B. Compact Laminate (Solid Phenolic) Urinal Screens: 1. Mounting Configuration:

a. Wall-hung.

- 1) Screen Height: 42 inches (107 cm) with 18 inches (46 cm) floor clearance.
- 2) Screen Height: 48 inches (122 cm) with 12 inches (30 cm) floor clearance.

C. Materials: Solidly fused plastic laminate with matte-finish melamine surfaces; integrally bonded colored face sheets and black phenolic-resin core.

E. Edges: Black; brown edges not acceptable.

F. Color: 1. As selected by Architect from manufacturer's standard range.

1. National Fire Protection Association/International Building Code Interior Wall and Ceiling Finish: Class B / Uniform Building Code: Class II.

- a. Flame Spread Index (ASTM E 84): 30 for panels and stiles.
- b. Smoke Developed Index (ASTM E 84): 55 for panels, 20 for stiles.

2. National Fire Protection Association/International Building Code Interior Wall and Ceiling Finish: Class A / Uniform Building Code: Class I.

- a. Flame Spread Index (ASTM E 84): 15 for panels and stiles.
- b. Smoke Developed Index (ASTM E 84): 25 for panels, 20 for stiles.

H. Finished Thickness:

1. Stiles and Doors: 3/4 inch (19 mm).
2. Panels and Screens: 1/2 inch (13 mm).

I. Stiles: Floor-anchored stiles furnished with expansion shields and threaded rods.

1. Leveling Devices: 7 gauge, 3/16 inches (5 mm) thick, corrosion-resistant, chromate-treated, double zinc-plated steel angle leveling bar bolted to stile; furnished with 3/8 inch (10 mm) diameter threaded rods, hex nuts, lock washers, flat washers, spacer sleeves, expansion anchors, and shoe retainers.
2. Stile Shoes: One-piece, 22 gauge (0.8 mm), 18-8, Type 304 stainless steel, 4 inch (102 mm) height; tops with 90 degree return to stile. One-piece shoe capable of adapting to 3/4 inch (19 mm) or 1 inch (25 mm) stile thickness and capable of being fastened (by clip) to stiles starting at wall line.

J. Wall Posts: Pre-drilled for door hardware, 18-8, Type 304, 16 gauge (1.6 mm) stainless steel with satin finish; 1 inch (25 mm) x 1-1/2 inches (38 mm) x 58 inches high (1473 mm).

K. Anchors: Expansion shields and threaded rods at floor connections as applicable. Threaded rods secured to supports above ceiling as applicable. Supports above ceiling furnished and installed as Work of Section 05 50 00 - Metal Fabrications.

L. Hardware:

1. Compliance: Operating force of less than 5 lb (2.25 kg).
2. Emergency Access: Hinges, latch allow door to be lifted over keeper from outside compartment on inswing doors.
3. Materials: 18-8, Type 304, heavy-gauge stainless steel with satin finish.
4. Doorstops: Prevents inswinging doors from swinging out beyond stile; on outswing doors, doorstop prevents door from swinging in beyond stile.
5. Fastening: Hardware is secured to door and stile with pin-in-head Torx stainless steel machine screws. Hinges, latch and optional door stops secured to door with pin-in-head Torx stainless steel machine screws into factory-installed, threaded brass inserts. Fasteners for hinges, latch and optional door stops secured directly into core not acceptable.
 - a. Threaded Brass Inserts: Factory-installed; withstand direct pull force exceeding 1500 lb (680 kg) per insert.
6. Clothes Hooks: Projecting no more than 1-1/8 inch (29 mm) from face of door.
7. Door Latch: Track of door latch prevents inswing doors from swinging out beyond stile; on outswing doors, door keeper prevents door from swinging in beyond stile; 16 gauge (1.6 mm) sliding door latch, 14 gauge (2 mm) keeper.
8. Locking: Door locked from inside by sliding door latch into keeper.
9. Hinge Type:
 - a. Standard.
 - 1) Balanced, with field-adjustable cam to permit door to be fully closed or partially open when compartment is unoccupied.
 - b. Full-Height Institutional Hinge.
 - 1) Hinges: 16 gauge (1.6 mm) stainless steel, self-closing, 3 section hinges.
10. Mounting Brackets:
 - a. Standard concealed.
 - 1) Mounting Brackets: Mounted inside compartment; exposed brackets on exterior of compartment not acceptable with the exception of outswing doors.
 - b. Full-Height.
 - 1) Mounting Brackets: 18 gauge (1.2 mm) stainless steel and extend full height of panel.
 - 2) U-Channels: Secure panels to stiles.
 - 3) Angle Brackets: Secure stiles-to-walls and panels to walls.

Floor-mounted.

- 1) Stile Height: 69 inches (175 cm).
 - a. Floor-mounted, overhead-braced with satin finish, extruded anodized aluminum headrails, 0.065 inch (1.65 mm) thick with anti-grip profile.
 - 1) Stile Height: 83 inches (211 cm).
 - b. Ceiling-hung.
 - 1) Stile Height: 8 feet 0 inches (244 cm) or as required 10 feet 0 inches (305 cm) maximum.

B. High Pressure Laminate Urinal Screens:

1. Mounting Configuration:
 - a. Floor-to-ceiling.
 - 1) Screen Height: 58 inches (178 cm) with floor clearance: 12 inches (30 cm).

b. Post-to-ceiling.

- 1) Screen Height: 58 inches (178 cm).
- 2) Floor Clearance: 12 inches (30 cm).
- 3) Post Height: Up to 10 feet 0 inches (305 cm) maximum.

c. Wall-hung.

- 1) Screen Height: 42 inches (107 cm) with 18 inches (46 cm) floor clearance.
- 2) Screen Height: 48 inches (122 cm) with 12 inches (30 cm) floor clearance.

PART 3 PRODUCTS

3.1 PREPARATION

A. Prepare substrates including but not limited to blocking and supports in walls and ceilings at points of attachment using methods recommended by the manufacturer for achieving the best result for the substrates under the project conditions.

1. Inspect areas scheduled to receive compartments for correct dimensions, plumbness of walls, and soundness of surfaces that would affect installation of mounting brackets.
2. Verify spacing of plumbing fixtures to assure compatibility with installation of compartments.

B. If preparation is the responsibility of another installer, notify Architect in writing of deviations from manufacturer's recommended installation tolerances and conditions.

C. Do not proceed with installation until substrates have been properly prepared with blocking and supports in walls and ceilings at points of attachment and deviations from manufacturer's recommended tolerances are corrected. Commencement of installation constitutes acceptance of conditions.

3.2 INSTALLATION

A. Install products in strict compliance with manufacturer's written instructions and recommendations, including the following:

1. Verify blocking and supports in walls and ceilings has been installed properly at points of attachment.
2. Verify location does not interfere with door swings or use of fixtures.
3. Use fasteners and anchors suitable for substrate and project conditions
4. Install units rigid, straight, plumb, and level.
5. Conceal evidence of drilling, cutting, and fitting to room finish.
6. Test for proper operation.

3.3 ADJUSTING, CLEANING AND PROTECTION

A. Adjust hardware for proper operation after installation. Set hinge cam on in-swinging doors to hold doors open when unlatched. Set hinge cam on out-swinging doors to hold unlatched doors in closed position.

B. Touch-up, repair or replace damaged products.

C. Clean exposed surfaces of compartments, hardware, and fittings.

END OF SECTION

10 22 39 – MOVABLE PARTITIONS

PART 1 – GENERAL

1.01 DESCRIPTION

A. General

1. Furnish and install operable partitions and suspension system. Provide all labor, materials, tools, equipment, and services for operable walls in accordance with provisions of contract documents.

1.02 RELATED WORK BY OTHERS

- A. Preparation of opening will be by General Contractor. Any deviation of site conditions contrary to approved shop drawings must be called to the attention of the architect.
- B. All header, blocking, support structures, jambs, track enclosures, surrounding insulation, and sound baffles as required in 1.04 Quality Assurance.
- C. Prepunching of support structure in accordance with approved shop drawings.
- D. Paint or otherwise finishing all trim and other materials adjoining head and jamb of operable partitions.

1.03 SUBMITTALS

- A. Complete shop drawings are to be provided prior to fabrication indicating construction and installation details. Shop drawings must be submitted within 60 days after receipt of signed contract.

1.04 QUALITY ASSURANCE

- A. Preparation of the opening shall conform to the criteria set forth per ASTM E557 Standard Practice for Architectural Application and Installation of Operable Partitions
- B. The partition STC (Sound Transmission Classification) shall be achieved per the standard test methods ASTM E90.
- C. Noise isolation classifications shall be achieved per the standard test methods ASTM E336 and ASTM E413.
- D. Noise Reduction Coefficient (NRC) ratings shall be per ASTM C423.
- E. Rack testing for 10 years. (tensional strength stress test)
- F. The manufacturer shall have a quality system that is registered to the ISO 9001 standards.

1.05 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Proper storage of partitions before installation and continued protection during and after installation will be the responsibility of the General Contractor.

1.06 WARRANTY

- A. Partition system shall be guaranteed for a period of two years against defects in material and workmanship, excluding abuse.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Upon compliance with all of the criteria specified in this section, Manufacturers wishing to bid products equal to the product specified must submit to the architect 10 days prior to bidding complete data in support of compliance and a list of three past installations of products similar to those listed. The submitting manufacturer

guarantees the proposed substituted product complies with the performance items specified and as detailed on the drawings.

2.02 MATERIALS

- A. Basis of Design: Product to be top-supported Series 632 paired panels as manufactured by Hufcor Inc.
 - 1. Acceptable manufacturers:
 - a. Modernfold
 - b. Kwik-Wall

- B. System Description
 - 1. Panels shall be nominally 3" thick, to 48" in width, and hinged in pairs.
 - 2. Panel faces shall be laminated to appropriate substrate to meet the STC requirement in 2.04 Acoustical Performance.
 - 3. Frames shall be of 16 gauge painted steel with integral factory applied aluminum vertical edge and face protection.
 - 4. Vertical sound seals shall be of tongue and groove configuration, ensure panel-to-panel alignment and prevent sound leaks between panels.
 - 5. Horizontal top seals shall be retractable, provide 1" nominal operating clearance, and exert upward force when extended.
 - 6. Horizontal bottom seals shall be retractable, provide up to 2" nominal operating clearance, and exert downward force when extended.
 - 7. Horizontal trim shall be of aluminum.
 - 8. Low profile hinges on basic panels shall be of steel and project no more than 1/4" beyond panel faces. Each pair of panels to have a minimum of three hinges.

- C. Weight of the panels shall be 5.7 lbs. per sq. ft. based on option selected.

- D. Suspension system:
 - 1. Track shall be of clear anodized architectural grade extruded aluminum alloy 6063-T6. Track design shall provide precise alignment at the trolley running surfaces and provide integral support for adjoining ceiling, soffit, or plenum sound barrier. Track shall be connected to the structural support by pairs of minimum 3/8" dia. threaded steel hanger rods. Guide rails and/or track sweep seals shall not be required.
 - a. Each panel shall be supported by one 4-wheeled carrier. Wheels to be of hardened steel ball bearings encased with molded polymer tires.
 - 2. Plenum closure (by others): Design of plenum closure must permit lifting out of header panels to adjust track height. Plenum closure required for optimum sound control of partition.
 - 3. The panels shall be supported by optional Unispan pre-engineered truss and post system fabricated of steel and aluminum. Unispan is attached to the building structure for lateral support only. The load of the truss and partition is supported by end columns and the system transfers the partition weight to the floor.

- E. Finishes
 - 1. Face finish shall be:
 - a. Factory applied reinforced vinyl fabric with woven backing, weighing not less than 15 oz. per lineal yard [465 g/m]. Color shall be selected from manufacturer's full range of available colors.
 - 2. Exposed metal trim and seal color shall be selected from manufacturer's standard colors.

3. Aluminum track shall be clear anodized

2.03 OPERATION

- A. Panels shall be manually moved from the storage area, positioned in the opening, and seals set.
- B. Retractable Horizontal Seals
 1. Retractable horizontal seals shall be activated by a removable quickset operating handle located approximately 42" from the floor in the panel edge.
 2. All retractable seals in each hinged pair shall be operated simultaneously.
 3. Seal activation requires approximately 15 lbs. of force per panel and approximately a 190 degree turn of the removable handle.
- C. Automatic Floor Seals
 1. Horizontal seals shall be activated by pressing the edge of the panel into the edge of the adjacent panel or wall.
 2. Seal activation requires approximately 15 lbs. of force per panel.
- D. Final partition closure to be by:
 1. Lever closure panel with expanding jamb which compensates for minor wall irregularities and provides a minimum of 250 lbs. seal force against the adjacent wall for optimum sound control. The jamb activator shall be located approximately 45" from the floor in the panel face and be accessed from either side of the panel. The jamb is to be equipped with a mechanical rack and pinion gear drive mechanism and shall extend 4"-6" by turning the removable operating handle.
- E. Stack/Store Panels
 1. Retract seals and move to storage area. Panels to be stored at both ends of the track, against wall.

2.04 ACOUSTICAL PERFORMANCE

- A. Acoustical performance shall be tested at a laboratory accredited by the U.S. Dept. of Commerce, National Institute of Standards and Technology, under the National Voluntary Laboratory Accreditation Program (NVLAP) and in accordance with ASTM E90 Test Standards. Standard panel construction shall have obtained an STC rating of 41.
 1. Complete, unaltered written test report is to be made available upon request.

PART 3 - EXECUTION

- A. Installation. The complete installation of the operable wall system shall be by an authorized factory-trained installer and be in strict accordance with the approved shop drawings and manufacturer's standard printed specifications, instructions, and recommendations.
- B. Cleaning
 1. All track and panel surfaces shall be wiped clean and free of handprints, grease, and soil.
 2. Cartoning and other installation debris shall be removed to onsite waste collection area, provided by others.
- C. Training
 1. Installer shall demonstrate proper operation and maintenance procedures to owner's representative.
 2. Operating handle and owners manuals shall be provided to owner's representative.

END OF SECTION

10 28 00 – RESTROOM ACCESSORIES

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.
- B. Refer to the Drawings for locations of work to be performed.

1.02 WORK INCLUDED

- A. Furnish labor and materials to complete restroom accessories indicated, as specified herein, or both.
- B. Accessories: Include anchors, plates, screws, bolts, expansion shields and like required by types of accessories selected and by construction to which they are to be secured.
 - 1. Exposed hardware: Finish to match accessory

1.03 RELATED SECTIONS

- A. Refer to Division 06 Specification Sections, Finish Carpentry for wood blocks for restroom accessory attachment.

1.04 SUBMITTALS

- A. Product Data: For each type of product indicated. Include the following:
 - 1. Construction details and dimensions.
 - 2. Anchoring and mounting requirements, including requirements for cutouts in other work and substrate preparation.
 - 3. Material and finish descriptions.
 - 4. Features that will be included for Project.
 - 5. Manufacturer's warranty.
- B. Product Schedule: Indicating types, quantities, sizes, and installation locations by room of each accessory required.
 - 1. Identify locations using room designations indicated on Drawings.
 - 2. Identify products using designations indicated on Drawings.
- C. Maintenance Data: Restroom accessories to include in maintenance manuals.

1.05 QUALITY ASSURANCE

- A. Source Limitations: For products listed together in the same articles in Part 2, provide products of same manufacturer unless otherwise approved by Architect.

1.06 COORDINATION

- A. Coordinate accessory locations with other work to prevent interference with clearances required for access by people with disabilities, and for proper installation, adjustment, operation, cleaning, and servicing of accessories.
- B. Individually pack and wrap accessory item, each complete with required trimmings, anchors, fastenings, bolts, screws and like; label each item indicating type of accessory, floor and room or space designation.
- C. Deliver inserts and anchoring devices set into concrete or masonry as required to prevent delaying the Work.

1.07 WARRANTY

- A. Special Mirror Warranty: Manufacturer's standard form in which manufacturer agrees to replace mirrors that develop visible silver spoilage defects and that fail in materials or workmanship within specified warranty period.

1. Warranty Period: 15-years from date of Substantial Completion.

Part 2 Products

2.01 MATERIALS

- A. Stainless Steel: ASTM A 666, Type 304, 0.0312-inch minimum nominal thickness, unless otherwise indicated.
- B. Galvanized Steel Mounting Devices: ASTM A 153/A 153M, hot-dip galvanized after fabrication.
- C. Fasteners: Screws, bolts, and other devices of same material as accessory unit and tamper-and-theft resistant where exposed, and of galvanized steel where concealed.
- D. Chrome Plating: ASTM B 456, Service Condition Number SC 2 (moderate service).
- E. Mirrors: ASTM C 1503, Mirror Glazing Quality, clear-glass mirrors, nominal 6.0 mm thick.
- F. ABS Plastic: Acrylonitrile-butadiene-styrene resin formulation.

2.02 RESTROOM ACCESSORIES

- A. Basis-of-Design Product: The design for accessories is based on products indicated. Subject to compliance with requirements, provide the named product or a comparable product by one of the following:
1. A & J Washroom Accessories, Inc.
 2. Bobrick Washroom Equipment, Inc.
 3. Bradley Corporation.
 4. General Accessory Manufacturing Co. (GAMCO).
- B. Toilet Grab Bar:
1. Basis-of-Design Product: Bobrick, B-5806
 2. Mounting: Flanges with concealed fasteners.
 3. Material: Stainless steel, 0.05-inch thick; smooth, No.4, satin finish.
 4. Outside Diameter: 1-1/4 inches.
 5. Configuration and Length: As indicated on Drawings.
- C. Mirror Units:
1. Types:
 - a. Basis-of-Design Product: Bobrick, B-292, 24" x 36"
 2. Frame: Stainless-steel welded frame, 0.05-inch thick; smooth, No.4, satin finish.
 3. Hangers: Produce rigid, tamper- and theft-resistant installation, using method indicated below.
 - a. Wall bracket of galvanized steel, equipped with concealed locking devices requiring a special tool to remove.
- D. Roll Paper Towel Dispenser:
1. Owner furnished, contractor installed.
- E. Toilet Paper Dispenser:
1. Owner Furnished, contractor installed.
- F. Sanitary Napkin Disposal:
1. Owner furnished, contractor installed.
- J. Wood Block for Soap Dispenser:
1. Size: 6" x 12", 1" thick with round corners
 2. Coordinate with Division 06 Section "Finish Carpentry" and item 1 of Toilet Accessories legend. Install where shown on Drawings.
 3. Soap dispensers to be installed by Owner.

2.03 FABRICATION

- A. General: Fabricate units with tight seams and joints, and exposed edges rolled. Hang doors and access panels with full-length, continuous hinges. Equip units for concealed anchorage and with corrosion-resistant backing plates.

Part 3 Execution**3.01 INSTALLATION**

- A. Install accessories where indicated, or as directed.
- B. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- C. Grab Bars: Install to withstand a downward load of at least 250 lbf (1112 N), when tested according to method in ASTM F 446.
- D. During installation of accessories, until finally installed, accepted, protect items by approved means to maintain accessories in perfect condition. Remove damaged or defective work; replace with perfect work without extra cost to Owner.

3.02 ADJUSTING AND CLEANING

- A. Adjust accessories for unencumbered, smooth operation. Replace damaged or defective items.
- B. Remove temporary labels and protective coatings.
- C. Clean and polish exposed surfaces according to manufacturer's written recommendations.

END OF SECTION 10 28 00

SECTION 21 13 13

WET-PIPE SPRINKLER SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipes, fittings, and specialties.
 - 2. Fire-protection valves.
 - 3. Sprinklers.
 - 4. Alarm devices.

1.2 SYSTEM DESCRIPTIONS

- A. This project involves modifications to an existing wet-pipe sprinkler system.
- B. Wet-Pipe Sprinkler System: Automatic sprinklers are attached to piping containing water and that is connected to water supply through alarm valve. Water discharges immediately from sprinklers when they are opened. Sprinklers open when heat melts fusible link or destroys frangible device. Hose connections are included if indicated.

1.3 PERFORMANCE REQUIREMENTS

- A. Standard-Pressure Piping System Component: Listed for 175-psig minimum working pressure.
- B. Delegated Design: Design sprinkler system(s), including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- C. Sprinkler system design shall be approved by authorities having jurisdiction.
- D. Minimum Density for Automatic-Sprinkler Piping Design:
 - 1. Light-Hazard Occupancy: 0.10 gpm over 1500-sq. ft.
- E. Maximum Protection Area per Sprinkler: Per UL listing.
- F. Seismic Performance: Sprinkler piping shall withstand the effects of earthquake motions determined according to NFPA 13.

1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

- B. Wiring Diagrams: For power, signal, and control wiring.
- C. Approved Sprinkler Piping Drawings: Working plans, prepared according to NFPA 13, that have been approved by authorities having jurisdiction, including hydraulic calculations if applicable.
- D. Welding certificates.
- E. Operation and Maintenance Data: For sprinkler specialties to include in emergency, operation, and maintenance manuals.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications:
 - 1. Installer's responsibilities include designing, fabricating, and installing sprinkler systems and providing professional engineering services needed to assume engineering responsibility. Base calculations on results of fire-hydrant flow test.
 - 2. Engineering Responsibility: Preparation of working plans, calculations, and field test reports by a qualified professional engineer.
 - 3. Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.
- B. 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.
- C. NFPA Standards: Sprinkler system equipment, specialties, accessories, installation, and testing shall comply with the following:
 - 1. NFPA 13, "Installation of Sprinkler Systems."

1.6 PROJECT CONDITIONS

- A. Interruption of Existing Sprinkler Service: Do not interrupt sprinkler service to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary sprinkler service according to requirements indicated:
 - 1. Notify Architect and Owner no fewer than three days in advance of proposed interruption of sprinkler service.
 - 2. Do not proceed with interruption of sprinkler service without Owner's written permission.

1.7 COORDINATION

- A. Coordinate layout and installation of sprinklers with other construction that penetrates ceilings, including light fixtures, HVAC equipment, and partition assemblies.

1.8 EXTRA MATERIALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 - 1. Provide three (3) extra sprinkles of each type used in this project.

PART 2 PRODUCTS

2.1 PIPING MATERIALS

- A. Comply with requirements in “Piping Schedule” for applications for pipe, tube, and fitting materials, and for joining methods for specific services, service locations, and pipe sizes.

2.2 STEEL PIPE AND FITTINGS

- A. Standard Weight, Black Steel Pipe: ASTM A 53/A 53M, Type E , Grade B . Pipe ends may be factory or field formed to match joining method.
- B. Black-Steel Pipe Nipples: ASTM A 733, made of ASTM A 53/A 53M, standard-weight, seamless steel pipe with threaded ends.
- C. Uncoated, Steel Couplings: ASTM A 865, threaded.
- D. Uncoated, Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.
- E. Malleable- or Ductile-Iron Unions: UL 860.
- F. Cast-Iron Flanges: ASME 16.1, Class 125.
- G. Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.
- H. Steel Welding Fittings: ASTM A 234/A 234M and ASME B16.9.
- I. Grooved-Joint, Steel-Pipe Appurtenances:
 - 1. Manufacturers:
 - a. Corcoran Piping System Co.
 - b. Shurjoint Piping Products.
 - c. TYCO Fire Products.
 - d. Victaulic Company.
 - e. Approved Equal.
 - 2. Pressure Rating: 175 psig [250 psig [300 psig minimum.
 - 3. Galvanized and Painted, Grooved-End Fittings for Steel Piping: ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting; with dimensions matching steel pipe.

- 4. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213, rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.
- J. Steel Pressure-Seal Fittings: UL 213, FM-approved, 175-psig (1200-kPa) pressure rating with steel housing, rubber O-rings, and pipe stop; for use with fitting manufacturers' pressure-seal tools.
 - 1. Manufacturers:
 - a. Victaulic Company.
 - b. Approved Equal.

2.3 COPPER TUBE AND FITTINGS

- A. Hard Copper Tube: ASTM B 88, Type L water tube, drawn temper.
- B. Wrought-Copper, Solder-Joint Fittings: ASME B16.22, pressure fittings.
- C. Bronze Flanges: ASME B16.24, Class 150, with solder-joint ends.
- D. Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

2.4 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: AWWA C110, rubber, flat face, 1/8 inch thick or ASME B16.21, nonmetallic and asbestos free EPDM rubber gasket.
 - 1. Class 125/150, Ductile-Iron Flanges and Class 150, Bronze Flat-Face Flanges: Full-face gaskets.
- B. Metal, Pipe-Flange Bolts and Nuts: Carbon steel unless otherwise indicated.
- C. Brazing Filler Metals: AWS A5.8/A5.8M, BCuP Series, copper-phosphorus alloys for general-duty brazing unless otherwise indicated.
- D. Welding Filler Metals: Comply with AWS D10.12M/D10.12 for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

2.5 LISTED FIRE-PROTECTION VALVES

- A. General Requirements:
 - 1. Valves shall be UL listed or FM approved.
 - 2. Minimum Pressure Rating for Standard-Pressure Piping: 175 psig.
 - 3. Minimum Pressure Rating for High-Pressure Piping: 300 psig.
- B. Ball Valves:
 - 1. Manufacturers:
 - a. Victaulic Company.
 - b. Approved Equal.

2. Standard: UL 1091 except with ball instead of disc.
3. Valves NPS 1-1/2 and Smaller: Bronze body with threaded ends.
4. Valves NPS 2 and NPS 2-1/2: Bronze body with threaded ends or ductile-iron body with grooved ends.
5. Valves NPS 3: Ductile-iron body with grooved ends.

C. Iron Butterfly Valves:

1. Manufacturers:
 - a. Anvil International, Inc.
 - b. Fivalco Inc.
 - c. Global Safety Products, Inc.
 - d. Milwaukee Valve Company.
 - e. NIBCO INC.
 - f. Shurjoint Piping Products.
 - g. TYCO Fire Products.
 - h. Victaulic Company.
 - i. Approved Equal:
2. Standard: UL 1091.
3. Pressure Rating: 300 psig.
4. Body Material: Cast or ductile iron.
5. Style: Lug or wafer.
6. End Connections: Grooved.

2.6 SPRINKLER SPECIALTY PIPE FITTINGS

A. Branch Outlet Fittings:

1. Manufacturers:
 - a. Anvil International, Inc.
 - b. National Fittings, Inc.
 - c. Shurjoint Piping Products.
 - d. TYCO Fire Products.
 - e. Victaulic Company.
 - f. Approved Equal.
2. Standard: UL 213.
3. Pressure Rating: 175 psig.
4. Body Material: Ductile-iron housing with EPDM seals and bolts and nuts.
5. Type: Mechanical-T and -cross fittings.
6. Configurations: Snap-on and strapless, ductile-iron housing with branch outlets.
7. Size: Of dimension to fit onto sprinkler main and with outlet connections as required to match connected branch piping.
8. Branch Outlets: Grooved or threaded.

B. Adjustable Drop Nipples:

1. Manufacturers:
 - a. CECA, LLC.
 - b. Corcoran Piping System Co.
 - c. Merit Manufacturing; a division of Anvil International, Inc.

- d. Approved Equal.
2. Standard: UL 1474.
3. Pressure Rating: 300 psig.
4. Body Material: Steel pipe with EPDM-rubber O-ring seals.
5. Size: Same as connected piping.
6. Length: Adjustable.
7. Inlet and Outlet: Threaded.

2.7 SPRINKLERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide TYCO Fire Products; RFlI – Royal Flush II Concealed Pendent or comparable product by one of the following:
 1. AFAC Inc.
 2. Globe Fire Sprinkler Corporation.
 3. Reliable Automatic Sprinkler Co., Inc.
 4. Venus Fire Protection Ltd.
 5. Victaulic Company.
 6. Viking Corporation.
 7. Approved Equal.
- B. General Requirements:
 1. Standard: UL's "Fire Protection Equipment Directory" listing or "Approval Guide," published by FM Global, listing.
 2. Pressure Rating for Automatic Sprinklers: 175 psig minimum.
- C. Automatic Sprinklers with Heat-Responsive Element:
 1. Nonresidential Applications: UL 199.
 2. Characteristics: Nominal 1/2-inch orifice with Discharge Coefficient K of 5.6, and for "Ordinary" temperature classification rating unless otherwise indicated or required by application.
- D. Finishes:
 1. Sprinkler.
 - a. Chrome plated.
 2. Cover plate retainer assembly.
 - a. Painted, White.

PART 3 EXECUTION

3.1 PIPING INSTALLATION

- A. Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping. Install piping as indicated, as far as practical.

1. Deviations from approved working plans for piping require written approval from authorities having jurisdiction. File written approval with Architect before deviating from approved working plans.
- B. Piping Standard: Comply with requirements for installation of sprinkler piping in NFPA 13.
- C. Install seismic restraints on piping. Comply with requirements for seismic-restraint device materials and installation in NFPA 13.
- D. Use listed fittings to make changes in direction, branch takeoffs from mains, and reductions in pipe sizes.
- E. Install unions adjacent to each valve in pipes NPS 2 and smaller.
- F. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.
- G. Install "Inspector's Test Connections" in sprinkler system piping, complete with shutoff valve, and sized and located according to NFPA 13.
- H. Install sprinkler piping with drains for complete system drainage.
- I. Install alarm devices in piping systems.
- J. Install hangers and supports for sprinkler system piping according to NFPA 13. Comply with requirements for hanger materials in NFPA 13.
- K. Fill sprinkler system piping with water.
- L. Install sleeves for piping penetrations of walls, ceilings, and floors
- M. Install escutcheons for piping penetrations of walls, ceilings, and floors.

3.2 JOINT CONSTRUCTION

- A. Install couplings, flanges, flanged fittings, unions, nipples, and transition and special fittings that have finish and pressure ratings same as or higher than system's pressure rating for aboveground applications unless otherwise indicated.
- B. Install unions adjacent to each valve in pipes NPS 2 and smaller.
- C. Install flanges, flange adapters, or couplings for grooved-end piping on valves, apparatus, and equipment having NPS 2-1/2 and larger end connections.
- D. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

- E. Remove scale, slag, dirt, and debris from inside and outside of pipes, tubes, and fittings before assembly.
- F. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
 - 1. Apply appropriate tape or thread compound to external pipe threads.
 - 2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged.
- G. Welded Joints: Construct joints according to AWS D10.12M/D10.12, using qualified processes and welding operators according to "Quality Assurance" Article.
 - 1. Shop weld pipe joints where welded piping is indicated. Do not use welded joints for galvanized-steel pipe.
- H. Steel-Piping, Cut-Grooved Joints: Cut square-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe joints.
- I. Steel-Piping, Roll-Grooved Joints: Roll rounded-edge groove in end of pipe according to AWWA C606. Assemble coupling with housing, gasket, lubricant, and bolts. Join steel pipe and grooved-end fittings according to AWWA C606 for steel-pipe grooved joints.
- J. Brazed Joints: Join copper tube and fittings according to CDA's "Copper Tube Handbook," "Braze Joints" Chapter.
- K. Dissimilar-Material Piping Joints: Make joints using adapters compatible with materials of both piping systems.

3.3 VALVE AND SPECIALTIES INSTALLATION

- A. Install listed fire-protection valves, trim and drain valves, specialty valves and trim, controls, and specialties according to NFPA 13 and authorities having jurisdiction.
- B. Install listed fire-protection shutoff valves supervised open, located to control sources of water supply except from fire-department connections. Install permanent identification signs indicating portion of system controlled by each valve.

3.4 SPRINKLER INSTALLATION

- A. Install sprinklers in suspended ceilings in center of narrow dimension of acoustical ceiling panels.

3.5 IDENTIFICATION

- A. Install labeling and pipe markers on equipment and piping according to requirements in NFPA 13.

- B. Identify system components, wiring, cabling, and terminals.

3.6 FIELD QUALITY CONTROL

- A. Perform tests and inspections.
- B. Tests and Inspections:
 1. Leak Test: After installation, charge systems and test for leaks. Repair leaks and retest until no leaks exist.
 2. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
 3. Flush, test, and inspect sprinkler systems according to NFPA 13, "Systems Acceptance" Chapter.
 4. Energize circuits to electrical equipment and devices.
 5. Coordinate with fire-alarm tests. Operate as required.
 6. Coordinate with fire-pump tests. Operate as required.
 7. Verify that equipment hose threads are same as local fire-department equipment.
- C. Sprinkler piping system will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.

3.7 CLEANING

- A. Clean dirt and debris from sprinklers.
- B. Remove and replace sprinklers with paint other than factory finish.

3.8 PIPING SCHEDULE

- A. Standard-pressure, wet-pipe sprinkler system, NPS 2 and smaller, shall be one of the following:
 1. Standard-weight, black-steel pipe with threaded ends; uncoated, gray-iron threaded fittings; and threaded joints.
 2. Type L, hard copper tube with plain ends; wrought-copper solder-joint fittings; and brazed joints.
- B. Standard-pressure, wet-pipe sprinkler system, NPS 2-1/2 to NPS 4, shall be one of the following:
 1. Standard-weight, black-steel pipe with cut- or roll-grooved ends; painted or galvanized, grooved-end fittings for steel piping; grooved-end-pipe couplings for steel piping; and grooved joints.
 2. Standard-weight, black-steel pipe with plain ends; steel welding fittings; and welded joints.
 3. Type L, hard copper tube with plain ends; wrought-copper solder-joint fittings; and brazed joints.

- C. Standard-pressure, wet-pipe sprinkler system, NPS 5 and larger, shall be one of the following:
 - 1. Standard-weight, black-steel pipe with plain ends; steel welding fittings; and welded joints.

END OF SECTION 21 13 13

SECTION 22 05 00

COMMON REQUIREMENTS FOR PLUMBING

PART 1 GENERAL

1.1 SUMMARY

- A. This section applies to all work performed under Specification Division 22 for plumbing installation. All contractors and subcontractors performing work in this division must abide by the requirements of this section. Section Includes:
1. Codes and Standards.
 2. Permits and Inspections.
 3. Submittals.
 4. Substitutions.
 5. Identification and labeling.
 6. Cutting and Patching.
 7. Excavation and backfill.
 8. Sleeves.
 9. Fire Stopping.
 10. Supports and structural elements.
 11. Commissioning.
 12. Close-out Documents.

1.2 CODES AND STANDARDS

- A. The contractor shall perform all work in a manner which complies with all applicable Federal, State and Local Codes. These include, but not limited to;
1. OSHA Standard 1926.
 2. 2013 Kentucky Building Code.
 3. 2013 Kentucky Plumbing Code.
 4. 2012 International Mechanical Code.
 5. 2012 International Fire Code.
 6. 2009 NFPA 54 - National Fuel Gas Code.
 7. 2009 International Energy Conservation Code.
 8. 2009 ICC/ANSI A 117.1 Accessible and Usable Buildings and Facilities.
 9. 2014 NFPA 70 National Electrical Code
 10. 2010 NFPA 72 – National Fire Alarm and Signaling Code
- B. If any code listed above is superseded by a newer version, the code in force at the time of the bid shall prevail.

- C. In the event that a conflict occurs between the bid documents and any applicable code, the code shall dictate the work. The contractor must bring any such conflict to the attention of the Architect/Engineer immediately.

1.3 PERMITS AND INSPECTIONS.

- A. Obtain and pay for all permits and inspections as required, including utility connection fees unless otherwise noted.
- B. Schedule all required inspections and provide any assistance required by the inspecting authority.

1.4 SUBMITTALS

- A. Contractor must submit for approval, prior to release for production, copies of submittal literature for each product proposed for use on the project. Products to be reviewed will include mechanical equipment, materials, systems, methods and devices. The Engineer will review the submittals for compliance to the plans and specifications. Engineer's review of the submittal literature does not in any way relieve the contractor from total responsibility for the correct selection, application and installation of the product.
- B. The contractor will submit multiple copies of the submittal literature for review. The number of copies will vary by project but will be no less than four copies plus the number of copies requested to be returned to the contractor after review.
- C. Submittals are to be provided for the specific model and type of product. Any optional features to be included should be indicated. Submittals are to indicate all pertinent dimensions, clearance requirements and necessary supports.
- D. Submittal literature should be presented on standard 8.5" x 11" bond paper, except where scaled drawings require larger sheet size. All plumbing submittal literature should be provided at one time, bound in a three-ring binder with index and tabs. A cover sheet should indicate the project title, contractor name and contact information.
- E. Where requested provide samples of product for review and color selection charts.

1.5 SUBSTITUTIONS

- A. Products identified throughout the Project Specifications Manual with specific manufacturer names, trade names or model numbers are the basis of design.
- B. Instructions to Bidders specify time for submitting requests for Substitutions during bidding period to requirements specified in this section.
- C. Acceptance of a substitute product by the Architect/Engineer does not relieve the bidder from fully complying with the intent of the specifications. Substitutions shall be

equal or better than the basis of design in all aspects of quality, appearance and functionality.

- D. The bidder is responsible for any costs associated with changes or additional work required by the bidder or any other contractor on the project which is the result of variance between the basis of design and the substitution.

1.6 IDENTIFICATION AND LABELING

- A. Provide identification nameplates for all plumbing equipment relating to identification shown on drawings (e.g. Domestic Water Heater DWH-1). Nameplate to be laminated three-layer plastic with ½ inch high black letters on white background. Mount nameplate with metal screws in a prominent location.
- B. Provide 1-1/2 inch diameter brass tag with S-hook and chain at each pipe valve. Each tag to have a unique alpha-numerical identification (e.g. HW-1 for a hot water valve) stamped and paint filled. Provide a framed list of all valve tags and description in each mechanical room.
- C. Provide plastic wrap-around pipe labels indicating type of pipe and direction of flow (e.g. HWS for hot water supply) equal to Seton Setmark Snap-around Pipe Marker. Label to be size and color as per ASME (ANSI) A13.1-2007 Standard.
 - 1. Omit pipe labels on pipes exposed in finished areas.

1.7 CUTTING AND PATCHING

- A. The Plumbing Contractor shall be responsible to perform all cutting, patching, excavation and backfill associated with the installation of their work.
- B. The plans may not indicate all cutting or patching required by the installation. The contractor must review the site and anticipate those requirements.
- C. Cutting and patching is to be performed by skilled and experienced crafts persons.
- D. No cutting of structural elements is allowed. Contractor must obtain prior approval from the engineer / architect before any cutting is performed.
- E. Building elements that may need to be cut and patched for the installation of the plumbing work include: walls, ceilings, floors and roofs.
- F. When cutting building elements, remove only the least amount of material required to properly install the work.
- G. The building elements are to be patched and restored to original condition after plumbing work is completed. This includes final finished surfaces and paint to match existing.

- H. Provide sleeves around mechanical pipes and ducts penetrations, patching tightly to walls and floors. Provide fire stop caulk at fire rated penetrations.
- I. Openings in masonry and concrete materials are to be made with a masonry saw or core drill.
- J. Perform cutting, fitting, and patching, to complete Work, and to:
 - 1. Install new work.
 - 2. Uncover existing work for tie-in or repair.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.

1.8 EXCAVATION AND BACKFILL

- A. Unless otherwise indicated, the contractor is responsible to perform all excavation and backfill associated with their work.
- B. Excavation and backfill procedures are to include shoring as required by code.
- C. Backfill is to be performed in 6" layers thoroughly compressed between added layers. Backfill with good clean earth or bank run sand and gravel, no clay or gombo is to be used. Final grade is to be level with existing area.
- D. Remove all surplus dirt and debris from the site.
- E. Each pipe is to be laid in a firm bed with solid bearing throughout the entire length. Changes in direction are to be made with proper bends and all joints to be made with standard wye or ell fittings.

1.9 SLEEVES

- A. Provide sleeves in walls and floors where mechanical pipes or ducts penetrate.
 - 1. Sleeves for pipes through non-fire rated walls and floors: 18 gage thick galvanized steel or Schedule 40 black pipe.
 - 2. Sleeves for pipes through fire rated walls and floors: Schedule 40 black pipe, secured to wall structure. Fill void between pipe (insulation) and sleeve with fire stop caulk.
- B. Sleeves for penetrations between floors must extend 4 inches higher than the finished surface. Caulk liquid tight between floor slab and sleeve.
- C. Use mechanical sleeve seals equal to Thunderline Link-Seal for penetrations below grade or subject to water penetration.
- D. Provide chrome plated escutcheon plates around pipe penetrations exposed in finished areas.

- E. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- F. Whenever possible, provide sleeves while new walls and floors are being constructed.

1.10 FIRESTOPPING

- A. All penetrations through fire rated walls, ceilings and floors must be firestopped with a product manufactured and labeled for that purpose with an equivalent rating.
- B. Use silicone elastomeric fire stopping caulk; single or multiple component silicone elastomeric compound and compatible silicone sealant; as manufactured by 3-M Company, Dow Corning or Hilti Corp.
- C. Apply product as directed in manufacturer's instructions.

1.11 SUPPORTS AND STRUCTURAL ELEMENTS

- A. Provide additional supports and structural elements as needed to properly install plumbing equipment, pipes and ducts including hangers, stands, braces and supports.
- B. Supports to be shop fabricated from standard formed steel shapes; angle iron, channel or beams. Weld steel frames and supports by certified welders.
- C. Steel supports and structural elements to be finished with hot-dipped galvanize or three coats of rust resistant paint.
- D. Fasten supports and structural elements securely to building structure with rust resistant fasteners.

1.12 COMMISSIONING

- A. The Plumbing Contractor shall be responsible for the proper start-up and adjustment; referred to as the commissioning, of all equipment and systems installed under this Division. This includes communicating and coordinating with all parties involved in commissioning; equipment manufacturer, temperature control contractor, test and balance contractor and service technicians.
- B. The commissioning of plumbing equipment and systems is to be performed by certified service technician(s) trained and knowledgeable in the specific manufacturer and model. Manufacturer licensed start-up may be required for some equipment specified.
- C. The plumbing contractor must notify the engineer 4 day prior to the commissioning of any piece of equipment. The contractor must grant the engineer access to observe the commissioning process.

- D. Provide start-up check list and record data in accordance with manufacturer's product literature. Include copies of all reports in operation and maintenance binder.
- E. Prior to the test and balancing, the plumbing contractor is to:
 - 1. Install new, clean, air filters in all equipment.
 - 2. Verify proper rotation of all motors, pumps and fans.
 - 3. Lubricate all bearings and gear boxes.
 - 4. Pressure test all piping and repair leaks.
 - 5. Open and clean all water side strainers.
 - 6. Disinfect all domestic water systems.
 - 7. Verify that all control systems are functioning as specified.

1.13 CLOSEOUT DOCUMENTS

- A. After completion of the installation, but before final payment; the Plumbing Contractor is to submit (through the General Contractor and Architect/Engineer) to the Owner the following documentation.
 - 1. One complete full sized set of construction drawings, indicating with red pencil marks, all changes made during installation.
 - a. Each sheet of drawing is to show the contractor's name, telephone number, date and the words "As-Built Drawing".
 - 2. Four copies of Operation and Maintenance Manuals for all plumbing equipment and systems installed as a part of the project. With each O&M Manual:
 - a. Provide information in a three-ring binder, with title page, index page and tab dividers identifying each section.
 - b. Provide installing contractor's name, and contact information.
 - c. Provide manufacturer's published literature for startup, maintenance and operation of equipment.
 - d. Provide manufacturer's published parts list for equipment.
 - e. Provide copy of any standard and extended warranty certificate.
 - f. Provide copy of start-up check list and recorded data.
 - g. Provide copy of approved submittal data.
 - h. Copy of final inspection approval by state or local agency of record.

END OF SECTION

SECTION 22 07 00

PLUMBING INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Piping insulation, jackets and accessories.
 - 2. Equipment insulation, jackets and accessories.

1.2 BASIC REQUIREMENTS

- A. Provide submittal data indicating proposed products and methods for review by Engineer. Submit manufacturer's installation instructions for each product.
- B. Perform all work in accordance with prevailing codes and standards.
- C. Do not install products when ambient temperature and humidity do not meet manufacturer's requirements. Maintain conditions before, during and after installation for a minimum period of 24 hours.
- D. Installation to be performed by journeyman insulator with a minimum of five years training in the trade.

PART 2 PRODUCTS

2.1 PIPE INSULATION

- A. Manufacturers:
 - 1. Armaflex.
 - 2. Childers Products Co.
 - 3. Johns Manville.
 - 4. Owens Corning.
 - 5. Rubatex.
 - 6. Substitutions: Permitted.
- B. Glass Fiber Pipe Covering:
 - 1. Rigid pre-formed, one-piece, high-performance designed for use on commercial, power or process pipes. ASTM C547, Type I.
 - 2. Standardized internal dimensions conforming to industry pipe dimensions. Three foot lengths.
 - 3. Thermal Conductivity, $k = 0.24 \text{ (BTU-IN)/(HR-SF-degree F)}$ at 100 degree F mean temperature.

4. Operating Temperature Limit: 0 to 850 degrees F.
 5. Integrated Vapor Retarder Jacket: White Kraft paper with glass fiber yarn and bonded to aluminized film, secured with self-sealing longitudinal laps and butt strips.
- C. Elastomeric Rubber Pipe Covering:
1. Closed cell, fiber-free elastomeric foam tubing. Formaldehyde free. ASTM C534 Type I. Equal to AP Armaflex.
 2. Standardized internal dimensions conforming to industry pipe dimensions. Six foot lengths.
 3. Thermal Conductivity, $k = 0.256 \text{ (BTU-IN)/(HR-SF-degree F)}$ at 90 degree F mean temperature.
 4. Operating Temperature Limit: -20 to 220 degrees F.
 5. ASTM E84 Tested: Flame spread index less than 25, smoke developed index less than 50.
 6. Mold Resistant: Made with antimicrobial protection.
 7. Adhesive: Air-drying contact adhesive equal to Armaflex 520.
 8. Finish: White water-based latex enamel suitable for indoor or outdoor applications. Equal to Armaflex WB.
 9. Insulating Tape: Flexible, expanded closed-cell elastomeric foam tape with self-stick adhesive. Formaldehyde free. Made with antimicrobial protection.

2.2 EQUIPMENT INSULATION

- A. Semi-Rigid Fiber Glass Insulation Board:
1. Fiber glass insulation board designed for use on equipment in commercial, industrial, power or process applications. ASTM C612, Type IA and IB. Equal to Johns-Manville 800 Series.
 2. Thermal Conductivity, $k = 0.24 \text{ (BTU-IN)/(HR-SF-degree F)}$ at 75 degree F mean temperature.
 3. Operating Temperature Limit: 0 to 450 degrees F.
 4. Integrated Vapor Retarder Jacket: White Kraft paper with glass fiber yarn and bonded to aluminized film, secured with self-sealing longitudinal laps and butt strips.
- B. Elastomeric Rubber Sheet Insulation:
1. Closed cell, fiber-free elastomeric foam sheets. 36 inch X 48 inch standard sheets size. Formaldehyde free. ASTM C534 Type I. Equal to AP Armaflex.
 2. Thermal Conductivity, $k = 0.25 \text{ (BTU-IN)/(HR-SF-degree F)}$ at 75 degree F mean temperature.
 3. Operating Temperature Limit: -20 to 200 degrees F.
 4. ASTM E84 Tested: Flame spread index less than 25, smoke developed index less than 50.
 5. Mold Resistant: Made with antimicrobial protection.

2.3 Jackets:

1. PVC Plastic: Heavy-duty fitting covers and jacketing specifically designed for industrial and institutional pipe applications. Equal to Zeston 300 Series.
 - a. Thickness: 10 mil.
 - b. Color: White.
 - c. Operating Temperature Limits: 0 to 150 degrees F.
 - d. ASTM E84 Tested: Flame spread index less than 25, smoke developed index less than 50.
2. Aluminum Jacket: Precision formed aluminum fitting covers and jacketing to cover and weather-proof pipe insulation. Equal to Childers Metals Ell-Jacs.
 - a. 0.020 inch thick sheet, smooth finish, with longitudinal slip joints and 2 inch laps.
 - b. Die shaped fitting covers with factory attached protective liner.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Verify piping and equipment is tested before installation.
- B. Piping Insulation:
 1. Insulation and jackets to be installed by craftsperson skilled in the trade.
 2. Use pre-formed insulation fittings at all pipe branches, turns and appurtenances.
 3. Provide continuous vapor barrier for any pipes conveying fluids below ambient temperature. Continue vapor barrier through wall or floor penetrations.
 4. Use full lengths of insulation whenever possible. Do not fit scrape pieces where full length can be used.
 5. Slip non-slit elastomeric pipe tubing over pipe lengths as installed. Seal butt joints with adhesive. Miter cut and seal with adhesive at joints.
 6. Provide white PVC jacket and fitting covers on all insulated pipes exposed in indoor finished areas including mechanical equipment rooms.
 7. Provide weather-proof aluminum jacket and fitting covers on all insulated pipes exposed outdoors.

3.2 SCHEDULES

- A. Piping Insulation:
 1. Domestic Hot and Cold Water:
 - a. Glass Fiber Insulation.
 - 1) Pipe Size Range: 1-1/2 inch and smaller; Thickness: 1 inch.
 - 2) Pipe Size Range: Greater than 1-1/2 inch; Thickness: 2 inch.
 2. Roof Drain Bodies:
 - a. Glass Fiber Insulation.
 - 1) Thickness: 1 inch.

3. Roof Drainage within building:
 - a. Glass Fiber Insulation.
 - 1) Thickness: 1 inch.
4. Plumbing Vents Within 10 feet of building exterior:
 - a. Glass Fiber Insulation.
 - 1) Thickness: 1 inch.
5. Piping Exposed to Freezing:
 - a. Glass Fiber Insulation.
 - 1) Thickness: 2 inch.

END OF SECTION

SECTION 22 10 00

PLUMBING PIPING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Pipe hangers and supports.
 - 2. Pipe and pipe fittings.
 - 3. Valves.
 - 4. Piping specialties.
 - 5. Plumbing drainage specialties.
 - 6. Plumbing supply specialties.

1.2 BASIC REQUIREMENTS

- A. Submittals:
 - 1. Provide submittal data indicating proposed products and methods for review by Engineer. Submit manufacturer's recommended installation instructions for each product.
 - 2. Provide schedule indicating type of pipe and fittings to be used for each purpose. Indicate type of hangers to be used. (e.g. Domestic Water – Type L Copper with Wrot Fittings, Silver Soldered – Clevis Hanger, full sized for insulation).
 - 3. Provide a schedule indicating type of valve to be used for each purpose. Provide submittal data with manufacturer catalog information, and service rating.
 - 4. Provide submittal data for any specialties indicating manufacturer catalog information, size, rough-in requirements and finish.
 - 5. Provide submittal data for each pump indicating physical dimensions, performance, pump curve, motor type, and electrical characteristics.
- B. Perform all work in accordance with prevailing codes and standards.
- C. Installation to be performed by journeyman plumber with a minimum of five years training in the trade.
- D. Provide five year manufacturer warranty for all pumps.

PART 2 PRODUCTS

2.1 PIPE HANGERS AND SUPPORTS

- A. Manufacturers:

1. Carpenter & Paterson Inc.
 2. Elcen.
 3. Grinnell.
 4. Substitutions: Permitted.
- B. Conform to ASME B31.9.
- C. Hangers for Pipe Sizes 1/2 to 1-1/2 inch: Malleable iron, adjustable swivel, split ring.
- D. Hangers for Pipe Sizes 2 inches and Over: Carbon steel, adjustable, clevis.
- E. Hangers for Hot Pipe Sizes 2 to 4 inches: Carbon steel, adjustable, clevis.
- F. Hangers for Hot Pipe Sizes 6 inches and Over: Adjustable steel yoke, cast iron roll, double hanger.
- G. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- H. Multiple or Trapeze Hangers for Hot Pipe Sizes 6 inches and Over: Steel channels with welded spacers and hanger rods, cast iron roll.
- I. Wall Support for Pipe Sizes to 3 inches: Cast iron hook.
- J. Wall Support for Pipe Sizes 4 inches and Over: Welded steel bracket and wrought steel clamp.
- K. Vertical Support: Steel riser clamp.
- L. Floor Support for Cold Pipe: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
- M. Floor Support for Hot Pipe Sizes to 4 inches: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
- N. Floor Support for Hot Pipe Sizes 6 inches and Over: Adjustable cast iron roll and stand, steel screws, and concrete pier or steel support.
- O. Copper Pipe Support: Copper-plated, carbon-steel adjustable, ring.

2.2 PIPES AND TUBES

- A. Sanitary Sewer Piping, Buried Under Concrete Slab:
1. Cast Iron Pipe, extra heavy, with neoprene gaskets or lead and oakum joints.
ASTM A74
 2. PVC Pipe, Schedule 40 with socket fittings and solvent weld joints.
- B. Sanitary Sewer Piping, above Grade:

1. Cast Iron Pipe, hub and spigot, service weight, with neoprene gaskets or lead and oakum joints. ASTM A74
 2. Cast Iron Pipe, no-hub, service weight, with neoprene gaskets and stainless steel clamps. CISPI 301
 3. Copper Tube, type DWV with cast bronze or wrought copper fittings and Grade 50B solder joints. ASTM B306.
 4. PVC Pipe, type DWV, with PVC fittings and solvent weld joints. : ASTM D2665 or ASTM D3034. Plumbing contractor is responsible to verify that no PVC pipe is to be installed in a new or existing return air plenum space.
 5. Galvanized Steel Pipe, Sch. 40, with threaded galvanized cast iron fittings.
- C. Water Piping, Buried under concrete slab:
1. Copper Tubing, Type K: ASTM B42, annealed without fittings.
- D. Water Piping, above Grade:
1. Copper Tubing: ASTM B88, Type L, hard drawn, with cast brass or wrought copper fittings and Grade 95TA solder joints.
 2. CPVC Schedule 40, with socket fittings and solvent cement joints.
 3. Single fixture branch less than 1 inch: PEX Tubing with brass barb fittings.
- E. Equipment Drains and Overflows:
1. Steel Pipe: ASTM A53/A53M, Grade B, Schedule 40 black steel, malleable iron or forged steel fittings, threaded or welded joints.
 2. Copper Tubing: ASTM B88, Type M, hard drawn, cast brass, wrought copper fittings, lead free solder joints.
 3. PVC Pipe: ASTM D1785, Schedule 40, or ASTM D2241, SDR 21 or 26, PVC fittings, solvent weld joints. Plumbing contractor is responsible to verify that no PVC pipe is to be installed in a new or existing plenum space.
- F. Natural Gas Piping:
1. Above 2 inch diameter: Steel Pipe, Sch. 40 black steel with butt weld steel fittings.
 2. 2 inch diameter and smaller: Steel Pipe, Sch. 40 black steel with threaded black malleable fittings.
- G. Flue and Combustion Air Piping (condensing type gas appliance):
1. PVC Pipe: ASTM D1785, Schedule 40, polyvinyl chloride (PVC) material. Fittings: ASTM D2466, Schedule 40, PVC. Joints: ASTM D2855, solvent weld with ASTM D2564 solvent cement. Prime joints with a contrasting color.
 2. CPVC Pipe: ASTM F441/F441M, Schedule 40, chlorinated polyvinyl chloride (CPVC) material. Fittings: ASTM F438, CPVC, Schedule 40, socket type. Joints: ASTM D2846/D2846M, solvent weld with ASTM F493 solvent cement. Prime joints with a contrasting color.

2.3 VALVES

- A. Manufacturers:
 - 1. Apollo.
 - 2. Crane.
 - 3. Jenkins.
 - 4. Nibco.
 - 5. Substitutions: Permitted.

- B. Gate Valves:
 - 1. Up to 2 inches: Bronze body, bronze trim, non-rising stem, hand wheel, inside screw, double wedge disc, soldered or threaded.
 - 2. Over 2 inches: Iron body, bronze trim, rising stem, hand wheel, OS&Y, solid wedge, flanged or grooved ends.

- C. Ball Valves:
 - 1. Up to 2 inches: Bronze or stainless steel one piece body, chrome plated brass ball, teflon seats and stuffing box ring, lever handle, solder or threaded ends.
 - 2. Over 2 inches: Cast steel flanged body, chrome plated steel ball, Teflon seat and stuffing box seals and lever handle.

- D. Plug Valves:
 - 1. Up to 2 inches: Bronze body, bronze tapered plug, non-lubricated, Teflon packing, threaded ends.
 - 2. Over 2 inches: Cast iron body and plug, pressure lubricated, Teflon packing, flanged ends.

- E. Butterfly Valves:
 - 1. Up To 2 inches: Bronze body, stainless steel disc, resilient replaceable seat, threaded ends, extended neck, [10-position lever handle.] [infinite position lever handle with memory stop.]
 - 2. Over 2 inches: Iron body, chrome plated iron disc, resilient replaceable seat, wafer or lug ends, extended neck, 10 position lever handle.

- F. Swing Check Valves:
 - 1. Up to 2 inches: Bronze body and swing disc, solder or threaded ends.
 - 2. Over 2 inches: Iron body, bronze trim, swing disc, renewable disc and seat, flanged ends.

- G. Spring Loaded Check Valves:
 - 1. Iron body, bronze trim with threaded, wafer or flanged ends and stainless steel spring with renewable composition disc.

- H. Relief Valves:
 - 1. Bronze body, Teflon seat, stainless steel stem and springs, automatic, direct pressure actuated capacities ASME certified and labeled.

2.4 PIPING SPECIALTIES

- A. Flanges, Unions, and Couplings:
 - 1. Pipe Size 2 inches and Under: Malleable iron unions for threaded ferrous piping; bronze unions for copper pipe, soldered joints.
 - 2. Pipe Size Over 2 inches: Forged steel flanges for ferrous piping; bronze flanges for copper piping; preformed neoprene gaskets.
 - 3. Grooved and Shouldered Pipe End Couplings: Malleable iron housing, C-shape elastomer composition sealing gasket, steel bolts, nuts, and washers.
 - 4. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

- B. Strainers:
 - 1. Size 2 inches and Under: Threaded brass or iron body for 175 psig working pressure, Y pattern with 1/32 inch stainless steel perforated screen.
 - 2. Size 2-1/2 inch to 4 inch: Flanged iron body for 175 psig working pressure, Y pattern with 3/64 inch stainless steel perforated screen.
 - 3. Size 5 inch and Larger: Flanged iron body for 175 psig working pressure, basket pattern with 1/8 inch stainless steel perforated screen.

- C. Flexible Connectors:
 - 1. Corrugated stainless steel or bronze hose with single layer of stainless steel exterior braiding, minimum 9 inches long with copper tube ends; for maximum working pressure 500 psig.

- D. Pressure Gages:
 - 1. Manufacturers:
 - a. Marsh.
 - b. Trerice.
 - c. U.S. Guage.
 - d. Weksler.
 - e. Substitutions: Permitted.
 - 2. Gage: ASME B40.1, UL 393 with bourdon tube, rotary brass movement, brass socket, front calibration adjustment, black scale on white background.
 - a. Case: Stainless steel.
 - b. Bourdon Tube: Phosphor bronze.
 - c. Dial Size: 3-1/2 inch diameter.
 - d. Mid-Scale Accuracy: One percent.
 - e. Scale: Psi.

- E. Thermometers:
 - 1. Manufacturers:
 - a. Trerice.
 - b. U.S. Guage.
 - c. Weksler.
 - d. Substitutions: Permitted.

2. Stem Type Thermometer: ASTM E1, adjustable angle, red appearing mercury, lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device.
 - a. Size: 9 inch scale.
 - b. Window: Clear Lexan.
 - c. Stem: Brass, 3/4 inch NPT, 3-1/2 inch long.
 - d. Accuracy: 2 percent.
 - e. Calibration: Degrees F.
3. Dial Type Thermometer: ASTM E1, adjustable angle, stainless steel case, bimetallic helix actuated with silicone fluid damping, white with black markings and black pointer hermetically sealed lens, stainless steel stem.
 - a. Size: 3-1/2 inch diameter dial.
 - b. Lens: Clear Lexan.
 - c. Accuracy: 1 percent.
 - d. Calibration: Degrees F.

2.5 PLUMBING DRAINAGE SPECIALTIES

- A. Floor Drains:
 1. Manufacturers:
 - a. Zurn.
 - b. Substitutions: Permitted.
 2. Floor Drain (FD): Medium duty lacquered cast iron for showers and finished areas, 5" round, chrome top. (ZN415B-CP)
- B. Cleanouts:
 1. Manufacturers:
 - a. Josam.
 - b. Jay R. Smith.
 - c. Watts.
 - d. Zurn.
 - e. Substitutions: Permitted.
 2. Finished Floor: Lacquered cast iron body with anchor flange, reversible clamping collar, and adjustable nickel-bronze round scored cover in service areas and square depressed cover to accept floor finish in finished floor areas.
 3. Line type with lacquered cast iron body and round epoxy coated gasketed cover, and round stainless steel access cover secured with machine screw.

2.6 PLUMBING SUPPLY SPECIALTIES

- A. Water Hammer Arrestors:
 1. Manufacturers:
 - a. Josam Model 75001.
 - b. Substitutions: Permitted.

2. Copper construction, piston type To PDI WH 201, pre-charged suitable for operation in temperature range -100 to 300 degrees F and maximum 250 psi working pressure.
- B. Hose Bibbs/Hydrants:
1. Manufacturers:
 - a. Woodford.
 - b. Substitutions: Permitted.
 2. Interior Hose Bibs (HB): Bronze or brass, replaceable hexagonal disc, hose thread spout, chrome plated with vacuum breaker. Removable key. (24CH)

PART 3 EXECUTION

3.1 INSTALLATION – PIPING

- A. Establish all elevations (inverts) in coordination with other trade work prior to installing.
 1. Establish elevations of buried piping outside the building to obtain not less than 2 feet of cover.
 2. Establish invert elevations, slopes for drainage to 1/4 inch per foot minimum. Maintain gradients.
- B. Install pipes parallel to building structure wherever possible. Group pipes to maintain headroom and conserve space. Group pipes at common elevation where possible.
- C. Install all pipes in a matter to compensate for normal expansion without stress on fittings.
- D. Install pipes with proper slope for drainage.
 1. Slope all drain and waste piping at least 1/ 4 inch per foot toward discharge.
 2. Slope all water pipes to point of drainage. Provide drain valves with hose connections at low points.
 3. Test drainage piping in accordance with local code requirements.
- E. Provide unions at each connection to equipment. Use dielectric unions to isolate dissimilar materials.
- F. Paint all pipe exposed outdoors with two coats of rust preventative paint.
- G. Extend all equipment drain pipes and relief discharge pipes to nearest floor drain.
- H. Take care to assemble piping systems with no foreign materials, scale or rust inside. Use only new materials.

- I. Use full lengths of pipe where possible. Do not piece together scraps of pipe if one length can be used.
- J. Plumbing Contractor is responsible to verify that no PVC materials are used in a new or existing ceiling return air plenum. PVC pipe and fittings may only be used where allowed by code.
- K. Disinfect all domestic water piping systems.
 - 1. Pressure test all piping and repair any leaks before disinfecting. Fill system with clean water. Verify pH of water to be treated is between 7.4 and 7.6 by adding alkali (caustic soda or soda ash) or acid (hydrochloric).
 - 2. Inject disinfectant, free chlorine in liquid, powder, tablet or gas form, throughout system to obtain 50 to 80 mg/L residual. Bleed water from outlets to accomplish distribution.
 - 3. Maintain disinfectant in system for 24 hours. When final disinfectant residual tests less than 25 mg/L, repeat treatment.
 - 4. Flush disinfectant from system. Take samples no sooner than 24 hours after flushing, and analyze in accordance with AWWA C601.

3.2 INSTALLATION – VALVES

- A. Install valves with stems upright or horizontal, not inverted.
- B. Install ball or butterfly valves for shut-off and to isolate equipment, part of systems, or vertical risers.
- C. Provide lug end butterfly valves adjacent to equipment when functioning to isolate equipment.
- D. Install spring loaded check valves on discharge of pumps.
- E. Install plug valves for throttling service. Install non-lubricated plug valves only when shut-off or isolating valves are also installed.
- F. Install 3/4 inch ball drain valves at main shut-off valves, low points of piping, bases of vertical risers, and at equipment. Pipe to nearest drain.
- G.

3.3 INSTALLATION - PIPING SPECIALTIES

- A. Install pressure gages with pulsation dampers. Provide needle valve to isolate each gage. Extend nipples and siphons to allow clearance from insulation.
- B. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2 inches for installation of thermometer sockets. Allow clearance from insulation.

- C. Install gages and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
- D. Adjust gages and thermometers to final angle, clean windows and lenses, and calibrate to zero.
- E. Provide drain and hose connection with valve on strainer blow down connection.
- F. Test and certify new and existing backflow preventers in accordance with State Plumbing Code.
- G. Install water hammer arrestors complete with accessible isolation valve on hot and cold water supply piping to flush valves and quick action valves.
- H. Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Install with clearance at cleanout for rodding of drainage system.
 - 1. Encase exterior cleanouts in concrete flush with grade.
 - 2. Install floor cleanouts at elevation to accommodate finished floor.
- I. Provide trap primer valve and water connection to floor drains located in mechanical equipment rooms.

3.4 INSTALLATION - PIPE HANGERS AND SUPPORTS

- A. Support horizontal piping as scheduled.
 - 1. Place hangers within 12 inches of each horizontal elbow.
 - 2. Support pipe at the following minimum intervals:
 - a. Cast Iron Pipe; all sizes: 5 feet with 3/8 inch rod.
 - b. Steel Pipe; 3 inch and smaller: 12 feet with 1/2 inch rod.
 - c. Steel Pipe; 4 inch and larger: 12 feet with 5/8 inch rod.
 - d. Copper Tube; 1-1/4 inch and smaller: 6 feet with 1/2 inch rod.
 - e. Copper Tube; 1-1/2 inch and larger: 10 feet with 1/2 inch rod.
 - f. PVC Pipe; all sizes: 4 feet with 3/8 inch rod.
- B. Size hangers for full outside diameter of insulation. Provide sheet metal saddles to prevent compression of insulation.
- C. Provide hangers with vertical adjustment.
- D. Support vertical piping at every floor.
 - 1. Support vertical cast iron pipe at each floor at hub.
 - 2. Support riser piping independently of connected horizontal piping.

- E. Provide trapeze style hangers where multiple pipes are installed in parallel and at same elevation.
- F. Provide copper plated hangers and supports for copper piping.
- G. Paint all fabricated steel supports and braces with two coats of rust preventative paint.

END OF SECTION – 22 10 00

SECTION 22 40 00
PLUMBING FIXTURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Water closets.
 - 2. Urinals.
 - 3. Lavatories.

1.2 BASIC REQUIREMENTS

- A. Submittals:
 - 1. Provide submittal data indicating proposed products and methods for review by Engineer. Submit manufacturer's recommended installation instructions for each product.
 - 2. Provide submittal data for any specialties indicating manufacturer catalog information, size, rough-in requirements and finish.
- B. Perform all work in accordance with prevailing codes and standards.
- C. Installation to be performed by journeyman plumber with a minimum of five years training in the trade.
- D. Provide five year manufacturer warranty for all electric water cooler compressor.
- E. Plumbing fixtures to be listed by the original manufacturer. Re-labeled or supply house-branded products will not be considered.

PART 2 PRODUCTS

2.1 FLUSH VALVE WATER CLOSETS (WC)

- A. Manufacturers:
 - 1. American Standard.
 - 2. Crane.
 - 3. Kohler.
 - 4. Substitutions: Permitted.
- B. Bowl: Wall hung vitreous china closet with elongated rim, 1-1/2 inch spud, china bolt caps; maximum 1.6 gallon flush volume.

- C. Flush Valve: Exposed chrome plated, battery powered for wall hung top mounted spud, 1.6 gpf. Provide with escutcheon, seat bumper, integral screwdriver stop and vacuum breaker.
- D. Seat: Solid white plastic, open front, extended back, self-sustaining hinge, brass bolts, without cover.
- E. Wall Mounted Carrier: Adjustable cast iron frame, integral drain hub and vent, adjustable spud. lugs for floor and wall attachment, threaded fixture studs with nuts and washers.
- F. Handicap Water Closet (HWC): Same as WC, mount at ADA height

2.2 WALL HUNG URINALS (U)

- A. Manufacturers:
 - 1. American Standard.
 - 2. Crane.
 - 3. Kohler.
 - 4. Substitutions: Permitted.
- B. Urinal: Vitreous china, wall hung urinal with shields, integral trap, removable stainless steel strainer, 3/4 inch top spud, steel supporting hanger; maximum 1.0 gallon flush volume. (K-4989-T)
- C. Flush Valve: Exposed chrome plated, diaphragm type with battery powered sensor, escutcheon, integral screwdriver stop, vacuum breaker. (Regal 8186-1.0)
- D. Wall Mounted Carrier: Cast iron and steel frame with tubular legs, lugs for floor and wall attachment, threaded fixture studs for fixture hanger, bearing studs. (Z1222)
- E. Handicap Urinal (HU): Same as U, mount at ADA height.

2.3 LAVATORIES (L)

- A. L1: Molded in basin furnished with countertop (FBO): Plumbing contractor to furnish and install all trim.
- B. Trim: Chrome plated metered mixing faucet with aerator with maximum 2.0 gpm flow (Delta 22C101), Provide chrome plated stops and risers, open grid strainer, chrome plated brass P-trap with clean- out plug and arm with escutcheon.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify adjacent construction is ready to receive rough-in work of this section.
- B. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough in and installation.

3.2 INSTALLATION

- A. Install Work in accordance with Kentucky State Building Code.
- B. Install each fixture with chrome plated rigid or flexible supplies with screwdriver stops, reducers, and escutcheons.
- C. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.
- D. Caulk all fixtures with white silicon.

END OF SECTION – 22 40 00

SECTION 23 05 00

COMMON REQUIREMENTS FOR HVAC

PART 1 GENERAL

1.1 SUMMARY

- A. This section applies to all work performed under Specification Division 23 for HVAC installation. All contractors and subcontractors performing work in this division must abide by the requirements of this section. Section Includes:
1. Codes and Standards.
 2. Permits and Inspections.
 3. Submittals.
 4. Substitutions.
 5. Identification and labeling.
 6. Cutting and Patching.
 7. Excavation and backfill.
 8. Sleeves.
 9. Fire Stopping.
 10. Supports and structural elements.
 11. Commissioning.
 12. Closeout Documents.

1.2 CODES AND STANDARDS

- A. The contractor shall perform all work in a manner which complies with all applicable Federal, State and Local Codes. These include, but not limited to;
1. OSHA Standard 1926.
 2. 2013 Kentucky Building Code.
 3. 2013 Kentucky Plumbing Code.
 4. 2012 International Mechanical Code.
 5. 2012 International Fire Code.
 6. 2009 NFPA 54 - National Fuel Gas Code.
 7. 2009 International Energy Conservation Code.
 8. 2009 ICC/ANSI A 117.1 Accessible and Usable Buildings and Facilities.
 9. 2014 NFPA 70 National Electrical Code
 10. 2010 NFPA 72 – National Fire Alarm and Signaling Code
- B. If any code listed above is superseded by a newer version, the code in force at the time of the bid shall prevail.

- C. In the event that a conflict occurs between the bid documents and any applicable code, the code shall dictate the work. The contractor must bring any such conflict to the attention of the Architect/Engineer immediately.

1.3 PERMITS AND INSPECTIONS.

- A. Obtain and pay for all permits and inspections as required, including utility connection fees unless otherwise noted.
- B. Schedule all required inspections and provide any assistance required by the inspecting authority.

1.4 SUBMITTALS

- A. Contractor must submit for approval, prior to release for production, copies of submittal literature for each product proposed for use on the project. Products to be reviewed will include mechanical equipment, materials, systems, methods and devices. The Engineer will review the submittals for compliance to the plans and specifications. Engineer's review of the submittal literature does not in any way relieve the contractor from total responsibility for the correct selection, application and installation of the product.
- B. The contractor will submit multiple copies of the submittal literature for review. The number of copies will vary by project but will be no less than four copies plus the number of copies requested to be returned to the contractor after review.
- C. Submittals are to be provided for the specific model and type of product. Any optional features to be included should be indicated. Submittals are to indicate all pertinent dimensions, clearance requirements and necessary supports.
- D. Submittal literature should be presented on standard 8.5" x 11" bond paper, except where scaled drawings require larger sheet size. All HVAC submittal literature should be provided at one time, bound in a three-ring binder with index and tabs. A cover sheet should indicate the project title, contractor name and contact information.
- E. Where requested provide samples of product for review and color selection charts.

1.5 SUBSTITUTIONS

- A. Products identified throughout the Project Specifications Manual with specific manufacturer names, trade names or model numbers are the basis of design.
- B. Instructions to Bidders specify time for submitting requests for Substitutions during bidding period to requirements specified in this section.
- C. Acceptance of a substitute product by the Architect/Engineer does not relieve the bidder from fully complying with the intent of the specifications. Substitutions shall be

equal or better than the basis of design in all aspects of quality, appearance and functionality.

- D. The bidder is responsible for any costs associated with changes or additional work required by the bidder or any other contractor on the project which is the result of variance between the basis of design and the substitution.

1.6 IDENTIFICATION AND LABELING

- A. Provide identification nameplates for all HVAC equipment relating to identification shown on drawings (e.g. Air Handling Unit AHU-101). Nameplate to be laminated three-layer plastic with ½ inch high black letters on white background. Mount nameplate with metal screws in a prominent location.
- B. Provide 1-1/2 inch diameter brass tag with S-hook and chain at each pipe valve. Each tag to have a unique alpha-numerical identification (e.g. H-1 for a hot water valve) stamped and paint filled. Provide a framed list of all valve tags and description in each mechanical room.
- C. Provide plastic wrap-around pipe labels indicating type of pipe and direction of flow (e.g. HWS for hot water supply) equal to Seton Setmark Snap-around Pipe Marker. Label to be size and color as per ASME (ANSI) A13.1-2007 Standard.
 - 1. Omit pipe labels on pipes exposed in finished areas.

1.7 CUTTING AND PATCHING

- A. The HVAC Contractor shall be responsible to perform all cutting, patching, excavation and backfill associated with the installation of their work.
- B. The plans may not indicate all cutting or patching required by the installation. The contractor must review the site and anticipate those requirements.
- C. Cutting and patching is to be performed by skilled and experienced crafts persons.
- D. No cutting of structural elements is allowed. Contractor must obtain prior approval from the engineer / architect before any cutting is performed.
- E. Building elements that may need to be cut and patched for the installation of the HVAC work include: walls, ceilings, floors and roofs.
- F. When cutting building elements, remove only the least amount of material required to properly install the work.
- G. The building elements are to be patched and restored to original condition after HVAC work is completed. This includes final finished surfaces and paint to match existing.

- H. Provide sleeves around mechanical pipes and ducts penetrations, patching tightly to walls and floors. Provide fire stop caulk at fire rated penetrations.
- I. Openings in masonry and concrete materials are to be made with a masonry saw or core drill.
- J. Perform cutting, fitting, and patching, to complete Work, and to:
 - 1. Install new work.
 - 2. Uncover existing work for tie-in or repair.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.

1.8 EXCAVATION AND BACKFILL

- A. Unless otherwise indicated, the contractor is responsible to perform all excavation and backfill associated with their work.
- B. Excavation and backfill procedures are to include shoring as required by code.
- C. Backfill is to be performed in 6" layers thoroughly compressed between added layers. Backfill with good clean earth or bank run sand and gravel, no clay or gombo is to be used. Final grade is to be level with existing area.
- D. Remove all surplus dirt and debris from the site.
- E. Each pipe is to be laid in a firm bed with solid bearing throughout the entire length. Changes in direction are to be made with proper bends and all joints to be made with standard wye or ell fittings.

1.9 SLEEVES

- A. Provide sleeves in walls and floors where mechanical pipes or ducts penetrate.
 - 1. Sleeves for pipes through non-fire rated walls and floors: 18 gage thick galvanized steel or Schedule 40 black pipe.
 - 2. Sleeves for ducts through non-fire rated walls and floors: 18 gage thick galvanized steel. Provide angle flanges on all sides.
 - 3. Sleeves for pipes through fire rated walls and floors: Schedule 40 black pipe, secured to wall structure. Fill void between pipe (insulation) and sleeve with fire stop caulk.
 - 4. Sleeve for ducts through fire rated walls and floors: provide manufactured fire damper and sleeve assembly as provided by manufacturer's requirements. Provide angle flanges on all sides.
- B. Sleeves for penetrations between floors must extend 4 inches higher than the finished surface. Caulk liquid tight between floor slab and sleeve.

- C. Use mechanical sleeve seals equal to Thunderline Link-Seal for penetrations below grade or subject to water penetration.
- D. Provide chrome plated escutcheon plates around pipe penetrations exposed in finished areas.
- E. Size sleeves large enough to allow for movement due to expansion and contraction. Provide for continuous insulation wrapping.
- F. Whenever possible, provide sleeves while new walls and floors are being constructed.

1.10 FIRESTOPPING

- A. All penetrations through fire rated walls, ceilings and floors must be firestopped with a product manufactured and labeled for that purpose with an equivalent rating.
- B. Use silicone elastomeric fire stopping caulk; single or multiple component silicone elastomeric compound and compatible silicone sealant; as manufactured by 3-M Company, Dow Corning or Hilti Corp.
- C. Apply product as directed in manufacturer's instructions.

1.11 SUPPORTS AND STRUCTURAL ELEMENTS

- A. Provide additional supports and structural elements as needed to properly install HVAC equipment, pipes and ducts including hangers, stands, braces and supports.
- B. Supports to be shop fabricated from standard formed steel shapes; angle iron, channel or beams. Weld steel frames and supports by certified welders.
- C. Steel supports and structural elements to be finished with hot-dipped galvanize or three coats of rust resistant paint.
- D. Fasten supports and structural elements securely to building structure with rust resistant fasteners.

1.12 COMMISSIONING

- A. The HVAC Contractor shall be responsible for the proper start-up and adjustment; referred to as the commissioning, of all equipment and systems installed under this Division. This includes communicating and coordinating with all parties involved in commissioning; equipment manufacturer, temperature control contractor, test and balance contractor and service technicians.
- B. The commissioning of HVAC equipment and systems is to be performed by certified service technician(s) trained and knowledgeable in the specific manufacturer and model. Manufacturer licensed start-up may be required for some equipment specified.

- C. The HVAC contractor must notify the engineer 4 day prior to the commissioning of any piece of equipment. The contractor must grant the engineer access to observe the commissioning process.
- D. Provide start-up check list and record data in accordance with manufacturer's product literature. Include copies of all reports in operation and maintenance binder.
- E. Prior to the test and balancing, the HVAC contractor is to:
 - 1. Install new, clean, air filters in all equipment.
 - 2. Verify proper rotation of all motors, pumps and fans.
 - 3. Lubricate all bearings and gear boxes.
 - 4. Pressure test all piping and repair leaks.
 - 5. Open and clean all water side strainers.
 - 6. Flush and fill all water side systems. Charge with final fluids and purge all air.
 - 7. Verify that all control systems are functioning as specified.

1.13 CLOSEOUT DOCUMENTS

- A. After completion of the installation, but before final payment; the HVAC Contractor is to submit (through the General Contractor and Architect/Engineer) to the Owner the following documentation.
 - 1. One complete full sized set of construction drawings, indicating with red pencil marks, all changes made during installation.
 - a. Each sheet of drawing is to show the contractor's name, telephone number, date and the words "As-Built Drawing".
 - 2. Four copies of Operation and Maintenance Manuals for all HVAC equipment and systems installed as a part of the project. With each O&M Manual:
 - a. Provide information in a three-ring binder, with title page, index page and tab dividers identifying each section.
 - b. Provide installing contractor's name, and contact information.
 - c. Provide manufacturer's published literature for startup, maintenance and operation of equipment.
 - d. Provide manufacturer's published parts list for equipment.
 - e. Provide copy of any standard and extended warranty certificate.
 - f. Provide copy of start-up check list and recorded data.
 - g. Provide copy of approved submittal data.
 - h. Copy of final inspection approval by state or local agency of record.

END OF SECTION

SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. All Division 23 specification sections, drawings, and general provisions of the contract apply to work of this section, as do other documents referred to in this section.

1.2 SCOPE OF WORK

- A. The owner will directly contract with a certified testing, adjusting, and balancing (TAB Agency) to test, adjust, and balance the HVAC systems.
- B. This specification section is included herein to assist and inform the Contractor of the standards, requirements and scope of the work to be performed by the Commonwealth's TAB Contractor.

1.3 PREPARATION AND COORDINATION REQUIREMENTS – GENERAL

- A. Shop drawings, submittal data, up-to-date revisions, change orders, and other data required for planning, preparation, and execution of the TAB work shall be provided to the TAB Agency no later than 30 days prior to the start of TAB work.
- B. System installation and equipment startup shall be complete prior to the TAB Agency's being notified to begin.
- C. The building control system shall be complete and operational. The Building Control system contractor shall install all necessary computers and computer programs, and make these operational. Assistance shall be provided as required for reprogramming, coordination, and problem resolution.
- D. All test points, balancing devices, identification tags, etc. shall be accessible and clear of insulation and other obstructions that would impede TAB procedures.
- E. Qualified installation or startup personnel shall be readily available for the operation and adjustment of the systems. Assistance shall be provided as required for coordination and problem resolution.

1.4 PREPARATION AND COORDINATION REQUIREMENTS – HVAC CONTROLS

- A. Written notice shall be submitted through the General Contractor to the Architect stating that the Control System is operating and controlling the HVAC System.

- B. The control subcontractor shall have entered all data needed for the TAB Agency to begin work.
- C. The Control subcontractor shall be available to correct any problems that the TAB Agency might have with the systems.
- D. All costs for additional work by the TAB Agency due to the Contractor's failure to comply with the above shall be paid by the Contractor and any subcontractor(s) for HVAC controls.

1.5 PREPARATION AND COORDINATION REQUIREMENTS – MECHANICAL

- A. Written notice shall be submitted through the General Contractor to the Architect stating that the HVAC system is operational and ready for the TAB Agency.
- B. The Mechanical subcontractor shall have proved all units operational and all air outlets in the full open position.
- C. The Mechanical Contractor shall be available to correct any problems that the TAB Agency might have with any equipment or systems.
- D. The Mechanical Contractor shall furnish and install any replacement sheaves, pulleys and drive belts required for flow adjustments, as determined by the TAB Agency. Adjustable sheaves shall be selected so that the final adjustment position is in the middle third of the total adjustment range.
- E. All costs for additional work by the TAB Agency due to the Contractor's failure to comply with the above shall be paid by the Contractor and any subcontractor(s) for mechanical work.

1.6 PREPARATION AND COORDINATION REQUIREMENTS – DUCTWORK

- A. Ductwork air leakage testing shall be performed by the TAB Agency.
- B. The ductwork/sheetmetal subcontractor shall promptly correct any related problems discovered by the leakage tests.
- C. All costs associated with retesting and/or delays or other problems which impede the TAB Agency from performing such testing shall be paid by the contractor and any subcontractor(s) for ductwork.

1.7 WORK BY TAB AGENCY

- A. The work included in the remainder of this section consists of furnishing labor, instruments, and tools required in testing, adjusting and balancing the HVAC systems, as described in these specifications or shown on accompanying drawings. Services shall include checking equipment performance, taking the specified measurements, and

recording and reporting the results. This work shall be performed by the TAB Agency under direct contract to the owner. The remainder herein is also for the information of the Contractor and all subcontractors.

- B. The items requiring testing, adjusting, and balancing include the following: [Consultant to edit list as required]
 - 1. AIR SYSTEMS:
 - a. Energy Recovery Unit (ERV-1)
 - 1) Supply Fan AHU
 - 2) Exhaust Fans
 - 3) Zone branch and main ducts
 - 4) Diffusers, Registers and Grilles
 - 5) Coils (Air Temperatures)

1.8 QUALIFICATIONS

- 1. Agency qualifications: The TAB Agency shall be a current member of a nationally recognized balance organization (“National 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).
- 2. The selected TAB Agency must provide proof of certification for the total project (air, water, sound, vibration, etc.).
- 3. 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 an “National Project Performance Guaranty” assuring that the project systems were tested, adjusted and balanced in accordance with the project specifications and National Standards.

- B. Submit 3 copies of the Final TAB Report.

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:

- B. For supply fans:
 - 1. Fan speeds – Test and adjust fan RPM to achieve maximum or design CFM. Confirm proper rotation direction.
 - 2. 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.
 - 3. Pitot-Tube Traverse – Perform a Pitot-tube traverse of main supply and return ducts, as applicable to obtain total CFM.
 - 4. 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.
 - 5. Static Pressure – Test and record system static profile of each supply fan.

- C. For exhaust fans:
 - 1. Fan speeds – Test and adjust fan RPM to achieve maximum and design CFM. Confirm proper rotation direction.
 - 2. 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.
 - 3. Pitot-tube Traverse – Perform a Pitot-tube traverse of main exhaust ducts to obtain total CFM.

- D. For zone, branch and main ducts:
 - 1. 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.

- E. For diffusers, registers and grilles:
 - 1. Tolerances – Test, adjust, and balance each diffuser, grille, and register to within 10% of design requirements. Minimize drafts.
 - 2. Identification – Identify the type, location, and size of each grille, diffuser, and register. This information shall be recorded on air outlet data sheets.

- F. For coils:
 - 1. 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. Dry-bulb temperature shall be taken on the entering and leaving side of each heating coil.

END OF SECTION -23 05 93

SECTION 23 07 00

HVAC INSULATION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Piping insulation, jackets and accessories.
 - 2. Ductwork insulation and jackets.

1.2 BASIC REQUIREMENTS

- A. Provide submittal data indicating proposed products and methods for review by Engineer. Submit manufacturer's installation instructions for each product.
- B. Perform all work in accordance with prevailing codes and standards.
- C. Do not install products when ambient temperature and humidity do not meet manufacturer's requirements. Maintain conditions before, during and after installation for a minimum period of 24 hours.
- D. Installation to be performed by journeyman insulator with a minimum of five years training in the trade.

PART 2 PRODUCTS

2.1 PIPE INSULATION

- A. Manufacturers:
 - 1. Armaflex.
 - 2. Childers Products Co.
 - 3. Johns Manville.
 - 4. Knauf.
 - 5. Owens Corning.
 - 6. Pittsburgh Corning Corp.
 - 7. Rubatex.
 - 8. Substitutions: Permitted.
- B. Cellular Glass Pipe Insulation (Foamglass):
 - 1. Light weight, rigid, all-glass, closed cell thermal insulation in preformed pipe and fittings. ASTM C 552.
 - 2. Standardized internal dimensions conforming to industry pipe dimensions.

3. Thermal Conductivity, $k = 0.29 \text{ (BTU-IN)/(HR-SF-degree F)}$ at 75 degree F mean temperature.
 4. Operating Temperature Limit: -20 to 900 degrees F.
 5. Density: 7.5 LBS/CU FT.
 6. CFC and HCFC free.
 7. Coat entire surface in contact with pipe and seal edges and ends with mastic.
- C. Glass Fiber Pipe Covering:
1. Rigid pre-formed, one-piece, high-performance designed for use on commercial, power or process pipes. ASTM C547, Type I.
 2. Standardized internal dimensions conforming to industry pipe dimensions. Three foot lengths.
 3. Thermal Conductivity, $k = 0.24 \text{ (BTU-IN)/(HR-SF-degree F)}$ at 100 degree F mean temperature.
 4. Operating Temperature Limit: 0 to 850 degrees F.
 5. Integrated Vapor Retarder Jacket: White Kraft paper with glass fiber yarn and bonded to aluminized film, secured with self-sealing longitudinal laps and butt strips.
- D. Elastomeric Rubber Pipe Covering:
1. Closed cell, fiber-free elastomeric foam tubing. Formaldehyde free. ASTM C534 Type I. Equal to AP Armaflex.
 2. Standardized internal dimensions conforming to industry pipe dimensions. Six foot lengths.
 3. Thermal Conductivity, $k = 0.256 \text{ (BTU-IN)/(HR-SF-degree F)}$ at 90 degree F mean temperature.
 4. Operating Temperature Limit: -20 to 220 degrees F.
 5. ASTM E84 Tested: Flame spread index less than 25, smoke developed index less than 50.
 6. Mold Resistant: Made with antimicrobial protection.
 7. Adhesive: Air-drying contact adhesive equal to Armaflex 520.
 8. Finish: White water-based latex enamel suitable for indoor or outdoor applications. Equal to Armaflex WB.
 9. Insulating Tape: Flexible, expanded closed-cell elastomeric foam tape with self-stick adhesive. Formaldehyde free. Made with antimicrobial protection.

2.2 DUCTWORK INSULATION

- A. Manufacturers:
1. Childers Products Co.
 2. Johns Manville.
 3. Knauf.
 4. Owens Corning.
 5. Pittsburgh Corning Corp.
 6. Substitutions: Permitted.

- B. Flexible Glass Fiber Duct Wrap:
 - 1. Flexible, noncombustible, formaldehyde-free, fiberglass thermal/acoustical blanket with foil vapor barrier. ASTM C553 Type II.
 - 2. Thermal Conductivity, $k = 0.24 \text{ (BTU-IN)/(HR-SF-degree F)}$ at 75 degree F mean temperature.
 - 3. Operating Temperature Limit: 40 to 250 degrees F.
 - 4. Vapor Retarder Jacket: Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, secured with pressure sensitive tape.

- C. Medium Density Rigid Glass Fiber Board:
 - 1. Fiber Glass Insulation Board designed for use on equipment and ductwork in commercial and industrial HVAC, power and process applications. ASTM C612 Type 1A and 1B.
 - 2. Thermal Conductivity, $k = 0.23 \text{ (BTU-IN)/(HR-SF-degree F)}$ at 75 degree F mean temperature.
 - 3. Operating Temperature Limit: 0 to 450 degrees F.
 - 4. Density: 3.0 lb/cu ft.
 - 5. Vapor Retarder Jacket: White Kraft paper with glass fiber yarn and bonded to aluminized film, secured with pressure sensitive tape.

- D. Weather Resistant External Jacket:
 - 1. Self-adhesive, flexible, fabric reinforced cladding product for heavy duty all weather mechanical protection. Equal to VentureClad Plus 1579CW-white.
 - 2. Operating Temperature Limit: -30 to 300 degrees F.
 - 3. Thickness: 15.5 mils
 - 4. Puncture Resistance: 80 LBS.
 - 5. Water Vapor Permeability: 0.0000 perms
 - 6. ASTM E84 Tested: Flame spread index less than 25, smoke developed index less than 50.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Verify piping, ductwork and equipment is tested before installation.

- B. Piping Insulation:
 - 1. Use pre-formed insulation fittings at all pipe branches, turns and appurtenances.
 - 2. Provide continuous vapor barrier for any pipes conveying fluids below ambient temperature. Continue vapor barrier through wall or floor penetrations.
 - 3. Use full lengths of insulation whenever possible. Do not fit scrape pieces where full length can be used.
 - 4. Slip non-slit elastomeric pipe tubing over pipe lengths as installed. Seal butt joints with adhesive. Miter cut and seal with adhesive at joints.

5. Provide white PVC jacket and fitting covers on all insulated pipes exposed in indoor finished areas including mechanical equipment rooms.
 6. Provide weather-proof aluminum jacket and fitting covers on all insulated pipes exposed outdoors.
 7. Provide 12 inch long sheetmetal saddles between insulation and hanger.
- C. External Duct Insulation:
1. Provide continuous vapor barrier for any ducts conveying air below ambient temperature. Continue vapor barrier through wall or floor penetrations.
 2. Use SMACNA labeled foil tape for sealing seams in insulation.
 3. Do not piece together scraps of insulation material.
 4. Use mechanical pin fasteners to secure insulation to duct surfaces to prevent sagging.
 5. Insulate around damper quadrants and leave locking adjustments exposed.
 6. Provide weather resistant jacketing on all insulation exposed outdoors.
- D. Internal Duct Insulation is not allowed.

3.2 SCHEDULES

- A. Piping Insulation:
1. Heating Water Supply and Return:
 - a. Glass Fiber Insulation.
 - 1) For Pipe Size 1-1/2" & Smaller, Thickness: 1 inch.
 - 2) For Pipe Larger than 1-1/2", Thickness: 2 inch.
 2. Chilled Water Supply and Return:
 - a. Cellular Glass Insulation (Foam Glass).
 - 1) For Pipe Size 1-1/2" & Smaller, Thickness: 1-1/2 inch.
 - 2) For Pipe Larger than 1-1/2", Thickness: 2 inch.
 3. Condensate Drain:
 - a. Glass Fiber Insulation.
 - 1) Thickness: 1 /2 inch.
 - b. Elastomeric Rubber Insulation.
 - 1) Thickness: 1 /2 inch.
 4. Refrigerant Suction:
 - a. Elastomeric Rubber Insulation.
 - 1) Thickness: 5/ 8 inch.
 5. Refrigerant Hot Gas:
 - a. Elastomeric Rubber Insulation.
 - 1) Thickness: 3/ 8 inch.
- B. Ductwork Insulation:
1. Concealed In Conditioned Ceiling Plenum; Supply, Return, Outside Air
 - a. Flexible Glass Fiber Duct Wrap: 1-1/2 inch thick.
 2. Concealed In Unconditioned Spaces: Supply, Return, Exhaust, Outside Air
 - a. Flexible Glass Fiber Duct Wrap: 2 inch thick.

3. Exposed in Finished Areas (except Mech Room); Supply, Return, Outside Air
 - a. Medium Density Fiber Glass Board: 1-1/2 inch thick with white all service vapor barrier jacket.
 4. Exposed in Mechanical Room; Supply, Return, Outside Air
 - a. Medium Density Fiber Glass Board: 2 inch thick with white all service vapor barrier jacket.
 5. Exposed Outdoors; Supply, Return, Exhaust Air
 - a. Medium Density Fiber Glass Board: 3 inch thick with vapor barrier and weather resistant external jacket.
 6. Pre-treated Ventilation Air shall be treated same as Supply Air.
- C. Plenums and Equipment Insulation:
1. Field fabricated air plenums:
 - a. Medium Density Fiber Glass Board: 2 inch thick with white all service vapor barrier jacket.
 2. Chilled Water Pumps:
 - a. Field fabricate complete pump body insulation casing with elasomeric rubber sheet; 3/ 4 inch thick. Glue all joints and coat with white enamel finish.

END OF SECTION

SECTION 23 08 00
COMMISSIONING OF HVAC

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. HVAC commissioning description.
 - 2. HVAC commissioning responsibilities.

1.2 COMMISSIONING DESCRIPTION

- A. HVAC commissioning process includes the following tasks:
 - 1. Testing and startup of HVAC equipment and systems.
 - 2. Equipment and system verification checks.
 - 3. Assistance in testing and balancing.
 - 4. Provide factory trained technician to perform commissioning tests.
 - 5. Complete functional performance test checklist provided by the equipment manufacturer to assure equipment and systems are fully operational and ready for service.
 - 6. Provide equipment, materials, and labor necessary to correct deficiencies found during commissioning process to fulfill contract and warranty requirements.
 - 7. Provide operation and maintenance information and record drawings.
 - 8. Provide operational training to facility maintenance personnel for systems specified in this Section.
- B. Equipment and Systems to Be Commissioned:
 - 1. Energy Recovery Ventilation Unit: ERV-1
 - 2. Automatic temperature control system.
 - 3. Testing, Adjusting and Balancing work.

1.3 COMMISSIONING SUBMITTALS

- A. Draft Forms: Submit draft of system verification form and functional performance test checklist.
- B. Test Reports: Indicate data on system verification form for each piece of equipment and system as specified.
- C. Field Reports: Indicate deficiencies preventing completion of equipment or system verification checks equipment or system to achieve specified performance.

1.4 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Record revisions to equipment and system documentation necessitated by commissioning.
- B. Operation and Maintenance Data: Submit revisions to operation and maintenance manuals when necessary revisions are discovered during commissioning.

1.5 COMMISSIONING RESPONSIBILITIES

- A. Equipment or System Installer Commissioning Responsibilities:
 - 1. Attend commissioning meetings.
 - 2. Ensure temperature controls installer performs assigned commissioning responsibilities as specified below.
 - 3. Ensure testing, adjusting, and balancing agency performs assigned responsibilities as specified.
 - 4. Provide instructions and demonstrations for Owner's personnel.
 - 5. Ensure subcontractors perform assigned commissioning responsibilities.
 - 6. Ensure participation of equipment manufacturers in appropriate startup, testing, and training activities when required by individual equipment specifications.
 - 7. Develop startup and initial checkout plan using manufacturer's startup procedures and functional performance checklists for equipment and systems to be commissioned.
 - 8. During verification check and startup process, execute HVAC related portions of checklists for equipment and systems to be commissioned.
 - 9. Perform and document completed startup and system operational checkout procedures, providing copy for O&M manual.
 - 10. Provide manufacturer's representatives to execute starting of equipment. Ensure representatives are available and present during agreed upon schedules and are in attendance for duration to complete tests, adjustments and problem-solving.
 - 11. Coordinate with equipment manufacturers to determine specific requirements to maintain validity of warranties.
 - 12. Prior to functional performance tests, review test procedures to ensure feasibility, safety and equipment protection and provide necessary written alarm limits to be used during tests.
 - 13. When deficient or incomplete work is discovered, ensure corrective action is taken and re-check until equipment or system is ready for startup.
- B. Temperature Controls Installer Commissioning Responsibilities:
 - 1. Attend all commissioning meetings.
 - 2. Review design for ability of systems to be controlled including the following:
 - 3. Confirm proper hardware requirements exists to perform functional performance testing.
 - 4. Confirm proper safeties and interlocks are included in design.

5. Confirm proper sizing of system control valves and actuators and control valve operation will result capacity control identified in Contract Documents.
6. Confirm proper sizing of system control dampers and actuators and damper operation will result in proper damper positioning.
7. Confirm sensors selected are within device ranges.
8. Review sequences of operation and obtain clarification from Architect/Engineer.
9. Indicate delineation of control between packaged controls and building automation system, listing BAS monitor points and BAS adjustable control points.
10. Provide written sequences of operation for packaged controlled equipment. Equipment manufacturers' stock sequences may be included, when accompanied by additional narrative to reflect Project conditions.
11. Inspect, check, and confirm proper operation and performance of control hardware and software provided in other HVAC sections.
12. Submit proposed procedures for performing automatic temperature control system point-to-point checks to Architect/Engineer.
13. Inspect check and confirm correct installation and operation of automatic temperature control system input and output device operation through point-to-point checks.
14. Perform training sessions to instruct Owner's personnel in hardware operation, software operation, programming, and application in accordance with requirements of Section 23 09 00.
15. Demonstrate system performance and operation during functional performance tests including each mode of operation.
16. Provide control system technician to assist during verification check and functional performance testing.
17. Provide control system technician to assist testing, adjusting, and balancing agency during performance of testing, adjusting, and balancing work.

1.6 SCHEDULING

- A. Prepare schedule indicating anticipated start dates for the following:
 1. Piping system pressure testing.
 2. Piping system flushing and cleaning.
 3. Equipment and system startups.
 4. Automatic temperature control system checkout.
 5. Testing, adjusting, and balancing.
 6. HVAC system orientation and inspections.
 7. Operation and maintenance manual submittals.
 8. Training sessions.
- B. Schedule occupancy sensitive tests of equipment and systems during conditions of both minimum and maximum occupancy or use.

1.7 COORDINATION

- A. Notify Architect/Engineer minimum of two weeks in advance of the following:
 - 1. Scheduled equipment and system startups.
 - 2. Scheduled automatic temperature control system checkout.
 - 3. Scheduled start of testing, adjusting, and balancing work.
- B. Coordinate programming of automatic temperature control system with construction and commissioning schedules.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Place HVAC systems and equipment into full operation and continue operation during each working day of commissioning.
- B. Install replacement sheaves and belts to obtain system performance, as requested by balancing contractor.
- C. Prior to start of functional performance test, install replacement filters in equipment.

END OF SECTION – 23 08 00

SECTION 23 30 00
HVAC AIR DISTRIBUTION

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Ductwork.
 - 2. Ductwork Accessories.
 - 3. Fire Dampers.
 - 4. Grilles and Diffusers.

1.2 BASIC REQUIREMENTS

- A. Submittals:
 - 1. Provide submittal data indicating proposed products and methods for review by Engineer. Submit manufacturer's recommended installation instructions for each product.
 - 2. Provide scale duct installation drawings indicating materials, sizes, seam / joint construction, sealing and hanging methods for each area.
- B. Perform all work in accordance with prevailing codes and standards.
- C. Installation to be performed by journeyman sheetmetal worker with a minimum of five years training in the trade.

PART 2 PRODUCTS

2.1 DUCTWORK

- A. Rectangular Metal Ducts:
 - 1. Galvanized Steel Ducts: ASTM A653/A653M galvanized steel sheet, lock-forming quality, having G60 zinc coating of in conformance with ASTM A90/A90M.
 - 2. Fasteners: Rivets, bolts, or sheet metal screws.
 - 3. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.
- B. Ductwork Fabrication:
 - 1. Fabricate and support rectangular ducts in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible and as indicated on Drawings. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.

2. Fabricate and support round ducts with longitudinal seams in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible (Round Duct Construction Standards), and as indicated on Drawings. Provide duct material, gages, reinforcing, and sealing for operating pressures indicated.
 3. Construct fittings with minimum radius 1-1/2 times centerline duct width.
 4. Construct rectangular elbows with 4 inch throat and provide turning vanes.
 5. Changes in duct sizes should not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
 6. Provide standard 45-degree lateral wye takeoffs.
 7. Transition ducts at angles of 15 degrees or less.
- C. Transverse Duct Connection System:
1. Manufacturers:
 - a. Ductmate.
 - b. Substitutions: Permitted.
 2. Product Description: SMACNA "J" rated rigidity class connection, interlocking angle and duct edge connection system with sealant, gasket, cleats, and corner clips.
- D. Insulated Flexible Round Ducts:
1. Product Description: Two ply vinyl film supported by helical wound spring steel wire; fiberglass insulation; polyethylene vapor barrier film.
 2. Pressure Rating: 10 inches wg positive and 1.0 inches wg negative.
 3. Maximum Velocity: 4000 fpm.
 4. Temperature Range: -10 degrees F to 160 degrees F.
 5. Thermal Resistance: 4.2 square feet-hour-degree F per BTU.
- E. Single Wall Spiral Round Ducts:
1. Manufacturers:
 - a. Lindab Incorporated.
 - b. McGill AirFlow Corporation.
 - c. Semco Incorporated.
 - d. Spiral Mfg. Co., Inc.
 - e. Substitutions: Permitted.
 2. Product Description: UL 181, Class 1, round spiral lock seam duct constructed of galvanized steel.
 3. Fittings: G-90 galvanized steel, factory fitted with EPDM rubber sealing gaskets.
 4. SMACNA Leakage Class 3 without field application of duct sealer.
 5. Duct Coating: Exterior galvanize primer for improved paint adhesion for any duct exposed in finished areas that is not externally insulated.
 6. Construct duct with the following minimum gages:
 - a. 3 to 14 inch diameter – 26 gauge
 - b. 15 to 26 inch diameter – 24 gauge
 - c. 28 to 36 inch diameter – 22 gauge
 - d. 38 to 50 inch diameter – 20 gauge

- e. 52 to 84 inch diameter – 18 gauge

2.2 DUCT ACCESSORIES

A. Volume Control Dampers:

1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible, and as indicated on Drawings.
2. Fabricate splitter dampers of material matching duct gage to 24 inches size in each direction, and two gages heavier for larger sizes. Secure with continuous hinge or rod. Operate with minimum 1/4 inch diameter rod.
3. Fabricate single blade dampers for duct sizes to 12 x 30 inch.
4. Fabricate multi-blade damper of opposed blade pattern with maximum blade sizes 8 x 72 inch. Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.
5. Provide locking quadrant on one shaft end and bearing at other end. Notch both shaft ends to indicate damper position.
6. Provide stand-off bracket and shaft extension for locking quadrants when ducts are to be insulated.

B. Back-draft Dampers:

1. Gravity back-draft dampers size 18 x 18 inches or smaller, furnished with air moving equipment, furnish of air moving equipment manufacturers standard construction.
2. Fabricate multi-blade, parallel action gravity balanced back-draft dampers of galvanized steel, or extruded aluminum, with center pivoted blades, with sealed edges, linked together, steel ball bearings, and plated steel pivot pin.

C. Turning Vanes and Air Extractors:

1. Provide multi-blade air foil turning vanes in all rectangular elbows and tee fittings.
 - a. Airfoil design; with smoothly-rounded entry nose with extended trailing edge for low pressure drop, anti-dirt, and positive fastening. Vanes shall be No. 26 hot dipped galvanized steel.
 - b. Rail support system shall be No. 24 hot dipped galvanized steel with pre-punched fastener holes. Tabbed or slotted dimple fasteners are not acceptable. Two fasteners shall fasten each vane to rail allowing for final vane angle angle-of-attack adjustment during installation.
 - c. Pressure drop performance shall be ETL tested not to exceed 0.027 in w.c. at 1,000 FPM. Generated sound power level shall not exceed 54 decibels in band 4 at 2,000 FPM-duct size 24 x 24.
2. Provide multi-vane air extractor at each branch duct take-off fitting; multi-blade device with radius blades attached to pivoting frame and bracket, steel or aluminum construction, with push-pull operator strap.

D. Flexible Duct Connections:

1. UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, approximately 3 inches wide, crimped into metal edging strip.

E. Duct Access Doors:

1. Fabricate in accordance with SMACNA HVAC Duct Construction Standards - Metal and Flexible.
2. Access doors smaller than 12 inches square secured with sash locks. Access doors with sheet metal screw fasteners are not acceptable.

2.3 FIRE DAMPERS:

A. Manufacturers:

1. Greenheck.
2. Louvers & Dampers.
3. Ruskin.
4. Substitutions: Permitted.

B. Fabricate in accordance with NFPA 90A and UL 555.

C. Fire Resistance: 1-1/2 hours.

D. Dynamic Closure Rating: Dampers classified for dynamic closure to 2000 fpm and 4 inches wg static pressure.

E. Construction:

1. Integral Sleeve Frame: Minimum 20 gage roll formed galvanized steel. Length: 12 inches.
2. Blades Style: Curtain type.
3. Action: Spring or gravity closure upon fusible link release.
4. Material: Minimum 24 gage roll formed, galvanized steel.
5. Closure Springs: Type 301 stainless steel, constant force type, if required.
6. Fusible Link Release Temperature: 165 degrees F.
7. Mounting: Vertical or horizontal as indicated on Drawings.
8. Duct Transition Connection, Damper Style:
 - a. Transfer openings use A style - rectangular connection, frame and blades in air stream.
 - b. Rectangular duct penetrations use B style - rectangular connection, blades out of air stream, high free area.
 - c. Round duct penetrations use CR style - round connection, sealed.
 - d. Oval duct penetrations use CO style - oval connection, sealed.
9. Picture Frame Mounting Angles:
 - a. One-piece, roll formed retaining angles 1-1/2 x 2-1/2 inches.
 - b. Factory matched and shipped attached to damper.

PART 3 EXECUTION

3.1 EXAMINATION

3.2 Verify sizes of equipment connections before fabricating transitions.

3.3 Verify rated walls are ready for fire damper installation.

3.4 Verify ducts and equipment installation are ready for accessories.

3.5 Check location of air outlets and inlets and make necessary adjustments in position to conform to architectural features, symmetry, and lighting arrangement.

3.6 INSTALLATION - DUCTWORK

- A. Coordinate elevation and routing of ducts with work of other trades. Establish elevation and suspended ceilings to avoid conflict.
- B. Metal Ducts: Install in accordance with SMACNA Duct Construction Standards - Metal and Flexible.
 - 1. During construction install temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
 - 2. Seal all joints with mastic duct sealer, equal to Foster 32-17 Safetee Duct Sealant.
 - 3. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities. Duct insulation is specified in Section 22 07 00.
 - 4. Paint ductwork visible behind air outlets and inlets matte black.
- C. Flexible Ducts:
 - 1. Connect diffusers or plenum boxes to low pressure ducts with 5 feet maximum length of flexible duct.
 - 2. Connect flexible ducts to metal ducts with liquid adhesive plus draw bands.
 - 3. Use crimp joints with bead for joining round duct sizes 8 inch and smaller with crimp in direction of airflow.
- D. Install flexible connections immediately adjacent to fans and motorized equipment. Install flexible connections specified between fan inlet and discharge ductwork. Prevent flexible connectors being in tension while running.
- E. Provide manufactured filter frames and housings where indicated. Do not shop fabricate.
 - 1. Prevent passage of unfiltered air around filters by installing felt, rubber, or neoprene gaskets.
 - 2. Install filter gage static pressure tips upstream and downstream of filters. Mount filter gages on outside of filter housing or filter plenum, in accessible position. Adjust and level.

- F. Install fire dampers at locations as indicated on Drawings. Install with perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.

 - G. Access Doors: Install access doors at the following locations:
 - 1. Spaced every 50 feet of straight duct.
 - 2. Upstream of each elbow.
 - 3. Upstream of each reheat coil.
 - 4. Before and after each duct mounted filter.
 - 5. Before and after each duct mounted coil.
 - 6. Before and after each duct mounted fan.
 - 7. Before and after each automatic control damper.
 - 8. Before and after each fire damper, smoke damper, and combination fire and smoke damper.
 - 9. Downstream of each VAV box.
 - 10. Install at locations for cleaning kitchen exhaust ductwork in accordance with NFPA 96.
 - 11. Access Door Sizes: Install minimum 8 x 8 inch size for hand access, 18 x 18 inch size for shoulder access, and as indicated on Drawings. Review locations prior to fabrication.
- 3.7 Install balancing dampers on duct take-off to diffusers and grilles and registers, regardless of whether dampers are specified as part of diffuser, or grille and register assembly.
- 3.8 Install control dampers furnished under Section 23 09 00.

END OF SECTION – 23 30 00

SECTION 23 73 12

ENERGY RECOVERY VENTILATION UNITS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
1. Self-contained, roof mounted, combination exhaust and ventilation supply with rotating media energy recovery, refrigeration and electric heating unit and accessories.

1.2 BASIC REQUIREMENTS

- A. Submittals:
1. Provide submittal data indicating proposed products and methods for review by Engineer. Submit manufacturer's recommended installation instructions for each product.
 2. Provide a schematic layout of refrigeration system, including equipment connections, valves, pipe sizes, specialties and traps.
 3. Provide submittal data for any specialties indicating manufacturer catalog information, size, rough-in requirements and finish.
- B. Perform all work in accordance with prevailing codes and standards.
1. Outside Air Damper Leakage: Test in accordance with AMCA 500.
 2. Recovery Core: ARI Standard 1060 Certified.
 3. ARI 1060: Air Transfer Ratio of 0% at balanced pressure.
- C. Installation to be performed by journeyman sheetmetal installer with a minimum of five years training in the trade.
- D. Provide manufacturer's startup service by factory certified service technician.
- E. Provide five year manufacturer warranty for variable frequency drive and one year on all parts.
- F. Delivery, Storage and Handling
1. Units not shipped fully assembled shall have tags and airflow arrows on each section to indicate location and orientation in direction of airflow. Shipping splits shall be clearly defined on submittal drawings. Cost associated with non-conformance to shop drawings shall be the responsibility of the manufacturer. Each section shall have lifting lugs or shipping skid to allow for field rigging and final placement of section.
 2. Deliver units to jobsite with fan motor(s), sheave(s), and belt(s) completely assembled and mounted in units.
 3. Accept units and components on site in factory protective containers, with factory shipping skids and lifting lugs. Inspect for damage.

4. Protect units from weather and construction traffic by storing in dry, roofed location.

G. EXTRA MATERIALS

1. Furnish one spare set of fan belts for each unit.
2. Furnish two spare sets of air filters for each unit.

PART 2 PRODUCTS

2.1 ENERGY RECOVERY VENTILATION UNITS

A. Manufacturers:

1. AAON.
2. Daikin.
3. Desert Aire.
4. Trane.
5. Approved equal.

B. Configuration:

1. Exhaust air discharge hood and motorized damper.
2. Exhaust air fan section.
3. Exhaust air filters.
4. Enthalpy recovery media.
5. Outside air intake hood and motorized damper.
6. Outside air filters.
7. Refrigeration cooling and de-humidification coil.
8. Electric heat.
9. Hot gas reheat coil.
10. Ventilation air fan section.
11. Air cooled condensing unit.
12. Power and control wiring cabinet.

C. Performance Base: Sea level pressure or altitude.

D. Fabrication: Conform to AMCA 99 and UL 1812 Listed.

2.2 CONSTRUCTION

- A. Channel base of welded steel. Assemble sections with gaskets and bolts.
- B. Separate 14" high, fabricated roof curb for vertical supply and exhaust duct configuration.
- C. Two-inch double wall rigid polyurethane foam panel cabinet, thermal resistance of R-13 or greater. Panels with full thermal break.
- D. Access doors with full length stainless steel piano hinges and quarter turn, zinc cast, lockable handles.

E. Corrosion resistant exterior polyurethane paint. 2,500 hour salt spray test.

F. Double sloped stainless steel drain pan.

G. Microchannel condenser coils.

2.3 FANS

A. Direct drive backward curved plenum supply fan with rubber isolation mounts and high efficiency EC motor.

B. Direct drive backward curved exhaust air fan with rubber isolation mounts and standard efficiency motor.

C. VFD controlled supply and exhaust fans for precise airflow control, building pressure control, and reduced power consumption.

2.4 ENERGY TRANSFER MEDIA

A. Rotating media wheel capable of transferring both sensible and latent energy between air streams.

B. Exhaust and ventilation air streams shall at all time travel in separate passages, and airstreams shall not mix.

C. Air flow through the transfer media shall be laminar, avoiding deposition of particulates on the interior of the media.

D. The transfer media shall perform without the occurrence of condensation or frosting under normal conditions, defined as outside air temperature is above -10°F and inside relative humidity is below 40%.

2.5 DIRECT EXPANSION COOLING AND DEHUMIDIFICATION

A. Variable capacity and two step R-410A scroll compressors with isolation valves.

B. R-410A refrigerant.

C. Modulating hot gas reheat coil.

D. ECM driven condenser fans with head pressure control.

2.6 ELECTRIC HEAT

A. Modulating SCR control with 0-10 VDC signal.

2.7 FILTERS

A. Flat: 2 inches deep disposable, pleated panel filters. MERV 11 or better.

2.8 CONTROLS

- A. Provide unit with complete self-contained DDC control system to maintain programmed schedule and discharge air conditions.
- B. Provide BACnet communication card for future interface with owner's building automation system by others.
- C. Sequence of Operation.
 - 1. Unit operation will be switched between occupied and un-occupied mode by 7-day time controller.
 - 2. Un-occupied Mode
 - a. All fans, heat recovery wheel, electric heat, and refrigeration systems will be de-energized. Low leakage dampers in exhaust hood and outside air intake hood will be fully closed.
 - 3. Occupied Mode
 - a. Dampers in exhaust hood and outside air hood will be fully open.
 - b. Exhaust air fan will operate to provide constant volume exhaust from attached duct system as scheduled.
 - c. Supply air fan will operate to provide constant volume ventilation air through attached duct system as scheduled.
 - d. Energy recovery wheel will operate to transfer heat and moisture between exhaust and supply air streams as required to pre-treat supply air to maintain the programmed discharge air conditions.
 - e. Electric heat, D-X cooling and hot gas bypass reheat will be modulated to provide conditioning additional to the energy recovery wheel as required to maintain the programmed discharge air conditions.
 - 4. The control system will allow adjustable setpoint control of the discharge air temperature and humidity.

2.9 SYSTEM DESIGN CAPACITY - ERV-1

- A. Air Flow
 - 1. 775 CFM Supply air at 0.8" wc ES,
 - 2. 550 CFM Exhaust air at 0.8" wc ESP
- B. Summer design temperatures
 - 1. Supply air: 70°FDB / 60°FWB
 - 2. Exhaust air: 75.0°FDB / 63.0°FWB
 - 3. Outside air: 95.0°FDB / 78.0°FWB
- C. Winter design temperatures
 - 1. Supply air: 70°FDB / 60°FWB
 - 2. Exhaust air: 68.0°FDB / 53.0°FWB
 - 3. Outside air: 0.0°FDB / -1.0°FWB

2.10 ELECTRICAL CHARACTERISTICS AND COMPONENTS

- A. Requirements for Electrical Characteristics:
 - 1. 208 volts, three phase, 60 Hz.
- B. Disconnect Switch: Factory mount on equipment.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with ARI 430.
- B. Install flexible connections between unit and inlet and discharge ductwork. Install metal bands of connectors parallel with minimum 1 inch flex between ductwork and fan while running. Refer to Section 23 30 00.

3.2 FIELD QUALITY CONTROL

- A. Furnish initial start-up and checkout.
- B. Vacuum clean coils and inside of unit cabinet.
- C. Install new throwaway filters in units at Substantial Completion.
- D. Demonstrate unit operation and maintenance.
- E. Instruct Owner's personnel in operation and maintenance of units. Schedule training with Owner, provide at least 7 days notice to Architect/Engineer of training date.
- F. Do not operate units until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

END OF SECTION – 23 73 12

SECTION 26 05 00

COMMON REQUIREMENTS FOR ELECTRICAL

PART 1 GENERAL

1.1 SUMMARY

- A. This section applies to all work performed under Specification Division 26 for electrical installation. All contractors and subcontractors performing work in this division must abide by the requirements of this section. Section Includes:
1. Codes and Standards.
 2. Permits and Inspections.
 3. Submittals.
 4. Substitutions.
 5. Identification and labeling.
 6. Cutting and Patching.
 7. Excavation and backfill.
 8. Fire Stopping.
 9. Supports and structural elements.
 10. Commissioning.
 11. Close-out Documents.

1.2 CODES AND STANDARDS

- A. The contractor shall perform all work in a manner which complies with all applicable Federal, State and Local Codes. These include, but not limited to;
1. OSHA Standard 1926.
 2. 2013 Kentucky Building Code.
 3. 2013 Kentucky Plumbing Code.
 4. 2012 International Mechanical Code.
 5. 2012 International Fire Code.
 6. 2009 NFPA 54 - National Fuel Gas Code.
 7. 2009 International Energy Conservation Code.
 8. 2009 ICC/ANSI A 117.1 Accessible and Usable Buildings and Facilities.
 9. 2014 NFPA 70 National Electrical Code
 10. 2010 NFPA 72 – National Fire Alarm and Signaling Code
- B. If any code listed above is superseded by a newer version, the code in force at the time of the bid shall prevail.
- C. In the event that a conflict occurs between the bid documents and any applicable code, the code shall dictate the work. The contractor must bring any such conflict to the attention of the Architect/Engineer immediately.

1.3 SUBMITTALS

- A. Contractor must submit for approval, prior to release for production, copies of submittal literature for each product proposed for use on the project. Products to be reviewed will include mechanical equipment, materials, systems, methods and devices. The Engineer will review the submittals for compliance to the plans and specifications. Engineer's review of the submittal literature does not in any way relieve the contractor from total responsibility for the correct selection, application and installation of the product.
- B. The contractor will submit multiple copies of the submittal literature for review. The number of copies will vary by project but will be no less than four copies plus the number of copies requested to be returned to the contractor after review.
- C. Submittals are to be provided for the specific model and type of product. Any optional features to be included should be indicated. Submittals are to indicate all pertinent dimensions, clearance requirements and necessary supports.
- D. Submittal literature should be presented on standard 8.5" x 11" bond paper, except where scaled drawings require larger sheet size. All plumbing submittal literature should be provided at one time, bound in a three-ring binder with index and tabs. A cover sheet should indicate the project title, contractor name and contact information.
- E. Where requested provide samples of product for review and color selection charts.

1.4 PERMITS AND INSPECTIONS.

- A. Obtain and pay for all permits and inspections as required, including utility connection fees unless otherwise noted.
- B. Schedule all required inspections and provide any assistance required by the inspecting authority.
- C. For projects with the Kentucky Finance and Administration Cabinet:
 - 1. Electrical Inspections: The contractor shall not use private inspectors. All electrical inspections will be performed by the inspectors from the Kentucky Department of Fire Prevention, Office of Electrical Inspections (502-564-3626). The contractor shall be responsible for requesting, scheduling and coordinating all electrical inspections through the Office of Electrical Inspections. The Project Manager from the Division of Engineering will arrange to pay the associated inspection fees directly to the Office of Electrical Inspections.

1.5 SUBSTITUTIONS

- A. Products identified throughout the Project Specifications Manual with specific manufacturer names, trade names or model numbers are the basis of design.
- B. Instructions to Bidders specify time for submitting requests for Substitutions during bidding period to requirements specified in this section.
- C. Acceptance of a substitute product by the Architect/Engineer does not relieve the bidder from fully complying with the intent of the specifications. Substitutions shall be

equal or better than the basis of design in all aspects of quality, appearance and functionality.

- D. The bidder is responsible for any costs associated with changes or additional work required by the bidder or any other contractor on the project which is the result of variance between the basis of design and the substitution.

1.6 IDENTIFICATION AND LABELING

- A. Provide identification labels for all electrical distribution, starting and switching devices.
 - 1. Label with engraved three-layer laminated plastic nameplate, one-eighth inch black letters on white background.
 - 2. Indicate the identification of the device, the source of power to the device and the electrical characteristics. (example: LC-1 Lighting Contactor, West Exterior Lights, LP04-22)
- B. Provide labeling on all junctions boxes indicated the source of the circuits within.
 - 1. In concealed areas label junction box covers with permanent marker.
- C. Provide wire markers at each conductor in panel boards, control devices, wiring troughs, pull boxes, and junction boxes.
 - 1. Wire markers to be plastic tape, split sleeve, or tubing type wire markers with circuit or control wire number permanently stamped or printed.
- D. Panel Schedules: Complete all panel schedules furnished with the device by typing the description as indicated on the drawings.

1.7 CUTTING AND PATCHING

- A. The Electrical Contractor shall be responsible to perform all cutting, patching, excavation and backfill associated with the installation of their work.
- B. The plans may not indicate all cutting or patching required by the installation. The contractor must review the site and anticipate those requirements.
- C. Cutting and patching is to be performed by skilled and experienced crafts persons.
- D. No cutting of structural elements is allowed. Contractor must obtain prior approval from the engineer / architect before any cutting is performed.
- E. Building elements that may need to be cut and patched for the installation of the electrical work include: walls, ceilings, floors and roofs.
- F. When cutting building elements, remove only the least amount of material required to properly install the work.

- G. The building elements are to be patched and restored to original condition after plumbing work is completed. This includes final finished surfaces and paint to match existing.
- H. Provide sleeves around mechanical pipes and ducts penetrations, patching tightly to walls and floors. Provide fire stop caulk at fire rated penetrations.
- I. Openings in masonry and concrete materials are to be made with a masonry saw or core drill.
- J. Perform cutting, fitting, and patching, to complete Work, and to:
 - 1. Install new work.
 - 2. Uncover existing work for tie-in or repair.
 - 3. Remove and replace defective and non-conforming Work.
 - 4. Remove samples of installed Work for testing.

1.8 EXCAVATION AND BACKFILL

- A. Unless otherwise indicated, the contractor is responsible to perform all excavation and backfill associated with their work.
- B. Excavation and backfill procedures are to include shoring as required by code.
- C. Backfill is to be performed in 6" layers thoroughly compressed between added layers. Backfill with good clean earth or bank run sand and gravel, no clay or gombo is to be used. Final grade is to be level with existing area.
- D. Remove all surplus dirt and debris from the site.
- E. Each pipe is to be laid in a firm bed with solid bearing throughout the entire length. Changes in direction are to be made with proper bends and all joints to be made with standard fittings.

1.9 FIRESTOPPING

- A. All penetrations through fire rated walls, ceilings and floors must be firestopped with a product manufactured and labeled for that purpose with an equivalent rating.
- B. Use silicone elastomeric fire stopping caulk; single or multiple component silicone elastomeric compound and compatible silicone sealant; as manufactured by 3-M Company, Dow Corning or Hilti Corp.
- C. Apply product as directed in manufacturer's instructions.

1.10 SUPPORTS AND STRUCTURAL ELEMENTS

- A. Provide additional supports and structural elements as needed to properly install plumbing equipment, pipes and ducts including hangers, stands, braces and supports.

- B. Supports to be shop fabricated from standard formed steel shapes; angle iron, channel or beams. Weld steel frames and supports by certified welders.
- C. Steel supports and structural elements to be finished with hot-dipped galvanize or three coats of rust resistant paint.
- D. Fasten supports and structural elements securely to building structure with rust resistant fasteners.

1.11 COMMISSIONING

- A. The Electrical Contractor shall be responsible for the proper start-up and adjustment; referred to as the commissioning, of all equipment and systems installed under this Division. This includes communicating and coordinating with all parties involved in commissioning; equipment manufacturer, plumbing contractor, mechanical contractor and service technicians.
- B. The commissioning of electrical equipment and systems is to be performed by certified service technician(s) trained and knowledgeable in the specific manufacturer and model. Manufacturer licensed start-up may be required for some equipment specified.
- C. The contractor must notify the engineer 4 day prior to the commissioning of any piece of equipment. The contractor must grant the engineer access to observe the commissioning process.
- D. Provide start-up check list and record data in accordance with manufacturer's product literature. Include copies of all reports in operation and maintenance binder.

1.12 CLOSEOUT DOCUMENTS

- A. After completion of the installation, but before final payment; the Electrical Contractor is to submit (through the General Contractor and Architect/Engineer) to the Owner the following documentation.
 - 1. One complete full sized set of construction drawings, indicating with red pencil marks, all changes made during installation.
 - a. Each sheet of drawing is to show the contractor's name, telephone number, date and the words "As-Built Drawing".
 - 2. Four copies of Operation and Maintenance Manuals for all electrical equipment and systems installed as a part of the project. With each O&M Manual:
 - a. Provide information in a three-ring binder, with title page, index page and tab dividers identifying each section.
 - b. Provide installing contractor's name, and contact information.
 - c. Provide manufacturer's published literature for startup, maintenance and operation of equipment.
 - d. Provide manufacturer's published parts list for equipment.
 - e. Provide copy of any standard and extended warranty certificate.
 - f. Provide copy of start-up check list and recorded data.
 - g. Provide copy of approved submittal data.

- h. Copy of final inspection approval by state or local agency of record.

END OF SECTION – 26 05 00

SECTION 26 05 10

RACEWAYS AND BOXES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Conduits and supports.
 - 2. Boxes and fittings.
 - 3. Surface mounted raceway systems.

1.2 BASIC REQUIREMENTS

- A. Submittals:
 - 1. Provide submittal data indicating proposed products and methods for review by Engineer. Submit manufacturer's recommended installation instructions for each product.
 - 2. Provide schedule indicating type of raceway and fittings to be used for each purpose. Indicate type of hangers to be used.
 - 3. Provide submittal data for any specialties indicating manufacturer catalog information, size, rough-in requirements and finish.
- B. Perform all work in accordance with prevailing codes and standards.
- C. Installation to be performed by journeyman electrician with a minimum of five years training in the trade.
- D. Warranty all work to be free of defect for a period of one years after acceptance.

PART 2 PRODUCTS

2.1 RACEWAYS

- A. Metallic Conduits
 - 1. Rigid Steel Conduit - UL-6
 - a. Rigid heavy wall galvanized with threaded fittings.
 - 2. Rigid Aluminum Conduit – ANSI C80.5.
 - 3. Intermediate Metallic Conduit (IMC) – UL-1242
 - a. Light weight rigid steel conduit with threaded or compression gland fittings.
 - 4. Electrical Metallic Tubing (EMT) - UL-797
 - a. Continuous, seamless tubing, galvanized on the exterior, coated on interior with smooth hard finish. Use only compression gland fittings, no set-screw fittings. Provide fittings with insulated throat.
 - 5. Flexible Steel Conduit - UL-1

- a. Single strip, continuous, flexible interlocked double-wrapped steel, galvanized inside and outside, forming smooth interior. Use only steel squeeze type connectors. Provide connectors with insulated throat.
 - b. Maximum length; Six feet for final hookup to interior fixture or appliance.
 - c. Each section of raceway must contain an equipment grounding wire bonded at each end.
6. Liquid Tight Flexible Conduit - UL-360
- a. Same as flexible tubing except with water-tight plastic outer jacket.
 - b. Cast malleable iron body and gland nut, cadmium plated with one-piece brass grounding bushings which thread to interior of conduit. Spiral molded vinyl sealing ring between gland nut and bushing and nylon insulated throat.
- B. Rigid Non-metallic Conduit (RNMCM) – UL-651
1. Polyvinyl chloride suitable for 90 degrees C. conductors.
 2. Schedule 40 PVC solvent weld fittings.
 3. Raceway, fittings and cement must be produced by the same manufacturer with a minimum of ten years of experience with the product.
- C. Surface Mounted Raceway System
1. Metallic surface mounted raceway – UL-5; equal to Wiremold Series 700. Manufactured fittings with removable covers.
 2. Non-metallic surface mounted raceway – UL-5A; equal to Wiremold Series 2300 or 2300D. Manufactured fittings with removable covers.
 - a. Provide divided raceway when combining power and data boxes.

2.2 OUTLET, JUNCTION AND PULL BOXES

- A. Cast Type Conduit Boxes.
1. Threaded leak tight fittings.
 2. Surface mounted for exposed outdoor or indoor in wet locations.
 3. Cast or sheet metal covers with gaskets.
- B. Galvanized Pressed Steel Outlet Boxes.
1. General: Pressed steel, galvanized or cadmium plated, minimum of four inches, octagonal or square with galvanized cover or extension ring as needed.
 2. Concrete Box: Four inch octagon with a removable backplate and 3/8 inch stud, if required. Depth of box to allow for a minimum of one inch of concrete poured above the backplate.
 3. Switch and Receptacle Box, Indoors: Nominal four inches square, 1-1/2 or 2-1/8 inch deep as needed, with raised cover. Gangable boxes shall not be used.
 4. Telephone Box, Indoors: Nominal four inches square, 2-1/8 inch deep as needed, with raised cover. Gangable boxes shall not be used.
 5. Lighting Fixture Box: Four inch octagon with 3/8 inch fixture stud.
 - a. For suspended ceiling work, four inch octagon with removable backplate where needed, and two parallel bars for securing to cross-furring channels.

6. Plug all un-used knockouts.
- C. Pull and Splice Boxes, Outdoors.
 1. Aluminum reinforced with removable covers secured by brass machine screws. Size box to permit pulling, racking and splicing of the cables.
 2. Provide with ground connector suitable for copper cables brazed inside the box.
- D. Junction Boxes, Sidewalk Type.
 1. Cast Iron, hot-dipped galvanized with threaded conduit entrance hubs. Provide with flanged, reinforced checkered cover, gasketed with pry bar slots and countersunk stainless steel screws.
- E. Floor Boxes.
 1. Class I, water tight, normal depth cast iron construction Type I, fully adjustable, for use in concrete.
 2. Brass or bronze flush mount covers impervious to cleaning detergents. Cover to be compatible with the intended floor covering. Provide carpet flange in carpeted areas.
 3. Provide continuous ground path to box.

PART 3 EXECUTION

3.1 INSTALLATION - RACEWAYS

- A. Provide raceways for all wiring systems, including security, data transmission, paging, low voltage and controls. Keep 277/480 volt wiring in separate raceway from 120/208 volt wiring. Emergency system wiring to be kept in separate raceway from normal system wiring.
- B. Provide raceway as follows:
 1. Underground
 - a. Rigid Steel Conduit, protected from corrosion with two coats of asphalt paint. Touch up abrasions and wrench marks after conduit is in place.
 - b. RNMC encased in 6 inches of concrete.
 2. Exterior of Building
 - a. Rigid Steel Conduit.
 - b. Liquid Tight Flexible conduit for final equipment connection.
 3. Interior of Building – concealed above suspended ceiling or in partition.
 - a. EMT.
 - b. Flexible steel conduit for final connection to fixture or equipment.
 4. Interior of Building – exposed in finished areas.
 - a. Surface mounted raceway. Use only on solid columns or walls that cannot be fished.
 5. Interior of Building – exposed in storage, or mechanical equipment rooms.
 - a. IMC.
 - b. Flexible steel conduit for final connection to fixture or equipment.

- C. Size each raceway per NEC for size and quantity of conductors indicated on drawings. Minimum raceway size 3/4 inch for all lighting and power circuits.
- D. Provide pull string in spare or empty raceways. Allow five feet of slack at each end of pull string.
- E. Provide one empty 3/4 inch raceway for each three spare or space in flush mounted panel boards. Extend spare raceway to an accessible junction box above ceiling for future circuit expansions.

3.2 INSTALLATION – OUTLETS, JUNCTION AND PULL BOXES:

- A. Provide outlets, junction and pull boxes as indicated on the drawings and as needed for the complete installation of the various electrical systems and to facilitate proper pulling of wires and cables. J-boxes and pull boxes to be sized per NEC minimum. Boxes on empty conduit systems to be sized as if containing conductors of #4 AWG.
- B. Provide boxes and covers for wiring devices so that the device will be installed in vertical orientation. Fit boxes in finished ceilings or walls with appropriate covers, set flush with the finished surface. Where more than one device is located at one point, use gang boxes and covers.
- C. Back-to-back outlets in the same wall, or “thru-wall” type boxes are not permitted. Provide twelve inches minimum horizontally between boxes in opposite side of a common wall and twenty-four inches minimum horizontally between boxes in opposite side of a fire rated wall.
- D. Pull Box Spacing:
 - 1. Provide pull boxes so no individual conduit run contains more than the equivalent of four quarter bends (360 degrees total).
 - 2. Conduit Sizes 1-1/4 inch and larger:
 - a. Provide boxes to prevent cable or wire from excessive twisting, stretching or flexing during installation.
 - b. Provide boxes so that maximum pulling tension does not exceed manufacturer’s recommendation.
 - c. Provide support racks for boxes so multiple sets of conductors do not rest on any metal work inside of box.
 - 3. Conduit Sizes 1 inch and smaller: Maximum distances
 - a. 200 feet straight runs.
 - b. 150 feet runs with one 90 degree bend.
 - c. 125 feet runs with two 90 degree bends.
 - d. 100 feet runs with three or four 90 degree bends.

END OF SECTION – 26 05 10

SECTION 26 05 26

GROUNDING AND BONDING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Grounding electrodes, conductors, connections and equipment for properly grounded electrical system.

1.2 BASIC REQUIREMENTS

- A. Submittals:
 - 1. Provide submittal data indicating proposed products and methods for review by Engineer. Submit manufacturer's recommended installation instructions for each product.
 - 2. Provide submittal data for any specialties indicating manufacturer catalog information, size, rough-in requirements and finish.
- B. Perform all work in accordance with prevailing codes and standards.
- C. Installation to be performed by journeyman electrician with a minimum of five years training in the trade.
- D. Warranty all work to be free of defect for a period of one year after acceptance.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Ground Cables: Green color coded, insulated, annealed stranded tinned copper wire as indicated on drawings; insulated wire to conform with requirements of Section 26 05 20.
- B. Mechanical Connectors: Tin plated aluminum alloy, U.L. approved and stamped for use with aluminum or copper conductors.
- C. Ground Rods:
 - 1. Copper-clad steel fabricated by molten welding process.
 - 2. Diameter: 5/8 inch. Use 3/4 inch for rocky soil.
 - 3. Length: 8 feet.
- D. Ground Lugs and Connectors for Cable Tray: Tin-plated aluminum alloy suitable for use with aluminum or copper conductors.

2.2 GENERAL

- A. Ground systems to be installed in accordance with the requirements of the local authorities, ad subject to the approval of the Architect / Engineer.
- B. All ground wires and bonding jumpers to be stranded copper installed in conduit. All ground wires to be without joints and splices over entire length.
- C. The system neutral to be grounded at the service entrance only, and kept isolated from grounding systems throughout the building.
- D. Each system of continuous metallic piping and ductwork must be grounded in accordance with the requirements of the NEC.
- E. All mechanical equipment must be bonded to the building equipment grounding system.
- F. PVC conduits and portions of metallic piping and duct systems which are isolated by flexible connections, insulated couplings, etc. must be bonded to the equipment ground with a flexible bonding jumper, or separate grounding conductor.
- G. Metal raceways, cable trays, cable armor, cable sheath, enclosures, frames, fittings and other metal noncurrent-carrying parts that are to serve as grounding conductors must be effectively bonded where necessary to assure electrical continuity and the capacity to conduct safely and fault current likely to be imposed on them. Any nonconductive paint, enamel, or similar coating must be removed at threads, contact points, and contact surfaces or be connected by means of fittings so designed as to make such removal unnecessary.

2.3 SEPARATELY DERIVED SYSTEMS

- A. Equipment grounding conductors must be provided for separately derived systems and must be grounded to building stall, cold water pipes, etc., or an alternate grounding means.

2.4 RECEPTACLES

- A. Receptacles must be grounded to the outlet box by means of a bonding jumper between the outlet box and the receptacle grounding terminal.

2.5 ISOLATED GROUND RECEPTACLES

- A. Isolated ground receptacles ground lug must not be connected to the respective outlet box.
- B. Provide insulated ground wire for each isolated ground receptacle. Ground wire to serve only those receptacles which are isolated. Route ground conductor together with phase and neutral conductors in a common raceway.

- C. Terminate isolated ground wire at the ground from the separately derived system serving the receptacles. Where not supplied by a transformer, run the isolated ground wire to the service ground bus.

2.6 CONCENTRIC KNOCKOUTS

- A. Provide grounding type bushings for conduits terminated through multiple concentric knockouts not fully knocked out, on inside of electrical enclosures. Install bonding jumper between ground bushing and enclosure.

2.7 RAISED FLOORS

- A. Provide bonding of all raised floors.
- B. Provide insulated #4 ground from opposite ends of raised floor to panelboard serving that area.

2.8 TOGGLE SWITCHES

- A. Provide grounding clip on each toggle switch. Mount over device mounting strap such that contact is made between mounting strap, screw, faceplate and outlet box.
- B. Provide devices with ground screw and bond to switch box.

2.9 GROUNDING METHODS

- A. The metal frame of the building, where effectively grounded.
- B. A metal underground water piping system used for grounding must be in direct contact with the earth for ten feet or more and must be electrically continuous. Provide bonding jumpers at water meter and at insulated joints.
- C. Steel reinforcing bars used for grounding shall be encased by at least two inches of concrete, located within and near the bottom of a concrete foundation or footing that is in direct contact with the earth. Reinforcing bars must be a minimum 1/2 inch diameter and consisting of twenty feet of one or more steel reinforcing bars.
- D. All bonding jumpers for the above grounding systems must be sized in accordance with the NEC.

PART 3 EXECUTION

3.1 INSTALLATION – GROUNDING

- A. Cold Water Pipe Grounding:
 - 1. Make connection with clamp type fitting; do not damage water pipe.
 - 2. Bond ground conductor and its conduit to water pipe.
 - 3. Install No. 4/0 AWG bonding jumper with ground clamps around water meter.

- B. Ground Conductors:
 - 1. Size as shown on drawings or as required by NEC.
 - 2. Where ground cables are required, install insulated copper ground conductors in steel conduit, or as indicated.
 - 3. Where ground cable is installed in metallic conduit, bond cable to conduit at both ends.
 - 4. Connect ground conductors in cables and in conduit to appropriate ground buses (as in switchgear, motor control centers and distribution panelboards) or directly to metallic enclosures if no ground bus is provided.

- C. Conduit Attachment to Electrical Equipment:
 - 1. Ground conduits to metal framework of electrical equipment with double locknuts or grounding bushings and bonding jumpers unless otherwise noted.
 - 2. Install bonding jumpers at all electrical equipment to provide continuous ground return path through conduit.
 - 3. Install bonding jumpers across expansion fittings between conduit sections for ground path continuity.
 - 4. Bond conduits to cable tray where conduit enters or exits tray.

- D. Receptacles and Switches:
 - 1. Install bonding jumpers between outlet box and receptacle grounding terminal except where contact device or yoke is provided for grounding purposes.

- E. Wireways:
 - 1. Install grounding jumpers for bonding between wireway and other panelboards, conduit, switchgear, motor control centers, and at any other point where solid connection was otherwise not provided in supporting system to insure continuous ground.

- F. Underfloor Duct:
 - 1. Install No. 8 AWG bare copper bonding jumper between underfloor duct sections on either side of expansion joint using pressure type lugs with embedding type bonding screws.

- G. Dry-Type Transformers:
 - 1. Perform grounding in accordance with NEC.
 - 2. Install bonding jumper across flexible conduit from transformer housing to rigid conduit.

- H. Pull Boxes, Junction Boxes and Enclosures:
 - 1. Connect all equipment grounding conductors together and connect to the box.

3.2 GROUNDING FOR RF / EMI CONTROL

- A. Install bonding jumpers to bond all conduit, cable trays, sleeves and equipment for low voltage signaling and data communications circuits. Bonding jumpers must consist of 4 inch wide copper strip or two #10 copper conductors spaced minimum 4 inches apart. Use #6 copper where exposed and subject to damage.

- B. Comply with the following when shielded cable is used for data circuits.
 - 1. Shields must be continuous throughout each circuit.
 - 2. Connect shield drain wires together at each circuit connection point and insulate from ground. Do not ground the shield.
 - 3. Do not connect shields from different circuits together.
 - 4. Shield must be connected at one end only. Connect shield to signal reference at the origin of the circuit. Consult with equipment manufacturer to determine signal reference.

3.3 FIELD QUALITY CONTROL:

- A. Resistance Values for System and Equipment Grounds: for each ground rod and ground grid.
 - 1. Acceptable Testing Equipment: Vibroground by Associated Research, Inc.: or Megger Earth Tester by James G. Biddle Co.
 - 2. Method: Three electrode fall of potential as prescribed by instrument manufacturer.
 - 3. Drive additional ground rods spaced eight feet apart, if necessary, until total resistance of system is measured at five ohms or less.

END OF SECTION – 26 05 26

SECTION 26 05 30

WIRING DEVICES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Receptacles.
 - 2. Switches.
 - 3. Dimmers.
 - 4. Wall Plates.

1.2 BASIC REQUIREMENTS

- A. Submittals:
 - 1. Provide submittal data indicating proposed products and methods for review by Engineer. Submit manufacturer's recommended installation instructions for each product.
 - 2. Provide submittal data for any specialties indicating manufacturer catalog information, size, rough-in requirements and finish.
- B. Perform all work in accordance with prevailing codes and standards.
- C. Installation to be performed by journeyman electrician with a minimum of five years training in the trade.
- D. Warranty all work to be free of defect for a period of one year after acceptance.

PART 2 PRODUCTS

2.1 WIRES AND CABLES

2.2 WIRING DEVICES

- A. Single Pole Switch:
 - 1. Hubbell HBL1201, Heavy-Duty or approved equal.
 - 2. Stainless steel wall plate.
- B. Double Pole Switch:
 - 1. Hubbell HBL1202, Heavy-Duty or approved equal.
 - 2. Stainless steel wall plate.
- C. Three-way Switch:
 - 1. Hubbell HBL1203, Heavy-Duty or approved equal.
 - 2. Stainless steel wall plate.

- D. Duplex Convenience Outlet:
 - 1. Hubbell HBL5262, Heavy-Duty or approved equal.
 - 2. Stainless steel wall plate.

- E. GFCI Receptacle:
 - 1. Hubbell GF5262A, Heavy-Duty or approved equal.
 - 2. Stainless steel wall plate.

- F. Telephone Jack:
 - 1. Hubbell HXJUW or approved equal.
 - 2. Companion snap-in wall plate.

- G. Data Jack:
 - 1. Hubbell HXJ6W, Cat 6 or approved equal.
 - 2. Companion snap-in wall plate.

- H. Occupancy Sensor:
 - 1. Hubbell WS1277 or approved equal.
 - 2. 1800W@120V INC 1800VA@120V 4000VA@277V FL, 120/277 Volt AC 60Hz
 - 3. Single-Pole, 180 Degree, 2100 Sq. Ft. Coverage, Passive Infrared Wall Switch Occupancy Sensor.
 - 4. Commercial Grade - White
 - 5. Companion decorative wall plate.

- I. Service Pole:
 - 1. Hubbell HSP10A or approved equal.
 - 2. Material: Aluminum .05" thick
 - 3. Finish: Gray or ivory powder coat
 - 4. Receptacles: Two spec grade 20A/125V
 - 5. Space: Behind communications knockout approx. 2" X 2".
 - 6. Capacity: Data channel will accommodate 24 UTP cables @ .21" dia. = 40% fill
 - 7. Conductors: #12 AWG Stranded copper

PART 3 EXECUTION

3.1 INSTALLATION – WIRING DEVICES

- A. All devices to be flush mounted in wall or ceiling unless otherwise noted.
- B. Mount all devices at heights according to ADA requirements.
- C. Devices installed outdoors must be labeled for outdoor use and have weather proof protective covers.
- D. Align devices vertically and horizontally. Device covers to be aligned vertically with a tolerance of 1/16 inch. All four corners of the cover should be in contact with the wall surface.

- E. Switches:
 - 1. Located near door; not less than 2 inches or greater than 18 inches from trim on strike side of doorway.
 - 2. Label switches that control exhaust fans, motors or equipment.

- F. Receptacles:
 - 1. Mount receptacles vertically. If near floor mount with ground positioned on top. If near ceiling, mount with ground positioned on bottom.
 - 2. Test and verify that hot, neutral and ground conductors are connected correctly.

- G. Ground Fault Interrupters:
 - 1. Each GFI protected circuit is to be installed in a separate raceway. Do not combine with other circuits.
 - 2. Label downstream receptacles to indicate the GFCI location if receptacles are more than 20 feet from the GFCI device.
 - 3. Do not feed through GFCI devices located in restrooms to receptacles in other rooms.

- H. Wall plates:
 - 1. Verify location, type and color of all devices and plates with Architect or Interior Designer before installation.

END OF SECTION – 26 05 30

SECTION 26 50 00

LIGHTING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Luminaires and lampholders.
 - 2. Lamps.
 - 3. Ballasts.
 - 4. Poles and brackets.
 - 5. Exit Signs.
 - 6. Emergency lighting units.

1.2 BASIC REQUIREMENTS

- A. Submittals:
 - 1. Provide submittal data indicating proposed products and methods for review by Engineer. Submit manufacturer's recommended installation instructions for each product.
 - 2. Provide submittal data for any specialties indicating manufacturer catalog information, size, rough-in requirements and finish.
- B. Perform all work in accordance with prevailing codes and standards.
 - 1. Conform to requirements of ANSI/NFPA 70.
 - 2. Conform to requirements of NFPA 101.
 - 3. Furnish products listed by Underwriters Laboratories, Inc. or other testing firm acceptable to authority having jurisdiction.
- C. Installation to be performed by journeyman electrician with a minimum of five years training in the trade.
- D. Warranty all work to be free of defect for a period of one year after acceptance.
- E. Spare Parts:
 - 1. Provide two extra of each size and type of lens and enclosure.
 - 2. Provide twelve extra of each lamp installed.
 - 3. Provide two extra of each size and type ballast.

PART 2 PRODUCTS

2.1 LUMINAIRES AND LAMP HOLDERS

- A. Luminaire Schedule: Product requirements for each luminaire and lampholder are specified in Lighting Schedule on Drawings.
- B. Accessories: Provide required accessories for mounting and operation of each luminaire as indicated.
- C. Recessed Luminaires: Provide trim type suitable for ceiling system in which luminaire is installed.
- D. Thermal Protection: Provide thermal protection devices to meet NFPA 70 requirements.
- E. Surface Luminaires: Provide spacers and brackets required for mounting.
- F. Pendant Luminaires: Provide swivel hangers, pendant rods, tubes, and chains as indicated to install luminaire at appropriate height.

2.2 EMERGENCY FLUORESCENT LAMP POWER SUPPLY

- A. Description: Self-contained battery-operated power supply installed in ballast compartment, rated for operating one 32W T8 fluorescent lamp to a minimum output of 600 lumens.
- B. Controls and Indicators: AC ON; TEST switch.

2.3 LAMPS

- A. Description:
- B. Incandescent Lamps: [125] [130] volts, shape as scheduled.
- C. Fluorescent Lamps: Type and color as scheduled.
- D. Metal Halide HID Lamps: Clear.
- E. Reflector Lamp Beam Patterns: Conform to ANSI C78.379.

2.4 FLUORESCENT BALLASTS

- A. Provide fluorescent ballast suitable for use under installation conditions listed for each luminaire and lampholder.
- B. Voltage: 120 volts.
- C. Ballasts for nominal 430 mA lamps: Electronic, Instant start type.

3.1 EXAMINATION AND PREPARATION

- A. Examine adjacent surfaces to determine that surfaces are ready to receive work.

3.2 INSTALLATION

- A. Install luminaires and accessories in accordance with manufacturer's instructions.
- B. Provide pendant accessory to mount suspended luminaires and exit signs at height indicated. Use swivel hanger on sloped ceilings.
- C. Support surface-mounted luminaires from ceiling grid tee structure; provide auxiliary support laid across top of ceiling tees. Fasten to prohibit movement.
- D. Install recessed luminaires to permit removal from below. Use plaster frames. Install grid clips. Install earthquake clips.
- E. Luminaire Pole Bases: Construct as indicated on Drawings. Install poles on bases plumb; provide for adjustment.
- F. Embedded Luminaire Poles: Depth as indicated Install plumb.
- G. Install lamps in luminaires and lampholders.

3.3 ADJUSTING AND CLEANING

- A. Align luminaires and clean lenses and diffusers at completion of work.
- B. Aim adjustable luminaires and lampholders as indicated or as directed.
- C. Adjust directional arrows on exit signs to meet approval of authority having jurisdiction.
- D. Clean paint splatters, dirt and debris from installed luminaires.
- E. Touch up luminaire and pole finish at completion of work.
- F. Re-lamp luminaires which have failed lamps (both new and re-used) at completion of work.

END OF SECTION – 26 50 00

SECTION 28 31 00

FIRE DETECTION AND ALARM

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes alterations to an existing fire detection and alarm system required by removal and additions of various interior wall of the existing building. The proposed alterations are indicated on the electrical power and systems drawing.
- B. Upon completion of the proposed alterations, the entire fire alarm system shall be tested and re-certified.

1.2 BASIC REQUIREMENTS

- A. Submittals:
 - 1. Provide submittal data indicating proposed products and methods for review by Engineer. Submit manufacturer's recommended installation instructions for each product.
 - 2. Provide drawings that indicate system wiring diagram showing each device and wiring connection; indicate annunciator layout, and design calculations.
 - 3. Provide submittal data for any specialties indicating manufacturer catalog information, size, rough-in requirements and finish.
- B. Perform all work in accordance with prevailing codes and standards.
 - 1. NFPA 72 - National Fire Alarm Code.
 - 2. NFPA 262 - Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces
- C. Design fire alarm under direct supervision of Professional Engineer experienced in design of this Work and licensed in Commonwealth of Kentucky.
- D. Installation to be performed by certified fire alarm installer with a minimum of five years training in the trade.
- E. Warranty all work to be free of defect for a period of one year after acceptance. Provide five year manufacturer warranty for all variable frequency motor drives.

1.3 SYSTEM DESCRIPTION

- A. Fire Alarm System: Existing fire alarm system to remain. The proposed alterations are indicated on the electrical power and systems drawing.

2.1 ALARM COMBINATION HORN/STROBE

- A. Manufacturers:
 - 1. Simplex 4906-9127.
 - 2. Substitutions: with ten day prior approval.

- B. Product Description: NFPA 72, flush type fire alarm horn with the following features:
 - 1. Sound Rating: 87 dB at 10 feet.
 - 2. Integral strobe lamp and flasher with red lettered "FIRE" on lens.

2.2 WIRE AND CABLE

- A. Product Description: Power limited fire-protective signaling cable, copper conductor, 300 volts insulation rated 105 degrees C.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify products and systems receiving devices are ready for installation.

3.2 EXISTING WORK

- A. Remove exposed abandoned fire alarm wiring, including abandoned wiring above accessible ceiling finishes. Cut cable flush with walls and floors, and patch surfaces.
- B. Disconnect and remove abandoned fire alarm equipment.
- C. Maintain access to existing fire alarm equipment and other installations remaining active and requiring access. Modify installation or provide access panel.
- D. Extend existing fire alarm installations using materials and methods compatible with existing installations, or as specified.
- E. Clean and repair existing fire alarm equipment to remain or to be reinstalled.

3.3 INSTALLATION

- A. Install manual station with operating handle 42 inches above floor to bottom.
- B. Install audible and visual signal devices 80 inches above floor to strobe.
- C. Install 14 AWG minimum size conductors for fire alarm detection and signal circuit conductors in conduit.

- D. Mount end-of-line device box with last device or separate box adjacent to last device in circuit.
- E. Connect conduit and wire to door release devices and duct smoke detectors.
- F. Automatic Detector Installation: Conform to NFPA 72.
- G. Install engraved plastic nameplates in accordance with Section 28 05 53.
- H. Ground and bond fire alarm equipment and circuits in accordance with Section 26 05 26.

3.4 FIELD QUALITY CONTROL

- A. Test in accordance with NFPA 72 and local fire department requirements.
- B. Re-certify system upon completion.

3.5 MANUFACTURER'S FIELD SERVICES

- A. Include services of certified technician to supervise installation, adjustments, final connections, and system testing.

END OF SECTION – 28 31 00